IMPLEMENTATION OF HOLE NUMBERED ARENA TO ENCOURAGE MOTIVATION AND IMPROVE CONCEPTUAL ABILITY OF LEAST COMMON MULTIPLE AND GREATEST COMMON FACTOR TOWARD FOURTH GRADE STUDENTS OF MI ATTARAQQIE MALANG

THESIS

By:

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ID. 09140073

INTERNATIONAL CLASS PROGRAM
ISLAMIC ELEMENTARY EDUCATION STUDY PROGRAM
ISLAMIC ELEMENTARY EDUCATION DEPARTMENT
TARBIYAH FACULTY
STATE ISLAMIC UNIVERSITY OF MAULANA MALIK IBRAHIM MALANG

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Submitted to Tarbiyah Faculty of
State Islamic University of Maulana Malik Ibrahim Malang
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(S.Pd.I)

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DEDICATION

This thesis is dedicated to:

1. My beloved father and mother, Nurhadi, B.A. and Yaminah Tri Rahmawati S.Pd who always sincerely pray for my best, encourage materially and spiritually. Nothing replaces your love.
2. My Younger brother and sister Yafi Rushan Rusli and Himmatul Azizah, thanks for your support, prayer, and spirit. Hopefully, all of you will be success in achieving your dream, becoming insan sholih and sholihah.

MOTTO

يَٰٓأَيُّهَا ٱلَّذِينَ ءَامَنُوٓاْ إِذَا قِيلَ لَكُمۡ تَفَسَّحُواْ فِي ٱلۡمَجَٰلِسِ فَٱفۡسَحُواْ يَفۡسَحِ ٱللَّهُ لَكُمۡۖ وَإِذَا قِيلَ ٱنشُزُواْ فَٱنشُزُواْ يَرۡفَعِ ٱللَّهُ ٱلَّذِينَ ءَامَنُواْ مِنكُمۡ وَٱلَّذِينَ أُوتُواْ ٱلۡعِلۡمَ دَرَجَٰتٖۚ وَٱللَّهُ بِمَا تَعۡمَلُونَ خَبِيرٞ ١١

11. Hai orang-orang beriman apabila kamu dikatakan kepadamu: "Berlapang-lapanglah dalam majlis", Maka lapangkanlah niscaya Allah akan memberi kelapangan untukmu. dan apabila dikatakan: "Berdirilah kamu", Maka berdirilah, niscaya Allah akan meninggikan orang-orang yang beriman di antaramu dan orang-orang yang diberi ilmu pengetahuan beberapa derajat. dan Allah Maha mengetahui apa yang kamu kerjakan.[1]

[1] Departemen Agama Republik Indonesia, *Al-Qur'an dan Terjemahannya*

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ADVISOR OFFICIAL NOTE

Matter : Thesis of Nurul Husnawati Malang, 30 March 2013
Appendices : 4 (four) exsemplars

The Excellency,
Dean of Tarbiyah Faculty
State Islamic University of Maulana Malik Ibrahim Malang
at
Malang

Assalamu'alaiakum Wr. Wb.

After carrying out several times for guidance, both in terms of content, language and writing technique, and after reading the following thesis:

Name : Nurul Husnawati
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Department : PGMI
Title of Thesis : Implementation of "Hole Numbered Arena" to Encourage Motivation and Improve Conceptual Ability of Least Common Multiples and Greatest Common Factors toward Fourth Grade Students of MI Attaraqqie Malang

As the advisor, we argue that this thesis has been proposed and tested decent. Thus, please tolerate presence.
Wassalamu'alaikum Wr. Wb.

Advisor,

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STATEMENT LETTER

Hereby I declare that on this thesis there is no work that ever submitted to obtain bachelor degree on one university, and as far as I know, there is no work or opinion that ever written or published by another person, except for in writes that is referenced on this thesis and mentioned on the bibliography.

Malang, 30March 2013

Nurul Husnawati

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The writer realize about the defectiveness of this Classroom Action Research report. Therefore, the writer needs constructed critical and suggestion from all parties and reader to the next perfect report arrangement.

Malang, 30 March 2013
Writer

Nurul Husnawati

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CHAPTER I

INTRODUCTION

A. Background of the Study

In every learning subject, including mathemathics, the relationship between a teacher and students can't be separated. The success of teaching and learning process is supported by the existence of a teacher in conveying materials and the participation of the students in learning activity. The urgent of a material concept, especially in establishing a concept is absolutely needed.

Establishing a material concept in accordance with teacher expectation is not easy. From this understanding, the role of teacher is very significant. As stated by National Commission on Teaching and America's Future "They need to understand and be committed to their students as learners of mathematics and as human beings and be skillful in choosing from and using a variety of pedagogical and assessment strategies."[1]Their decisions and their actions in the classroom—all of which affect how well their students learn mathematics—should be based on this knowledge. Teacher should be a creative teacher who can manage teaching and learning process in the class, so that s/he enables to optimize the learning process of students. The implementation of pleasure method and strategy will affect the students become more active in following learning activity because the pleasurable learning won't cause boredom.

[1] The National Council of Teachers of Mathematics, *Principles and Standards for School Mathematics*(Reston: Library of Congress Cataloguing-in-Publication Data.2000), p. 17

Mathematics is one of subjects which should be learned by students of all levels which are from Elementary School until college. Mathematics takes important roles because by learning mathematics well, the logical ability of the students can be explored. Unfortunately, many students grouch this subject. Many students of elementary school consider that mathematics is a frightening, uninteresting, boring, and difficult subject. There were several factors that cause this problem:[2]

1. Factor of educational system. Our education system tends to determine everything from "upper". This paradigm influences the process of teaching and learning in the class. Tteacher is the main source of information, while students are the empty bottles which will be fulfilled with much kind of knowledge. Then, students become the object of study that has to obey the rules which has determined by the school or teacher.
2. Curriculum factor. Curriculum consist of many materials but the time allocation is very limited, less of contextual experiences, has the level of difficulties which unsuitable with the development of students, and the systematic is not always precise. This condition causes difficulties for the students in learning mathematics suitable with the curriculum expectation.
3. Teacher factor. Compared with the teacher of other subjects, the teacher of Mathematics tends to be more emotional. Viewed from the side of accomplishing curriculum demand, target of achievement through national examination, and etc. Moreover, in the other side, many students tend to be

[2] Catur Supatmono, *Matematika Asyik, Asyik Mengajarnya, Asyik Belajarnya* (Jakarta: PT Gramedia Widiasarana Indonesia, 2009), pp. 1-3

indolent in learning Mathematics and weak in solving Mathematics problems. In addition, the curriculum which is implemented by the teacher sometimes is unsuitable with student's way of thinking by which it should be in accordance with the competence which should be achieved.

According to Max A. Sobel and Evan M. Maletsky:

> Banyak sekali guru matematika yang menggunakan waktu pelajaran 45 menit dengan struktur kegiatan sebagai berikut:
> a. 30 menit-membahas tugas-tugas yang lalu;
> b. 10 menit-memberi pelajaran baru;
> c. 5 menit-memberi tugas kepada para siswa.
> Pendekatan seperti ini, yang rutin dilakukan hampir setiap hari, hanya dapat dikategorikan sebagai kegiatan tiga **M**: **M**embosankan, **M**embahayakan, **M**erusak seluruh minat siswa.[3]

Then, the implementation of Mathematics learning in the school tends to achieve material target referred to the curriculum and oriented to the accomplishment of pass target through national examination. As the consequence, the learning process doesn't emphasize on the understanding subject material. Student doesn't establish the concept of Mathematics, but tends to memorize the concept without knowing its essence.

Well-documented examples demonstrate that all children, including those who have been traditionally underserved, can learn mathematics when they have access to high-quality instructional programs that support their learning (Campbell; Griffin, Case, and Siegler; Knapp et al.; Silver and Stein).[4] Achieving equity requires a significant allocation of human and material resources in schools and classrooms. Instructional tools, curriculum, materials, special supplemental programs, and the skillful use of community resources undoubtedly play

[3] Ibid., p. 3
[4] The National Council of Teachers of Mathematics, Op. cit., p. 14

important roles. An even more important component is the professional development of teachers. Teachers need help to understand the strengths and needs of students who come from diverse linguistic and cultural backgrounds, who have specific disabilities, or who possess a special talent and interest in mathematics. To accommodate differences among students effectively and sensitively, teachers also need to understand and confront their own beliefs and biases.

As formulated in PERMENDIKNAS (Peraturan Menteri Pendidikan Nasional) Republic of Indonesia No. 22, 2006. The second standard competence of Mathematics in the first semester of fourth grade is understanding and applying the concept of GCF (Greatest Common Factor) and LCM (Least Common Multiples) in solving the problem. The basic competence are: Describing the concept of factoring and multiples, determining the multiplication and factor of number, determining LCM and GCF, solving the problem related to LCM and GCF. [5]

Fourth grade of Elementary School is the beginning of high class which certainly different with the previous classes. If the previous grades implement thematic teaching, the teaching process in 4th grade is focused in one subject, thus the level of material discussed is deeper than before. The material of GCF (Greatest Common Factor) and LCM (Least Common Multiples) which is started to be learned in 4th grade is a new material for the students. It needs the creativity of the teacher in establishing the basic concept of the above materials. The

[5] PERMENDIKNAS Republic of Indonesia No. 22, 2006

materials of LCM & GCF are very useful for the students in the next learning activity.

Based on the interview with Mrs. Hidayah who is the mathematic teacher of 4th grade, the materials of LCM & GCF are the most difficult material for the students in the first semester. It is proved from the result of study which shows that the most of the students' scors are lower than other materials. Implied from the statement of the teacher, the mathematic teaching of 4th grade at MI Attaraqqie Malang is using directional approach from the teacher to the students. The mathematic teaching is centered to the teacher and the student is treated as the object of teaching.

Therefore the students are discouraged in learning the material of LCM and GCF. The students' conceptual ability of those materials becomes less. It can cause less capability in skill of solving the mathematic question. The skill of the student in solving both material LCM and GCM is less because the concept of those materials is not established correctly and strongly. "One of the most robust findings of research is that conceptual understanding is an important component of proficiency, along with factual knowledge and procedural facility (Bransford, Brown, and Cocking)."[6]

Some researches of teaching LCM and GCF in Elementary school resulted the information that the material of LCM and GCF are difficult enough for the students. One of those researches was done by Graviss and Greaver (Musser, and others) which stated "Mungkin karena siswa sering kebingungan antara faktor dan

[6] The National Council of Teachers of Mathematics. Op. cit., p. 20

kelipatan, Faktor Persekutuan Terbesar (FPB) dan Kelipatan Persekutuan Terkecil (KPK) merupakan topik yang sulit bagi siswa untuk dipahami."[7]

MI Attaraqqie has optimum human resources both of the teacher and the students. However, the mathematic teaching in MI Attaraqqie is oriented to the accomplishment of curriculum with the many materials and limited time allocation, thus the teacher conveys the material rapidly. In the first semester, the teacher is unable to implement an interesting method because she has to finished the material so that the students achieved all material same as another school.

Materials of Mathematics are delivered and explained abstractly. The students learn the material from text book and listen the explanation from the teacher, without doing another activity which related to the material. In sense of cognitive development, Piaget stated "the students of elementary school are in operational concrete phase." In that phase, students develop their mind set be based on particular logical rules.[8] It means that in this phase the students' perception is limited by the objects they have found in directional experience. The students think about the object that has been found directly, such as about the weight, color, and its structure. They also think about what kind of activity which can be done by using the object found.

Therefore, the students' ability is still limited on the concrete objects. Thus the thinking process of students will happen in direct activities. Student will face difficulties to understand the concept by only relying on mind ability without trying to do the activity (directional activity). The studied object should be

[7] Catur Supatmono. Op.cit., p. 13
[8] Ibid., pp. 10-11

transmitted to the real object. Without any transmission the students will find the difficulties in understanding the concept.

In addition, the existence of a media will help the teacher in fastening the understanding process of students toward a material that conveyed by the teacher. In accordance with the function of media according to Kemp & Dayton, can accomplish three main function, there are (1) encouraging the interest or action, (2) providing the information, and (3) giving instruction. By using media, the learning motivation can be encouraged and the student's attention will focused to media. [9]Therefore, in the last expectation, with the existence of media usage, the students are easier to understand a material concept, thus misunderstanding about a concept can be reduced.

Based on that background the researcher here is interested to implement the interesting media called "Hole Numbered Arena" which is adopted from the folk game called congklak or dakon. Through this media the students are able to learn by play. They can learn the concept of LCM and GCF directly in the concrete media without thinking abstractly. Thus, by implementing this media students are expected to have high motivation without any fear, clumsy, and difficulties toward the material of LCM and GCF.

The researcher plans to use this media through gaming technique to encourage the motivation and improve conceptual ability of LCM and GCF. The research will be conducted at MI Attaraqqie Malang. Thus, the researcher formulates a title for this research. It is "**Implementation of "Hole Numbered**

[9] Arsyad Azhar, *Media Pembelajaran*(Jakarta:Raja Grafindo Persada, 2007), p. 19

Arena" to Encourage Motivation and Improve Conceptual Ability of Least Common Multiples and Greatest Common Factors toward Fourth Grade Students of MI Attaraqqie Malang."

B. Focus of the Study

Departing from the background of existing problems, the main problems in the study are formulated as follows:

1. How is the teaching planning of implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors toward fourth grade student of MI Attaraqqie Malang?
2. How is the implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors fourth grade student of MI Attaraqqie Malang?
3. How is the evaluation of implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors toward fourth grade student of MI Attaraqqie Malang?

C. Objectives of the Study

Based on the background of above focus of study, the objectives that should be accomplished are:

1. To describe the planning process of implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common

Multiples and Greatest Common Factors toward fourth grade student of MI Attaraqqie Malang.

2. To describe the implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors toward fourth grade student of MI Attaraqqie Malang.
3. To describe the evaluation process of implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors toward fourth grade student of MI Attaraqqie Malang.

D. Significances of the Study

The researcher expects the result of this research have several benefits for:

1. The Institution

a. Recommendation to the school to consider implementation of the above media so that the teaching and learning process can be more effective.

b. Assist the school in implementing curriculum and applying the better teaching and learning activity.

2. The Teacher

a. As consideration in selecting media and technique of teaching to encourage motivation and conceptual ability.

b. As alternative choice for the teacher in assessing the activity and motivation to assess the affective aspect of the students.

3. **The Students**

   a. Making easier understanding and conceptual ability toward the material of LCM and GCF.

   b. Flourishing student's interest and encouragement so that students can involved actively in the learning process. Thus the achievement of study can be improved too.

4. **The researcher**

   a. As the reference about mathematics teaching and effective media selection.

   b. Motivation to learn mathematics more.

E. Limitation of the Study

In this part, the resarcher determines variables or aspects of teaching and learning which will be the research scope. This scope is determined to answer the research questions. Those variables are students learning motivation, students conceptual ability about the material of Least Common Multiples and Greatest Common Factor, and the implementation of particular teaching method called Hole Numbered Arena.

This research is focused in the material concept of LCM and GCF in the mathematic subject of 4^{th} grade at MI Attaraqqie Malang.

F. The Previous Study

In this topic of research there were several researchs and information that can be considered as reference:

1. Penggunaan Media Pembelajaran "Pohon pintar" dengan Teknik Permainan untuk Meningkatkan Keaktifan dan Penguasaan Konsep FPB dan KPK pada Siswa Kelas IVA SDN Ngerong Kab. Pasuruan oleh Evin Dwi Angelina. This research is done by the students of The State of Malang University. This research has the following purposes: knowing the implementation of media pohon pintar in improving activity and conceptual ability of LCM and GCF in A class of the forth grade at SDN Ngerong Kab. Pasuruan, student's activity after implementation of media, conceptual ability of LCM and GCF after implementation of media.

   Based on the result of this research teaching of mathematics by using media of pohon pintar can improve the spirit and motivation of learning. The student achievement can be improved too. But the improvement of activeness and motivation weren't significant. Thus the researcher wants to observe more about this problem.

2. Referred from the previous research with the title "Profil Pembelajaran matematika dengan Materi FPB dan KPK di Kelas IV SDN Madyopuro 3 Malang untuk Mengetahui Penerapan Pembelajaran FPB dan KPK yang Dilakukan oleh Guru Kelas IV SDN Madypuro 3 Malang, this research has several purpose, there are: knowing the implementation of teaching LCM and GCF in the fourth grade, knowing factor that can affect the success of teaching LCF and GCM in the fourth grade. From this research can be proved that the teaching of LCF and GCM should uses contextual strategy because the student conforming some difficulties in understanding the concept. By

using contextual strategy students can understand the material in the contextual way or in the reality. But contextual learning can be implemented in many different ways. Its need to be specified so that the teaching and learning can be more applicative.

3. Through the folk game called congklak or dakon, Komang Windya, S.Pd a teacher of elementary school from Bangli became the winner of Indonesian Festival Science (ISF) on 26th September 2007 in Pondok Indah Mallin because she taught Mathematics by using dakon to establish the concept of Greatest Common Factor (GCF) and success to improve students understanding of GCF. But this game adopted same as dakon. [10]While the research which will be implemented here has different rule, only the form of Hole Numbered Arena which has same formation as dakon.

G. The Systematic of Discussion

The writing of this the thesis will be divided into chapters, with a view to facilitate the reader in understanding the content and review of this paper. The following systematic are:

Chapter I : An introduction. In which consists of the key points are: background of the research, problem of the research, objectives of the research, the significance of the research, scope of the study, and systematic of discussion.

Chapter II : Review of Literature. In this chapter the researcher discusses about Implementation of "Hole Numbered Arena" by using

[10] http://narlinyppi.blogspot.com/2009/05/permainan-dakon-untuk-fpb.html

gaming technique to encourage motivation and improve conceptual ability of LCM and GCF in mathematics teaching, contains general discussion about media of Hole Numbered Arena, Mathematics Teaching, motivation, and the concept of LCM and GCF.

Chapter III : Discuss about research method, approach and type of research, the attendance of researcher, research setting, data source, technique of data collection, analysis of data, checking validity, cycle of research, achievement criteria.

Chapter IV : The result of the research. In this discussion contains about the object of research that includes the discussion about the result of research data in the form of description of fourth grade students, pre test and post test, planning of action, action, reflection, and evaluation.

Chapter V : The analysis and discussion result of the research data that includes planning, implementation, and evaluation of implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factors toward 4th Grade Students of MI Attaraqqie Malang.

Chapter VI : The closing which contains the conclusion and suggestion of the research.

CHAPTER II

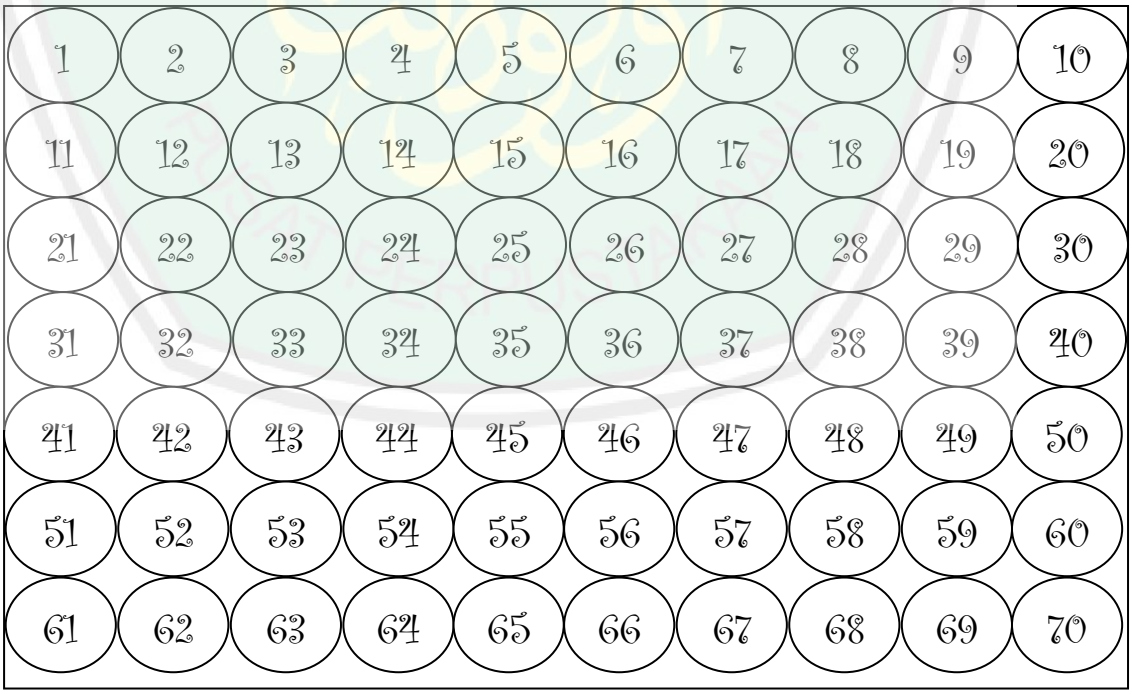
REVIEW OF LITERATURES

A. Hole Numbered Arena

"Hole Numbered Arena" is a game which is adopted from the folk game of Java namely "Dakon." Dakon consists of a board with holes which should be fulfilled by rocks or beans. But "Hole Numbered Arena" is slightly different from dakon. "Hole Number Arena" has series number in every holes of its board.

> Alat peraga "dakon bilangan" dapat dipakai untuk membantu anak belajar konsep bilangan prima dan menentukan bilangan prima, menentukan faktor-faktor pembagi suatu bilangan, menentukan kelipatan suatu bilangan, menentukan faktor persekutuan atau kelipatan persekutuan dua bilangan atau lebih, serta mencari FPB dan KPK dari dua bilangan atau lebih.[11]

1. Tool of the Media



Picture 2.1. Hole Numbered Arena

[11] http://staff.uny.ac.id/sites/default/files/PengembanganPembelajaranMatematika_UNIT_2_0.pdf

The implementation of this media needs the following objects:

a. Arena. Arena is big square shaped. It fulfilled with a numbered hole which is arranged in a series.
b. Beads. The beads consist of two colors, pink and purple.

2. How to use Hole Numbered Arena

a. **Jumping Count**. Preparing Hole Numbered Arena and one color of beads. For example: jumping count of two, students counting the hole by pronouncing its number loudly and quietly at intervals: one (quietly), two (loudly), three (quietly), four (loudly), and so on. While pronouncing its number loudly, students put a bead on the number. The next step, students saying loudly in series, the number which get the bead only.
b. **Multiples**. The activity to determine multiples of a number, similar with the activity of jumping count. Students put a bead on the determined number as it was in jumping count. Therefore, students have to be able to do jumping count or repeated addition.
c. **Factors**. Students should have mastered multiplication and division because in the previous competence, students have studied multiplication and division and its operation. For example, determining the factors of 6, teacher takes a colored bead. Teacher asks students, is 6 can be divided by 1, and asks the result of its division. The teacher commands the students to put a bead on number 1 as the divisor and 6 as the result. Then, continued by asking is 6 can be divided by 2, and what is the result. Students put a

bead on number 2 as a divisor and 3 as the result. Student is commanded to mention the holes which get the bead. The teacher explains that 1,2,3, and 6 is the factors of 6.

d. **The Least Common Multiples (LCM).** The requirement of determining. LCM is students should have mastered the material of multiples. Here the example: determining LCM of 3 and 4. Preparing Hole Numbered Arena with two kind of colored bead, pink and purple, for example pink for the multiples of 3, and purple for the multiples of 4. Students put a pink bead on every hole of multiples of 3 (3, 6, 9, 12, and so on). Then the stunts put a purple bead on every hole of multiples of 4 (4, 8, 12, 16, 20, and so on). It can be seen in the arena there is a numbered hole which get 2 kind of colored beads they are pink bead and purple bead, and the least one is the LCM of 3 and 4.

e. **The Greatest Common Factors (GCF).** In this activity students should have mastered the material of factor of a number. For example, determining GCF of 8 and 12. Preparing Hole Numbered Arena and two kinds of colored beads, they are pink and purple beads. Pink bead for the factor of 8, and purple bead for the factor of 12. As the activity of determining the factors of a number, students put a pink bead in the hole of the factors of 8 (1, 2, 4, and 8), then put a purple bead on the hole of the factors of 12 (1, 2, 3, 4, 6, and 12). It can be seen on the arena there were some numbered hole which gets two kinds of colored beads, pink bead and purple bead (they are 1, 2, and 4). The teacher explains that the numbered

hole which gets two kinds of colored beads is the common factor of 8 and 12, because they are the factors of 8 and 12. And the greatest one or number 4 is the GCF of 8 and 12.

B. The Mathematics Teaching in MI

1. Concept of Mathematics Teaching

Mathematics is universal science which is the foundation of the development of modern technology, has the important role in many kind of sciences and advance the thinking ability of human. The Mathematics subject need to be learned by the students started from elementary school to establish the ability of logical thinking, analytics, systematic, critical, creative, and cooperative.

Etymologically, mathematics derived from Latin *manthanein* or *mathemata* means "study or things that are learned". In Dutch called by *wiskunde* or hematics, all of them are related to intellectual activity.

Students learn mathematics through the experiences that teachers provide. Thus, students' understanding of mathematics, their ability touse it to solve problems, and their confidence in, and disposition toward, mathematics are all shaped by the teaching they encounter in school. The improvement of mathematics education for all students requires effective mathematics teaching in all classrooms.

> Teaching mathematics well is a complex endeavor, and there are no easy recipes for helping all students learn or for helping all teachers become effective. Nevertheless, much is known about effective mathematics teaching, and this knowledge should guide professional judgment and activity. To be effective, teachers must know and

> understand deeply the mathematics they are teaching and be able to draw on that knowledge with flexibility in their teaching tasks. They need to understand and be committed to their students as learners of mathematics and as human beings and be skillful in choosing from and using a variety of pedagogical and assessment strategies (National Commission on Teaching and America's Future 1996). In addition, effective teaching requires reflection and continual efforts to seek improvement. Teachers must have frequent and ample opportunities and resources to enhance and refresh their knowledge. [12]

According to the above theory, an effective mathematics teaching requires a teacher who always enhances and refreshes his/her knowledge. Furthermore, sh/e should be able to apply it by well paedagogical ability, in order to helps students in learning mathematical ideas.

> Effective mathematics teaching requires a serious commitment to the development of students' understanding of mathematics. Because students learn by connecting new ideas to prior knowledge, teachers must understand what their students already know. Effective teachers know how to ask questions and plan lessons that reveal students' prior knowledge; they can then design experiences and lessons that respond to, and build on, this knowledge.[13]

If we want to reveal student's prior knowledge, we need to know how to ask question. By asking question we will know how far their knowledge. Making a plan lesson is also takes an important role. By designing lesson plan the teaching and learning will goes well. We will know what to do in the class, as planned in the lesson plan.

"In effective teaching, worthwhile mathematical tasks are used to introduce important mathematical ideas and to engage and challenge students intellectually. Well-chosen tasks can pique students' curiosity and draw them into

[12] The National Council of Teachers of Mathematics, Op. cit., p. 17
[13] Ibid., p. 18

mathematics."[14] In this research the researcher will use some task to engage students' challenge and curiosity. There were individual tasks and group tasks.

2. The Objectives of Mathematics Teaching

As formulated in PERMENDIKNAS No. 22, 2006 the objectives of Mathematics teaching in Elementary School are: [15]

1. Memahami konsep matematika, menjelaskan keterkaitan antarkonsep dan mengaplikasikan konsep atau algoritma, secara luwes, akurat, efisien, dan tepat, dalam pemecahan masalah
2. Menggunakan penalaran pada pola dan sifat, melakukan manipulasi matematika dalam membuat generalisasi, menyusun bukti, atau menjelaskan gagasan dan pernyataan matematika
3. Memecahkan masalah yang meliputi kemampuan memahami masalah, merancang model matematika, menyelesaikan model dan menafsirkan solusi yang diperoleh
4. Mengomunikasikan gagasan dengan simbol, tabel, diagram, atau media lain untuk memperjelas keadaan atau masalah
5. Memiliki sikap menghargai kegunaan matematika dalam kehidupan, yaitu memiliki rasa ingin tahu, perhatian, dan minat dalam mempelajari matematika, serta sikap ulet dan percaya diri dalam pemecahan masalah.

Therefore we can conclude that teaching mathematics not only aimed students to understand the concept well, but also apply it in solving the problem. Teachers help students make, refine, and explore conjectures on the basis of evidence and use a variety of reasoning and proof techniques to confirm or disprove those conjectures. Students are flexible and resourceful problem solvers. Orally and in writing, students communicate their ideas and results effectively. They value mathematics and engage actively in learning it.

[14] Ibid.,
[15] PERMENDIKNAS, No. 22, 2006., p. 417

3. The Scope of Mathematic Teaching

The subject of Mathematics in Elementary School includes the following standards: [16]

1. Number
2. Geometry and measurements
3. Processing data.

4. The Competence Standard and the Basic Competence of Fourth Grade in the Standard of Number with the Topic of Least Common Multiples (LCM) and Greatest Common Factors (GCF)

Table 2.1. Competence Standard and Basic Competence[17]

Competence Standard	Basic Competence
2. Understanding and applying factors and multiples in solving the problem.	2.1 Describing the concept of factors and multiples 2.2 Determining multiples and factor of given number 2.3 Determining Least Common Multiples (LCM) and Greatest Common Factors (GCF) 2.4 Solving the problem related to LCM and GCF

[16] Ibid., p. 417
[17] Ibid., p. 424

C. Concept of LCM and GCF

a. LCM (Least Common Multiples)

The requirements of understanding concept of LCM, the students should be able to master the concept of multiples. Multiples is the result of multiplication between the number itself with natural number. For example:

5 x 1 = 5

5 x 2 = 10

5 x 3 = 15

5 x 4 = 20

5 x 5 = 25 and so forth

Thus, it can be considered that the multiples of 5 are 5, 10, 15, 20, 25. **Kelipatan persekutuan** dari dua bilangan adalah kelipatankelipatan dari dua bilangan tersebut yang bernilai sama.[18]

If the multiples of 2 are: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, ...

And the multiples of 3 are: 3, 6, 9, 12, 15, 18, 21, 24, ...

The common multiples of both of 2 and 3 are 6, 12, 18, 24.

Kelipatan persekutuan terkecil (KPK) dari dua bilangan adalah kelipatan persekutuan bilangan-bilangan tersebut yang nilainya paling kecil.[19]

Taken from the above example can be concluded that **The Least Common Multiples (LCM)** of 2 and 3 is 6.

[18] Burhan Mustaqim, Ary Astuti, *Ayo belajar matematika 4 : untuk SD dan MI kelas IV*(Jakarta :Pusat Perbukuan, Departemen Pendidikan Nasional, 2008) p 46

[19] Ibid., p 54

b. GCF (Greatest Common Factor)

The requirement of understanding concept of GCF is the students should be able to master the concept of factor. **Faktor** adalah pembagi dari suatu bilangan, yaitu bilangan-bilangan yang membagi habis bilangan tersebut.[20]

If the students have understood about factor, they will be able to understand the concept of GCF easier. Since the students have learned about arithmetic operation, especially multiplication they have confronted with the word of factor. For example:

15 = 3 x 5 or 5 x 3

15 x 1 or 1 x 15

3, 5, 1 and 15 is the factor of 15, because 15 can be divided complitely by 3, 5, 1, and 15. Thus it can be considered that a number is the multiplication result of various factor.

Faktor persekutuan dari dua bilangan adalah faktor-faktor dari dua bilangan tersebut yang bernilai sama. **Faktor persekutuan terbesar (FPB)** dari dua bilangan adalah faktor persekutuan bilanganbilangan tersebut yang nilainya paling besar. [21]

If the factor of 12 are: 1, 2, 3, 4, 6, 12

And the factor of 15 are: 1, 3, 5, 15

The common factor of 12 and 15 are: 1 and 3

The Greatest Common Factor (GCF) of 12 and 15 is 3

[20] Ibid., p 48
[21] Ibid., p 55

D. Motivation

1. Definition of Motivation

Learning motivation is emerge from the students themselves, however encouraged because of external factor. According to Printich and Schunk, "motivasi merupakan sebuah proses yang terjadi di dalam diri individu yang mengarahkan aktivitas individu mencapai tujuan yang perlu didorong dan dijaga."[22] In this case teacher has crucial role as external factor in encouraging learning motivation of the students. By giving stimulus which involves students' body and their five sense such as question, song, or game, the learning motivation of students can be encouraged.

Unsur-unsur yang dapat mempengaruhi motivasi belajar siswa antara lain:

a. Cita-cita atau aspirasi siswa,
   Keinginan telah ada sejak kecil, seperti keinginan untuk makan, berjalan, dan bermain. Keinginan yang terpenuhi akan menimbulkan kemauan. Dalam proses belajar, pemberian hadiah dan hukuman akan merubah keinginan menjadi kemauan, dan kemudian kemauan yang keras akan berubah menjadi cita-cita. Cita-cita dan aspirasi siswa akan mempengaruhi motivasi mereka, siswa yang memiliki cita-cita akan termotivasi untuk melakukan segala upaya dalam meraih cita-citanya.
b. Kemampuan siswa,
   Kemampuan siswa juga berpengaruh terhadap tumbuhnya motivasi dalam diri mereka. Jika siswa merasa mampu dan merasa memiliki hasil dalam usahanya maka ia akan terus termotivasi untuk mempertahankan dan meningkatkan hasil belajar yang ia peroleh. Begitu pula jika ia merasa tidak memiliki kemampuan atau mendapatkan hasil yang tidak sesuai dengan keinginannya, maka ia akan terus berusaha dan terus termotivasi untuk meningkatkan kemampuannya.
c. Kondisi siswa,
   Kondidi siswa meliputi kondisi jasmani dan rohani mempengaruhi motivasi belajar. Seorang siswa yang sedang sakit, lapar atau marah-marah akan mengganggu perhatian belajar. Sebaliknya siswa yang bergembira, kenyang, dan sehat akan mudah termotivasi.

[22] Esa Nur Wahyuni, *Motivasi dalam Pembelajaran* (Malang: UIN-Malang Press, 2010), hlm. 13

d. Kondisi lingkungan siswa.
Lingkungan siswa berupa keadaan alam, lingkungan tempat tinggal, suasana kelas, pergaulan sebaya dan kehidupan masyarakat. Sebagai anggota masyarakat maka siswa akan terpengaruh oleh lingkungan sekitar. Bencana alam, tempat tinggal yang kumuh, ancaman teman yang nakal akan mengganggu kesungguhan belajar. Oleh karena itu, kondisi lingkungan sekolah yang sehat, kerukunan hidup, ketertiban pergaulan akan meningkatkan semangat dan motivasi belajar siswa.[23]

Students' learning motivation is affected by the above unsure, students expectation or aspiration, students ability, students condition, and students environment. Four unsure above shouldn't accomplished thoroughly, it is enable to only an unsure can affect students' motivation.

2. How to Encourage Learning Motivation

There is some ways to encourage learning motivation in the school, they are:

1) Memberi angka. Commonly, students learn to get high score. Thus high score is one of strong motivation for students.
2) Hadiah. The students are encouraged when what they do is appreciated. Moreover, the reward is a present they will be happy during the class
3) Saingan/kompetisi. Teacher tries to make a competition among the students so that the students try to be the best in the class.
4) Ego-involvement. Teacher need to involve student's ego so that they are feel taken care.
5) Memberi ulangan. The students are satisfied if they have high score in the examination. If they are failed will try more and more.

[23] Dimyati dan Mudjiono, *Belajar dan Pembelajaran* (Jakarta: Rineka Cipta 2006) hlm. 99

6) Mengetahui hasil. If the students are success they will satisfied of what they do and they try to do better for the next. Thus, teacher is recommended to give chance to students for achieving success.
7) Pujian.
8) Hukuman. Punishment is needed when the students do something bad in their behavior.
9) Hasrat untuk belajar. Motivation can be encouraged if the students have high interest. Thus teacher needs to attract students' interest with creative teaching and learning activity
10) Tujuan yang diakui. The clearer a goal the higher students' motivation to achieve it. [24]

Beside the above ways, there were many other ways to encourage learning motivation. Basically, the treatment that is done by the teacher will develop and guide the student to learn and have good achievement.

3. Indicator of Learning Motivation

Learning motivation is internal and external impulsion of students who are studying to make behavioral change, generally it is showed by indicator or supported unsure. This is has significant role in the success of learning.

According to Printich and Schunk, "Sebagai sebuah proses, motivasi bukanlah sebuah produk, sehingga tidak dapat diamati secara langsung, tetapi dapat diketahui indikatornya dari perilaku yang tampak, seperti pemilihan tugas-tugas, usaha, keteguhan, dan ucapan-ucapan secara verbal."[25]

[24] Sardiman, *Interaksi dan Motivasi Belajar Mengajar* (Jakarta: Raja Grafindo Persada. 2011), p.92
[25] Esa Nur Wahyuni, *Motivasi dalam Pembelajaran* (Malang: UIN-Malang Press, 2010), p. 13

Learning motivation can't be seen directly, but it can be observed from its indicator, such as behavior, selection of assignment, effort, and verbal expressions. The indicator of learning motivation can be classified as below:

a. There is a will to success.
b. There is encouragement and need to learn.
c. There is expectation in the future.
d. There is reward in learning process.
e. There is an attractive activity in learning.
f. There is a conducive learning environment which enables students to learn well.[26]

To be success in learning there should be a will to achieve teaching and learning purpose, encouragement and need to learn, and expectation for the future. it can be showed in the learning activity, how is students activeness in the class, are they express their ide, are they ask the teacher, are the response teacher's question, are they communicate with the other friends, are they trying to solve the problem. Those all can be observed during the teaching and learning process in the class.

Then the researcher develops the indicator so that it can be observed and assessed directly:

a. Students Attention
    1) Listening to the teacher explanation
    2) Listening to the opinion of friends

[26] Hamzah B. Uno, *Teori Motivasi dan Pengukurannya Analisis di Bidang Pendidikan* (Jakarta: Bumi Aksara, 2007), p. 23

b. Expressing idea

1) Asking to the other friends in a team

2) Answering friend's question

3) Asking or answering teacher's question

c. Cooperativeness in a team and assignment submission

d. Emotional feeling

1) Enthusiastic

2) cheerfully face

Teacher need to give a reward to every student's achievement. It will encourage their motivation and do better in the next learning activity. Teacher also needs to design an attractive learning activity. An attractive learning activity can rise up students' activeness, make students happy and enjoyable.

E. Conceptual Ability

Conceptual ability can be divided becomes three, they are:[27]

1. Translation, ability to understand an idea and express it in another way
2. Interpretation, ability to recognize and understand the main idea of a communication which displayed in the form of chart, table, diagram, picture, and so on.
3. Extrapolation, ability to predict the tendency of consequence and implication in line with the displayed condition.

[27] http://repository.upi.edu/kampus-daerah/fulltext/upload/s_pwk_0801641_chapter2.pdf, accessed on 24 March 2013 at 13.45 WIB

The cognitive domain as stated by Anderson and Kathwohl can be displayed as the table below:[28]

Table 2.2. Dimension of cognitive process

Category of Cognitive Process	Aspects
1. Knowledge	Recognize, remember
2. Comprehension	Interpretation, giving example, classifying, summarizing, concluding, comparing, and explaining
3. Implementation/ Application	Executing, implementing, and operating
2. Analysis	Distinguishing, organizing, distributing
3. Evaluation	Correcting, criticizing, and appreciating
4. Creating	Formulating, planning, producing

1. Knowledge, the ability to remember and express the information which have learned
2. Comprehension, the ability to understand teaching and learning object or subject.
3. Application, the ability to implement concept, principal, and procedure, in a particular situation.
4. Analysis, the ability to describe and consider a material into some parts and unsure and the relation among them.

[28] http://repository.upi.edu/kampus-daerah/fulltext/upload/s_pwk_0801641_chapter2.pdf, accessed on 24 March 2013 at 13.45 WIB

5. Evaluation is the highest goal in cognitive domain, related to the ability to assess something based on particular criteria.
6. Creating is process of arranging elements become coherent and functional whole. [29]

Conceptual ability is a foundation of thinking, learning the rules, and solving a problem.

[29] Ibid.

CHAPTER III

RESEARCH METHODOLOGY

A. The Research Design

The design of this research is Classroom Action Research. It is a research which is committed in the classroom.

> Ada tiga pengertian yang dapat diterangkan.
> 1. Penelitian-menunjuk pada suatu kegiatan mencermati suatu objek dengan menggunakan cara dan aturan metodologi tertentu untuk memperoleh data atau informasi yang bermanfaat dalam meningkatkan mutu suatu hal yang menarik minat dan penting bagi peneliti.
> 2. Tindakan-menunjuk pada sesuatu gerak kegiatan yang sengaja dilakukan dengan tujuan tertentu. Dalam penelitian berbentuk rangkaian siklus kegiatan untuk siswa.
> 3. Kelas-dalam hal ini tidak terikat pada penertian ruang kelas, tetapi dikenal dalam bidang pendidikan dan pengajaran, yang dimaksud dengan istilah *kelas* adalah sekelompok siswa yang dalam waktu yang sama, menerima pelajaran yang sama dari guru yang sama pula.[30]

The researcher makes collaboration with the teacher of Mathematics subject. The researcher is involved directly during the process of teaching and learning include planning the action, implementing the action, observation, reflection, and so forth. By conducting those kinds of activities the researcher earns valid data.

In this research the researcher should make an observation by himself to understand the phenomena or problem. In this case the researcher comes to MI Attaraqqie to observe the phenomena or problem of teaching and learning about

[30] Suharsimi Arikunto, Suhardjono,Supardi, *Penelitian Tindakan Kelas*(Jakarta: PT Bumi Aksara, 2006) p. 2-3

the concept of LCM and GCF. The problem of research is taken from the phenomena in the field. There is an interactive relation between the researcher and object of research. The researcher comes to the field directly and rules as main instrument of research. However, in the process of analyzing data, the researcher implements quantitative approach because some results of study use numeral symbol which should be analyzed by using statistic method in order to get valid data.

B. Location of The Research

This research will be implemented at MI Attaraqqie, Ade Irma Suryani Street No. 50 Malang, and Syarif Al-Qodri Street No 35 Malang. The school is separated into two locations. The first location is used for male and the second for the female students. The research is focused to the female students in the 4th Grade.

C. Presence of The Researcher

The attendance of the researcher in qualitative research is absolutely necessary, because the researcher acts as the instrument who primarily can collects data. Other instrument beside the researcher is also can be used, such as picture, document, and result of interview. However the function of those instruments outside the human is limited as the supporting data for the researcher as the main instrument.

Status of the researcher is complete participant who observes and conducts the research. Susan Stainback stated that "In participant observation, the researcher observes what people do, listen to what they say, and participates in

their activity"[31] referred from this quotation can be understood that complete participation means the researcher is a natural participant. In collecting data, the researcher has completely involved in what the informant do. Thus the situation is natural, the researcher doesn't look like doing research.

The attendance of researcher is definitely known by the informant (students and teacher). Researcher at the time of study conducted direct observation, thus she clearly know the phenomena that appear.

According to Iskandar "Penelitian Tindakan Kelas (PTK) merupakan bagian dari paradigm penelitian kualitatif dengan latar atau setting yang natural atau alamiah, yang memberikan peranan penting bagi peneliti (guru dan dosen sebagai instrumen utama, yang menghadapi situasi dan kondisi proses pembelajaran di kelas)"[32]

D. Instruments of The Research

Instruments which will be applied in this research include:

1. Instrument for data of students activities

Instruments wich will be applied for data of students activities during the process of teaching and learning are:

a. Teaching and planning sets, such as:

1) Syllabus, it will help the researcher and the teacher in arranging the lesson plan

[31] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*(Bandung: Alfabeta, 2011), p. 227
[32] Iskandar, *Penelitian Tindakan Kelas* (Ciputat: Gaung Persada Press, 2009), p. 65

2) lesson plan. Lesson plan will help the teacher to conduct teaching and planning activity which included, basic competence, standard competence, indicator, teaching and learning steps, and assessment
3) students worksheet, will be used to evaluate the students
4) learning material sheet

b. Observation sheets of students activities. In this sheets, indicator and scoring criteria have determined before.
c. Guidelines of interview, contains questions which will be asked to the teacher and students.
d. Field Appendices, contains about everything which will happen within the process of teaching and learning, students activities related to the implementation of "Hole Numbered Arena" which is not recorded in the observation sheets, and students motivation or enthusiasm.

2. Instrumens for data of students conceptual ability

Instruments which will be applied for data of students conceptual ability after the implementation of "Hole Numbered Arena" in the subject of Mathematics is formative test which consist of group test and individual test. The researcher will also use achievement criteria which have determined by the school. By observing the result of formative test, it can be considered that students understanding about the concept of LCM and GCF are achieved.

E. Sources of The Data

The sources of data in this research is categorized into two kinds:

1. Source of Primary Data

Primary data source is the data which is collected, processed, and presented by the investigator from primary sources, which can be either words or actions. Primary data in Classroom Action Research is the researcher's self, because the one who conforms changeable and uncertainty situation is the researcher. In this case the researcher ruled as the teacher. Thus the phenomena such as behavior, interaction, and process of teaching and learning during the field observation can be described directly to the researcher.

The researcher also makes deep interview with the teacher, students, staff, and headmaster whom can give directional information to the researcher about their experience, opinion, feeling, and understanding.

2. Source of Secondary Data

Secondary data sources are complementary data source that functions complement the data required by primary data. That may include books, papers archives, personal papers, official documents, and so forth. And test used to get quantitative data in form of test scoring both in group and individual.

F. Technique of Data Collection

Data collection is the urgent step in a research, because the main purpose of research is getting data as much as possible. Catherine Marshall, Gretchen B. Rossman, stated that " the fundamental methods relied on by qualitative researchers for gathering information are, participation in the setting, direct observation, in-depth interviewing, document review"[33]

[33] Sugiyono, op.cit., p. 225

To collect as much data from the above topic the researcher uses the the following technique:

1. Observation

Marshall stated that "through observation, the researcher learns about behavior and the meaning attached to those behaviors"[34] through this method the researcher wants to obtain data of:

a. The physical condition of classroom
b. The implementation of Implementation of Hole Numbered Arena by using gaming technique toward the students of fourth grade at MI Attaroqqie.
c. The behavior of the students in the classroom.
d. The activity of students during teaching and learning process.
e. The respond of students toward teaching and learning process by using Hole Numbered Arena applied by gaming technique.
f. The affective aspect of students in the class such as feeling, expression, spirit, and motivation.

Sanafiah Faisal classified the observation into participant observation, overt observation and covert observation, unstructured observation. Furthermore, Spradley, as quoted in Susan Stainback divided participation observation into four kinds, there are passive participation, moderate participation, active participation, and complete participation. In this research the researcher ruled as complete participant because she is a teacher in the class and she makes a collaborative cooperation with the native teacher of mathematics in fourth grade.

[34] Ibid., p. 226

2. Interview

Interview used as technique of collecting data if the researcher wants to do introduction or preface study to find the problem and to know the respondent condition in depth, in this case is students.

Esterberg defined interview as follow. "A meeting of two persons to exchange information and idea through question and responses, resulting in communication and joint construction of meaning about a particular topic"[35]

The researcher has made a meeting with the mathematics teacher of fourth grade at MI Attaraqqie namely Mrs. Hidayah. Both of us were involved in an interesting interview about the teaching and learning of mathematics in the class generally.

There will be more interviews with the other informant and the other topic related to the teaching and learning of mathematics and material of GCF and LCM during the process of research, such as students. In this research the researcher plans to interview three students.

3. Documentation and document collection

Document is record of the phenomena in the field both in past time and during the process of research. Document can be in the form of writing, picture, or monumental creation. Document study is the complement of observation and interview in qualitative research. The result of research will be more credible if supported by the existing photos, academic writing, document, and so forth. As

[35] Ibid., p. 231.

stated by Bogdan "Photographs provide strikingly descriptive data, are often used to understand the subjective and is product are frequently analyzed inductive."[36]

In this research, the researcher will take the documentation as much as possible. It can be in form of photos, syllabus and teaching planning, record of students' achievement, profile of school, and so forth.

G. Data Analysis

In qualitative research, data analysis is more focused during the process of research in the field, together with collecting data. Nasution stated that" in fact, data analysis in qualitative research is an on going activity that occurs throughout the investigative process rather that after process.[37]

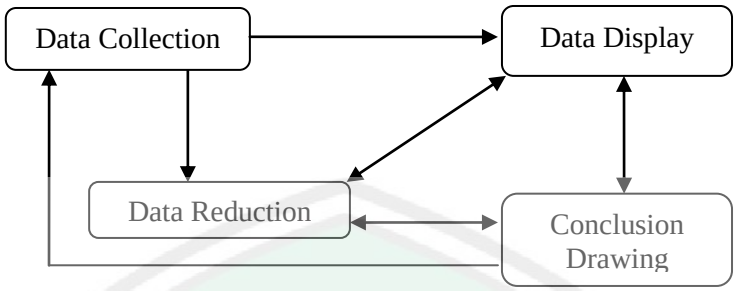
1. Analysis of pre-research

Qualitative research has analyzed data before the researcher going to the field. Analysis is applied toward the resulted data of preliminary research or secondary data that will be used to determine the focus of research. But this focus of research is still temporary, it will develop after the researcher goes on and during process of research in the field.[38] In this case the researcher analyzes the data from journal, literature, and the previous research.

2. Analysis of data during the research

Miles and Huberman (1984) stated that "Aktivitas dalam analisis data kualitatif dilakukan secara interaktif dan berlangsung secara terus menerus sampai tuntas, sehingga datanya sudah jenuh. Aktivitas dalam analisis data, yaitu *data reduction, data display,* dan *conclusion drawing/verification.*

[36] Ibid.,
[37] Ibid., p. 245
[38] Ibid., p. 245



Picture 3.2. Interactive Analysis Model of Miles and Huberman
(Adopted from Miles and Huberman, 2007: 20)

a. Data Reduction

Data reduction means summarizing, selecting the important point, focusing on important thing, looking for its theme and pattern. Data reduction can be helped by utilizing electronic device such as mini computer, by giving code in particular aspect. In reducing data, every researcher will be guided by the purpose that will be achieved. The main purpose of qualitative research is research finding. Therefore, if there is something strange, uncommon, unknown, hasn't pattern, it should be treated as the object of research in reducing data.

b. Data Display

In qualitative research, data display can be in the form of brief description, chart, relations among the category, flowchart, and so forth. In this case Miles and Huberman stated that "the most frequent form of display data for qualitative research data in the past has been narrative text"[39]

Through data display, the resulted data is organized well, arranged in interrelated pattern, so that can be understood easier. Miles and Huberman stated

[39] Ibid., p 249

that "looking at displays help us to understand what is happening and to do some thing-further analysis or caution on that understanding"[40]

c. Conclusion Drawing/ verification

Conclusion in qualitative research is a new founding or invention. The invention can be in the form of description or the view of an object that still unclear and need to be cleared as well. It can be proved after the founding of evidences during the research. Conclusion can be in the form of causal relation or interactive, hypothesis, or theory.

E. Checking Validity of The Data

Checking validity in qualitative research include, credibility (interbal validity), transferability (external validity), dependability (reliability), and conformability (objectivity).

1. Credibility

Credibility in qualitative research can be checked in several ways such as improving persistence in the research, triangulation, discussion with the colleague, and member check.

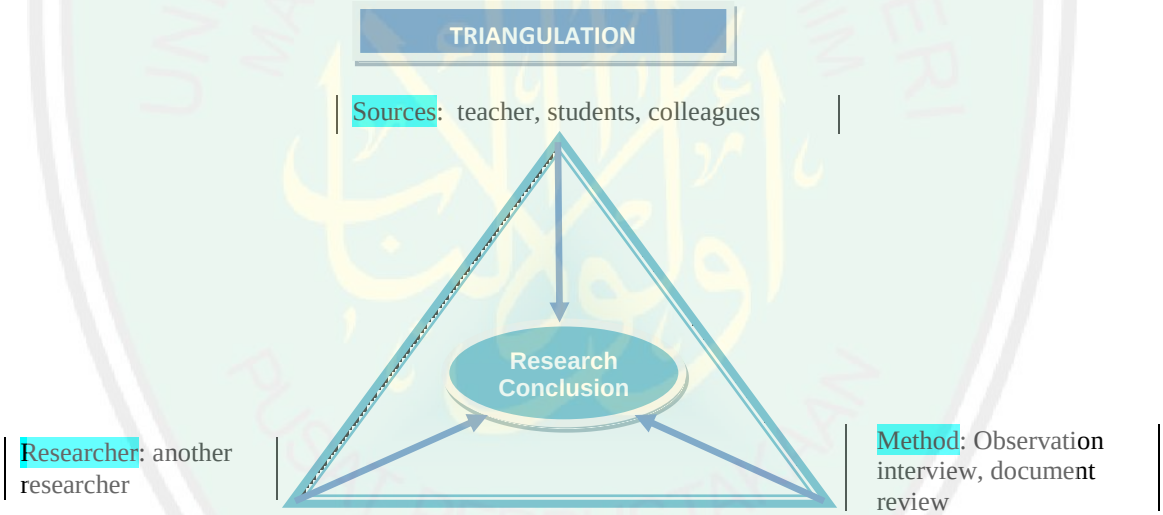
a. Improving the persistence

Improving persistence means observing more accurately and continually. By such way the assurance of data and the sequence of event can be recorded certainly and systematically.

[40] Ibid.,

b. Triangulation

Triangulation is qualitative cross-validation. It assessed the sufficiency of the data according to the convergence of multiple data sources or multiple data collection procedures (William Wiersma).[41] Triangulation in checking validity defined as checking data from resource with the various ways, and various time. Therefore, there were triangulation of source, triangulation of technique, and triangulation of observer.



Picture 3.3. Triangulation
Source: Adapted from Jack and Raturi (2006)

Triangulation which will be applied in this research:

1) Triangulation of sources

Triangulasi sumber: suatu teknik pengecekan kredibilitas data yang dilakukan dengan memeriksa data yang didapatkan melalui

[41] Ibid., p 273

beberapa sumber.[42] In this case the researcher will check data of interview from the teacher to the students or other teacher, and the students to the teacher.

2) Triangulation of technique

Teknik ini digunakan untuk menguji kredibilitas data yang dilakukan dengan cara mengecek data kepada sumber yang sama dengan teknik yang berbeda.[43] The researcher will apply this kin of triangulation by doing interview, observation, and documentation.

3) Triangulation of researcher

Lexy J. Moeloeng state "Teknik ini adalah cara pemeriksaan kredibilitas data yang dilakukan dengan memanfaatkan pangamat lain untuk pengecekan derajat kepercayaan data kita."[44] In this kind of triangulation the researcher will be assisted by Giska Enny Fauziah who is doing the research in the same location.

c. Consideration of reference

In this case, reference means the existence of supporting data to prove the founded data that has found by the researcher.

d. Member Check

Member check is process of checking data that has gotten by the researcher confirmed to the one who gives the data. The purpose of

[42] Andi Prastowo, *Metode Penelitian Kualitatif dalam perspektif rancangan penelitian*(Yogyakarta:Ar-Ruzz Media, 2011) p: 269
[43] Ibid., p 270
[44] Ibid.

member check is to know how far the founded data in accordance with the one who gives data.

2. Transferability

Transferability is external validity in qualitative research. External validity shows the level of accuracy. The result of data can be applied into the population where the sample is taken.

3. Dependability

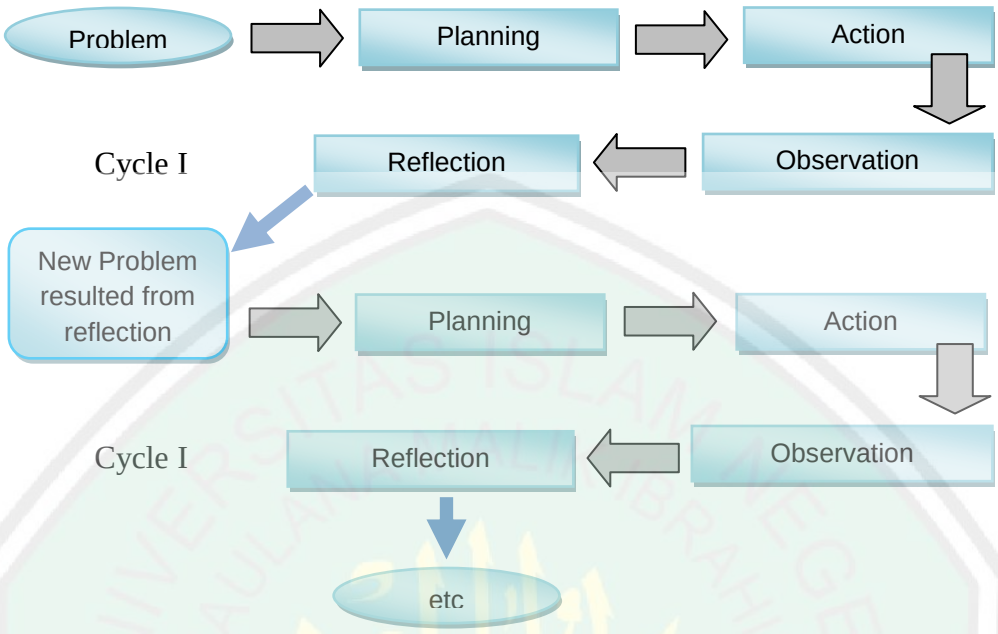
In qualitative research dependability is called as reliability. A research is reliable if another people can re-observe the research. In qualitative research, checking dependability can be done by doing audit toward all process of research.

4. Confirmability

Confirmability in qualitative research can be defined as checking the objectivity of research. A research is objective if the result of research is agreed by many people.

A. The Cycles of Classroom Action Research

Classroom Action Research consists of some cycles in its implementation. The cycles will always be continued until the objectives of study can be achieved. In this research the researcher plans to conduct two cycles. Cycles I and II for each cycle consist of two meeting. There were four main activities in every cycle, they are: (a) planning (b) action (c) observation (d) reflection. Those activities can be drawn as below:



Picture 3.4. Model of Classroom Action Research

1. Cycle I

a. Survey

1) Problem identification

The researcher identifies the problem mathematics teaching conformed by the teacher by doing interview and collecting documentation with the mathematic teacher in fourth grade.

2) Checking the field

The researcher observes the existing problem during the process of teaching and learning process.

b. Implementation

1) Planning of cycle I

The process of planning consist of the following activities:

a) Making a set of teaching such as lesson plan, students worksheet, media, and guidance book, test questioning and the answers.

b) Making a set of research instrument which consist of observation sheets, field appendices, documentation equipment, and so forth.

2) Action of cycle I

Action is implemented in fourth grade in accordance with the planning in lesson plan which arranged before. During the implementation, the researcher ruled as a teacher and observer who notice the improvement during teaching and learning process.

3) Observation of cycle I

Observation is done within the implementation of action is taking place. In this case, it is the process of teaching and learning. The observer uses observation guidance during the process and notices all of phenomena to collect data.

4) Reflection of cycle I

Reflection is done to see the temporary result of Implementation of Hole Numbered Arena by using gaming technique to encourage the motivation and conceptual ability of LCM and GCF in mathematics.

5) Revision

The result of cycle I is used as the foundation to make revision of the next planning. Revision can be done based on the observation and reflection in cycle I to avoid the repetition of mistake and the weakness of cycle I.

2. Cycle II

a. Planning of cycle II

After knowing the improvement and making the revision of planning, the researcher makes the new continuous lesson plan in accordance with the reflection and revision of planning in the cycle I.

b. Action of cycle II

The implementation of action is done in accordance with the new planning which formulated before so that get optimal result in accordance with the goal.

c. Observation of cycle II

In this process, the researcher observes and notice again toward the condition of class to know the improvement of cycle I and cycle II. It should be observed well because this is the last observation and data collection of the research.

d. Reflection of cycle II

The researcher notices the result of observation and discuss with the teacher to know the result of action that implemented toward the students in the class. The researcher reflects and concludes the result of cycle I and II so that can be known that the motivation and conceptual ability are encouraged.

3. Cycle III, etc.

B. Achievement Criteria

In this part, it is needed to determine achievement criteria of action explicitly, it is used to assess the success of teaching and learning process during the research.

> Adapun indikator kinerja yang digunakan untuk menentukan keberhasilan pelaksanaan strategi pembelajaran adalah dua kriteria[45], yakni (1) indikator kualitatif berupa keantusiasan siswa mengikuti pembelajaran dan sikap mereka terhadap strategi pembelajaran yang dikembangkan, dan (2) indikator kuantitatif berupa besarnya skor ujian yang diperoleh siswa.

The students' score compared with the pass minimal point (Minimum Achievement Criteria) of Mathematics in MI Attaraqqie (as apendiced); the score of Minimum Achievement Criteria is 65. Therefore, the student is pass individually if the score is 65 and more. It means that, if the score less than 65 the student is fail. And the average class of Mathematics score in 4th Grade is 75. It is means that the teaching and learning is success, if the average class achieves 75 or more.

The criteria of students' motivation achieved at least 80% because to achieve high score students should have high motivation. And the percentage of student's motivation can be observed from these following indicators:

a. Students Attention
    1) Listening to the teacher explanation
    2) Listening to the opinion of friends
b. Expressing idea
    1) Asking to the other friends in a team

[45] Wahidmurni. *Penelitian Tindakan Kelas.*(Malang: UM Press2008), p. 38

2) Answering friend's question

3) Asking or answering teacher's question

c. Cooperativeness in a team and assignment submission

d. Emotional feeling

1) Enthusiastic

2) cheerfully face

The number of students who have the above criteria is compared to the total of student in the class.

Motivation Percentage = $\frac{No}{Nm}$ **x 100%**

No = the number of students who achieved the criteria

Nm= the total of students in a class

CHAPTER IV

RESEARCH REPORT

A. Data Explanation

1. Before action

Before the research would be conducted in the classroom, the researcher met the headmaster of MI Attaraqqie at 09.00 on 8th September 2012. In this meeting, the researcher delivered her intention to conduct the research in that school.

The headmaster and mathematic teacher gave their permission to conduct the research. The researcher and mathematic teacher discussed about the research planning that will be conducted. Finally, they agreed to conduct the research in the 4th grade, with the consideration that the material of LCM and GCF is delivered toward 4th Grade students.

The researcher interviewed the Mathematics teacher namely Mrs. Hidayah to find the information about the Mathematic teaching in the classroom.

The researcher	:Bagaimana kemampuan siswa kelas 4B dalam pembelajaran Matematika kelas 4?
The teacher	:Siswa kelas 4B heterogen, sebagian besar cepat memahami apa yang disampaikan guru, tetapi memang ada yang masih lambat tingkat pemahamannya.
The researcher	:Pada kompetensi apakah siswa sulit untuk mencapainya?
The teacher	:Kalau di semester 1 ini ya kompetensi KPK dan FPB ini, biasanya anak-anak nilainya jelek karena memang terbatasnya waktu di semester satu, karena materi sebelumnya adalah perkalian dan pembagian jadi mereka harus matang dulu di pemebagian dan perkalian. Agar anak-anak tidak ketinggalan materi, dan bisa selesai sampai UAS.

The researcher	:Apakah Hole Numbered Arena memungkinkan untuk diterapkan untuk kelas ini?
The teacher	:Bisa, karena anak-anak senang kalau diajak bermain sambil belajar
The researcher	: Apakah sebelumnya juga pernah menggunakan teknik permainan?
The teacher	: Pernah tetapi memang memerlukan waktu yang lama. Kalau saya biasanya untuk membuat anak-anak aktif dengan metode kuis.
The researcher	:Apakah siswa sudah mahir perkalian dan pembagian?
The teacher	:Sudah. Tetapi memang masih ada yang belum hafal.[46]

From the above interview, the researcher decided to implement Hole Numbered Arena in the competence of LCM and GCF toward fourth Grade students. The researcher would also make a teamwork technique, by this way the researcher expected the students have high motivation and enthusiasm.

The researcher also observed the Mathematics teaching and learning in fourth grade B. As the result, the teacher used teacher centered approach by using lecturing method, catechizing, giving assignment, and there is no learning media especially the topic of LCM and GCF, therefore students learning motivation in Mathematics is low, this is showed in the result of students mark in the chapter 1 is still low.

After getting some data that showed the condition of 4th grade students, the researcher should give an action with the goal to encourage motivation and improve conceptual ability of LCM and GCF. The research conducted in 10 October 2012, after getting permission from the faculty and the headmaster.

[46] Interview with Mrs. Hidayah, S.Pd as the Mathematics teacher of fourth grade in MI Attaraqqie Malang at 10.15, 8th September 2012

The researcher expects that she can apply teaching method which can explore the students to be more active and creative, it is using "Hole Numbered Arena." Hole Numbered Arena can be implemented in group. Therefore, the researcher should make some group of students. This research conducted in 4th grade that all the students are girls. The total of them is 33. The teacher of Mathematics is Mrs. Hidayah.

2. Planning

Before conducting the research, the researcher made some planning. This planning was also consulted to the teacher of Mathematics in the 4th Grade on 9 October 2012. The planning was formulated as follows:

a. Determining the indicator which should be achieved by the students
b. Made lesson plan and teaching strategy. The researcher made a lesson plan, and then she consulted it to Mrs. Hidayah as the Mathematics teacher of fourth grade.
c. Asked the achievement criteria of Mathematics for fourth grade
d. Arrange the teaching material which related to the indicator which have determined
e. Made the media of " Hole Numbered Arena"
f. Made the worksheet for the students. for evaluation
g. Made the list of group. The group would be divided into 7 groups which consisted of 4-5 people
h. Made sheet of observation to assess the students motivation.

3. Pre-Test

a. Pre-Test Planning

Before the action was implemented, the researcher conducted a pre-test as an action of observation by implementing teacher centered approach, it was lecturing, giving example, giving assignment, and catechizing, as the comparison before action and after action. It was after implementing "Hole Numbered Arena"

The teaching planning before action was divided into three steps, they are:

1) **Introduction**, the researcher introduced herself to the students, delivered her purpose, and make a dialog about the previous materials.
2) **Core activity**, the teacher writes the material in the whiteboard and explained it to the students, continued by catechizing. Then, the teacher gave the questions as the pre-test to the students to know how far the students understanding toward the materials.
3) **Closing**, the students with the teacher concluded the materials, gave some advises, and closed by praying.

b. Conducting Pre-test

Pre test conducted on Wednesday 10 October 2012 at 09.30-11.00 in the classroom of 4th grade B of MI Attaraqqie. Before the action teaching and learning activity was implemented teacher centered approach. Indicator of this meeting is mentioning the definition of multiples and determining the multiples of a number. The teacher opened the lesson. This teaching was implemented without any media, the teacher explained the material of multiple and gave its example. During the teaching, the teacher conveys the materials and students listen to her.

In that condition, the students feel bored and less enthusiasm in receiving the materials, so that there were some students who called away their attention to draw, have a chat, and play around.

After giving explanation, the teacher gave a chance to the students to ask by upping the hands but nobody responds of it. Then the teacher gave feedback to the students, by giving question to them but, only two till three students answered it.

After that the teacher gave question sheet to the students. Students answered it by themselves. Then the teaching activity closed by praying. In this pre test, the researcher hadn't got goal achievement individually through individual test. As the result of pre test can be showed in the table below:

Table 4.2

Distribution of Pre-Test Score of Mathematics with the topic multiples

No	Score Intervals	Frequency	Status
1	81 – 85	3	Pass
2	76 – 80	3	Pass
3	71 – 75	4	Pass
4	66 – 70	6	Pass
5	61 – 65	5	Fail
6	56 – 60	5	Fail
7	51 – 55	3	Fail
8	46 – 50	2	Fail
9	0 – 45	2	Fail
	Total	33	

Minimum Completeness Criteria = 65

According to the above table, it can be concluded that the success of test is 51%. Taken from 33 participants, 16 participants are pass and 17 participants are fail, or 53% because their score less than 70. The result of pre-test showed the class average is 65, 15.

c. Observation and Result of Pre-Test

Pre-test was conducted in 10 October 2012 in the first lesson at 09.30 – 11.00. The material of pre- test is the concept of multiple and determining the multiples of a number. The lesson is started by praying and reciting Holy Qur'an, it was continued by opening. Then, the teacher delivered the material of multiple and determining the multiples of a number by explaining and giving example. Some of students whose their learning style is auditory students can listen well. But the others students look unenthusiastic in teaching and learning Mathematics, thus teacher oriented activity is inappropriate to be implemented. Because the

students tend to keep silent, prefer to listen than giving opinion, play by them, and didn't respond to the teacher. Then the teacher continued to give individual test to know how far the understanding of the students about the material of multiples. The students answered the individual test. There were students who still confuse how to answer the question, thus there were many points of question unanswered yet.

Table 4.3

Observation Data of Students in the pre-test

During the teaching and learning activity

NO	Activity	Total of Students	Total Maximum
1	a. Listening to the teacher explanation	25	33
	b. Listening to the opinion of friends	20	33
2	Expressing idea		
	a. Asking to the other friends in a team	-	
	b. Answering friend's question	1	10
	c. Asking or answering teacher's question	3	10
3	Cooperativeness in a team	-	
4	Emotional feeling		
	a. Enthusiastic	20	33
	b. Cheerfully face	20	33
	Total	89	152
	Score	58%	

Score = $\frac{\text{Total}}{\text{Total Maximum}}$ x 100%

It can be looked from observation sheet of students motivation which showed 58% indicated that the students are less enthusiasm in the teaching and learning activity, beside that the students are less active in asking and answering question. During the pre test, there were many points of question without any answer. The result of pre-test above showed that the learning motivation is still low, so that it can affect student understanding about the concept of material and give impact to student achievement which still under Minimum Completeness Criteria (Kriteria Ketuntasan Minimum).

d. Pre-Test Reflection

Teacher centered approach is inappropriate to be implemented in teaching and learning Mathematics, because this approach can't rises students activeness and creativity. Thus, it causes the students are less enthusiastic in following the Mathematics teaching and learning. Students also resulted bad score in their evaluation.

According to the result of pre-test, it is needed the method which can make students more active and creative. The researcher planed these following actions for the next meeting (cycle):

1) Implementing Hole Numbered Arena
2) Dividing the students become 7 group every group consisted of 4-5 people
3) Hole Numbered Arena would be implemented cooperatively in every group

4) As a preparation the researcher made a teaching and planning sets such as lesson plan, syllabus, media of Hole Numbered Arena, materials, evaluation sheet, observation sheet, and so forth.

B. Research Cycles

1. Cycle 1

Cycle 1 conducted in 2 meetings. In every meeting 2 x 35 minutes. In this meeting, the researcher implemented Hole Numbered Arena to encourage motivation and improve conceptual ability of the material.

a. Planning of cycle 1

In the planning of cycle 1, the researcher implemented "Hole Numbered Arena." The researcher prepared the following preparation:

1) Make lesson plan, include opening, core activity, closing
2) Prepare the material of Least Common Multiples
3) Prepare media of Hole Numbered Arena
4) Prepare worksheet of group
5) To apply this method it is needed to divide the students into 7 groups, every group consist of 4-5 people
6) In the opening, apperception 5 minutes, by asking the condition, checking attendances, recalling the material of multiples, relate the material with the real problem around the students, delivering the purpose of teaching and learning, and explain the steps of teaching and learning globally.
7) In the core activity, the students were divided into 7 groups, in every group consist of 4-5 people

8) The teacher gave media of Hole Numbered Arena to every group
9) The teacher gave worksheet of group
10) The teacher explain the rule and how to answer the question by using Hole Numbered Arena
11) Every group does their work cooperatively.
12) The groups who can finish their work first come forward to write and demonstrate how they work by using HNA.
13) The teacher gives correction and confirmation.
14) Closing activity, doing evaluation to know how far the success of teaching and learning by using HNA.
15) Make reflection for the correction to the next cycle.

b. Action of cycle 1

The implementation of cycle 1 conducted by using Hole Numbered Arena. First meeting was conducted in 15 October 2012. The second meeting was conducted in 17 October 2012.

1) First Meeting

The meeting is started at 07.00 and finished at 09.00. Students recited the Holy Qur'an The letter Al-Waqi'ah together until 7.20. Then the teacher opened the lesson and conducted the opening as planned in the lesson plan. In the first meeting the researcher implemented Hole Numbered Arena, the material of this meeting is the common multiples of two number. The indicator that should be achieved is defining and determining the common multiples of two numbers by

giving the example. To make easy the implementation of Hole Numbered Arena, the students were divided into 7 groups, every group consists of 4-5 people.

This meeting consist of 3 steps, they are opening activity, core activity, and closing activity which include reflection and evaluation.

a) Opening activity

In the opening activity, started by greeting to all of students, continued by checking attendance list, asking students' condition, continued by delivering the purpose of teaching and learning, and explains the step of teaching and learning activity globally. In the apperception step, the teacher gave stimulus by recalling the previous material about multiples of a number.

b) Core Activity

In teaching and learning by implementing Hole Numbered Arena, teacher ruled as a facilitator. Teaching and learning activity is started when the students have gathered with their group. Thus, in the first step, the teacher divided the students into 7 groups, every group consists of 4-5 students. Then, the teacher delivered the materials and the researcher delivered the instruction how to use Hole Numbered Arena.

In the next step, the teacher gave the worksheet to every group so that they can work under the instruction of worksheet by using media of Hole Numbered Arena. The teacher gave limitation of time about 10 minutes. The group who had finished their worksheet, come forward and answer the question by demonstrating how they work using Hole Numbered Arena. The other group listened to the presentator and gave correction together with the teacher. According to the observation of group test in doing worksheet of Hole Numbered Arena, teaching and learning activity passed well. The students can actively and creatively involved in the activity, they can asked

and gave their opinion. After correction, test score of each group can be displayed in the table below:

Table 4.4

Test Score HNA in Group in the cycle 1 of Mathematics subject for 4th Grade

Group	Score	Status
1	70	Pass
2	80	Pass
3	75	Pass
4	80	Pass
5	80	Pass
6	75	Pass
7	70	Pass

According to the result of test score, the average score of class is 75,71. It can be concluded that this teaching and learning activity by implementing Hole Numbered Arena is effective to encourage motivation and improve conceptual ability of Least Common Multiples (LCM). The rule of the teacher here is controlling thoroughly and helping if there is some group who face any difficulties in understanding the materials and question sheet.

c) Closing Activity

In closing activity, the teacher evaluated the students by asking the point of determining Common Multiples and how to solve the problem related to common multiple. The teacher also gave opportunity to the students to conclude the

materials that have studied. Then the students collected the result of group worksheet.

Assessment was done when the group doing their worksheet. It can be looked from their activeness in expressing idea, dialog with the team, and togetherness in teamwork.

Table 4.5

Observation Data of Students in the first meeting of cycle 1

During the teaching and learning activity

NO	Activity	Total of Students	Total Maximum
1	a. Listening to the teacher explanation	30	33
	b. Listening to the opinion of friends	25	33
2	Expressing idea		
	a. Asking to the other friends in a team	23	33
	b. Answering friend's question	3	10
	c. Asking or answering teacher's question	5	10
3	Cooperativeness in a team	23	33
4	Emotional feeling		
	a. Enthusiastic	25	33
	b. cheerfully face	25	33
	Total	159	218
	Score	73%	

Score = $\frac{\text{Total}}{\text{Total Maximum}}$ x 100%

Before the meeting was closed the teacher gave the motivation to the students to keep spirit in studying, then the lesson was closed by praying together. The lesson finished at 09.00.

2) Second Meeting

The second meeting was conducted on Wednesday 17 October 2012 at 09.30-11.00, in the 4th Grade B class of MI Attaraqqie. This meeting is the continuance of the first meeting which only done by group. The teacher started the teaching and planning by recalling students about what they have learned in the previous meeting. Then the teacher continued to deliver the instruction of teaching and planning activity which would be implemented in this meeting.

In the second meeting, the researcher did test individually toward the students to know how far the understanding of students toward the material which have learned in the first meeting. But before conducting individual test, the teacher conducted the teaching and learning activity without media of Hole Numbered Arena. Because the use of media in Mathematics just help the students in understanding the material. The students will not use media when they answer

or solve the problem. They will not bring the media every time. Therefore, the teacher will teach them how to determine Least Common Multiples (LCM) without media. Actually media of Hole Numbered Arena is designed same as the concept of LCM but it is shaped in the real object so that the students can touch it. That's why the students not face any difficulties if the media is taken. The teaching and learning activity in the second meeting include there steps, they are:

a) Opening activity

As conducted in the previous meeting, activities in the opening section are greeting, praying together, asking students' condition, and apperception about the material of Least Common Multiples (LCM) in the first meeting.

b) Core activity

The teacher reminded the students how to determine LCM by using Hole Numbered Arena. Then, Continued by explaining how to determine LCM without media Hole Numbered Arena. The students could understand the materials rapidly because media is designed same as the concept of how to determine LCM.

Then the activity was continued by doing individual test. Before the test was started, the students had chance to study about 5 minutes. Then, the teacher asked the students to close all of their books and saved it in their desk. The teacher gave the question sheet to all of the students. Students could do the test without any cheating moreover some of them closed their job so that other students couldn't copy her answer. After all of the students had finished answering the question, the teacher asked them to exchange their answer with other student. They corrected the answer together.

c) Closing Activity

In this activity, the teacher together with the students concluded the materials, conducted catechizing about the materials that hadn't understood yet, the students collected the question sheet. The teacher advised the students to keep their spirit of study. Then, the second meeting was closed by praying together.

In the second meeting, the researcher got reached the goal of teaching and learning individually without media of Hole Numbered Arena. It can be concluded from the result of individual test as planned in the planning step. The individual score as displayed in the table below:

Table 4.6
Distribution of Individual Test Score in the cycle 1
of Mathematics 4th Grade Students

No	Score Intervals	Frequency	Status
1	96 – 100	1	Pass
2	91 – 95	1	Pass
3	86 – 90	1	Pass
4	81 – 85	5	Pass
5	76 – 80	6	Pass
6	71 – 75	6	Pass
7	66 – 70	6	Pass
8	61 – 65	2	Fail
10	56 – 60	2	Fail

11	51 – 55	2	Fail
12	0 – 50	1	Fail
	Total	33	

Minimum Completeness Criteria = 65

According to the distribution table of individual test above, it can be concluded that the success level of teaching and learning is 78%, about 26 of 33 test participant are pass. And the 7 left are fail or 12 %, because their test score is still under 65. The result of individual test above showed us that there is progresses both in the motivation and the conceptual ability of students, but its still haven't reach the maximum target. The average of students score increased until 74, 12. The score of motivation improved from 58% to 72%.

c. Observation of Cycle 1

Observation was conducted during the teaching and learning activity in each meeting. The first meeting was conducted on Monday 15 October 2012 at 07.00-09.30. The students come in to the classroom and recite together the Holy Qur'an letter Al-Waqi'ah, they looked very engrossed in their recitation. After finished to recite the Holy Qur'an, the teacher opened the lesson. The teacher delivered the instruction of teaching and learning activity which would be applied, the students look enthusiastic because they would learn by playing. Moreover, they looked happier when the teacher divided into some groups. Then the teacher gave them media of Hole Numbered Arena, the researcher continued to deliver how to use

Hole Numbered Arena in the material of Least Common Multiples of two numbers.

The students looked enjoying the teaching and learning activity. Although some of them still unaccustomed with Hole Numbered Arena because she still confuse with the rule of Hole Numbered Arena. Therefore, they still depended on other friends in a group/team.

The second meeting was conducted on Wednesday 17 October 2012 at 09.30-11.00, in the 4th Grade B class of MI Attaraqqie. This meeting is the continuance of the first meeting which only done by group. The teacher started the teaching and planning by recalling students about what they have learned in the previous meeting. Then the teacher continued to deliver the instruction of teaching and planning activity which would be implemented in this meeting.

In the second meeting, the researcher did test individually toward the students to know how far the understanding of students toward the material which have learned in the first meeting. But before conducting individual test, the teacher conducted the teaching and learning activity without media of Hole Numbered Arena. The teacher will teach them abstractly how to determine Least Common Multiples (LCM) without media.

After implementing Hole Numbered Arena in the teaching and learning of Least Common Multiples (LCM) in the cycle 1, it can be observed from the result of teamwork learning by using Hole Numbered Arena. The Students' motivation can be encouraged, it was affected to students' ability to understand the concept of Least Common Multiples, therefore students achievement also improved. If we compare with the result of pre-test that conducted before action, the average of students' score is improved. It can be seen from the activity during pre-test, the students still shy and afraid of wrong. But, in the first cycle, they start to ask and answer without any doubt and anxiety, although it's still haven't achieved as the expectation.

During the teaching and learning activity in the first cycle, the students learned happily, they were confident to raise their hands when they want to ask or answer the question. Although their confidence is still obsessed and dominated from the active students. But the passive students also try to be confidents and enthusiastic little by little because they are try to be competitive with other students, thus they weren't bored in receiving the materials of Least Common Multiple. They start to be responsible, discipline, and easy to interact with their friends in a learning team. Indicator of motivation progress can be seen from their spirit, enthusiasm, curiosity, and confidence during the process of teaching and learning.

According to the result of observation in cycle 1 which is conducted in two meetings, there is a motivation progress. And also from assessment result that showed a progress of class average score from 65,15 to 74,12. In the first cycle all of the students attended to the class. Because the average class is still under 75 the researcher conducted the next cycle.

d. Reflection of Cycle 1

Concluded from the action of cycle 1, there is progress both in the motivation and the result of assessment. It can be seen from the observation sheet during the lesson and the students' score after action. But, those progress haven't reached the maximum level, therefore it is needed a revision in the teaching and learning process in the effort to encourage the motivation and improve conceptual ability of Least Common Multiples and Greatest Common Factor toward the students.

In the observation result which conducted in the cycle 1 there were some problem in implementing Hole Numbered Arena, they are:

1) There were some students who still confuse about the rule of using Hole Numbered Arena because the didn't understand it clearly about the teacher's instruction.
2) The students haven't adapted to implement and work in group by using Hole Numbered Arena
3) Some of the students still depended to other students in teamwork. Thus the learning activity is still dominated by active students.
4) During the teaching and learning process, there are still the students who play by herself and have a chat with another student.
5) There were some students who still unconfident and shy to ask or answer the questions, and express her idea.

e. Revision of Cycle 1

Response from the result of reflection above, it is needed to make a revision and improvisation, so that the problem in the cycle 1 will not repeated in the next cycle. The revision and improvisation that conducted by the researcher are:

1) Explaining clearly about the instruction and rule of teaching and learning by using Hole Numbered Arena toward the students.
2) Accustoming teamwork, so that the students can interact with other friends, understanding other people, confident in expressing idea, so that she isn't dependent to the active students only (other people)

3) Encouraging the students so that students confidence in expressing idea can be raised
4) Making a competition among the students in doing their assignment
5) Preparing a reward for the best group/team
6) Giving freedom to every group, so that they can explore their ability and the aren't feel protected
7) Preparing everything needed in the cycle 2, in order to prevent the problem repetition in the previous cycle.

2. Cycle 2

a. Planning of cycle 2

In this second cycle, the researcher still implements Hole Numbered Arena in teamwork. But, there is a difference with the previous cycle. The researcher made a competition among the groups so that they are more encouraged and wants to be better than other team moreover they wants to be the best in the class.

The first meeting the researcher conducted the teaching and learning by conveying materials and the second meeting the researcher conducted assessment of cycle 2. As conducted in cycle 1, in the cycle two students were divided into 7 groups. The standard competence in this cycle is determining factor and Greatest Common Factor. Planning in the cycle 2 is:

1) Preparing course of study, especially for the topic of factor and Greatest Common Factor
2) Preparing the steps of teaching and learning activity with referred to the lesson plan in the appendix.

3) Preparing the media of teaching and learning, it is Hole Numbered Arena and its accessories.
4) Preparing worksheet of students which consist of two form, the first is team worksheet, and the second is individual worksheet for post test to check the achievement of standard competence
5) Preparing observation sheet to notice the result of observation during the teaching and learning activity.
6) Make observation sheet for the result of teamwork
7) Preparing sheet of notice and impression for the students during the teaching and learning activity.

b. Action of cycle 2

Cycle 2 consist of two meetings. First meeting was conducted in 22 October 2012 and the second meeting was conducted in 24 October 2012. Every meeting consists of 2 x 35 minutes.

1) First meeting of cycle 2

First meeting was conducted on Monday 22 October 2012, at 07.00-09, in the classroom of 4th Grade B of MI Attaraqqie. The students came in to the classroom at 7 o'clock. The Students recited the Holy Qur'an The letter Al-Waqi'ah together until 7.20. Then the teacher opened the lesson and conducted the opening as planned in the lesson plan. The teacher gave the instruction of teaching and learning activity which would be conducted in this meeting.

In the first meeting the researcher implemented Hole Numbered Arena, the material of this meeting is the common multiples of two number. To make easy

the implementation of Hole Numbered Arena, the students were divided into 7 groups, every group consists of 4-5 people.

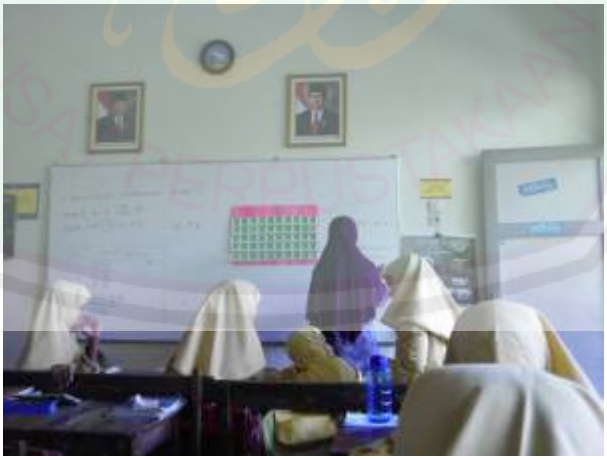
In this meeting was used to convey the materials of factor and Greatest Common Factor. Basic competence in this meeting is:

a) Determining the factor of a number
b) Determining Greatest Common Factor of two number

And the indicators are:

a) Explaining the definition of factor
b) Determining the factor of a number
c) Determining the greatest common factor (GCF) of two numbers
d) Solving the problem related to the greatest common factor

This meeting was divided into 3 part, opening activity, core activity, and closing activity, the detail of them was explained as below:



a) In the opening activity, started by greeting to all of students, continued by checking attendance list, asking students' condition, continued by delivering the purpose of teaching and learning, and explains the step of teaching and

learning activity globally. In the apperception step, the teacher gave stimulus by recalling the previous material about multiples of a number.

b) Core Activity. In the exploration the researcher delivered the rule of using Hole Numbered Arena, while the teacher conveyed the material of factor and GCF by using Hole Numbered Arena. Teaching and learning activity is started when the students have gathered with their group. Thus, in the first step, the teacher divided the students into 7 groups, every group consists of 4-5 students. Then, the teacher delivered the materials and gave the instruction how to use Hole Numbered Arena clearly because in the previous cycle there were the groups who can't work because they still confused with the instruction.

In the next step, the teacher gave the worksheet to every group so that they can work under the instruction of worksheet by using media of Hole Numbered Arena. The teacher gave limitation of time about 15 minutes.

The teacher also made a competition among the groups, for the group who can do every job in the fastest time will get the reward. Finally, the students did their job rapidly with full of spirit because they want to be the best team. The group who had finished their worksheet, come forward and answer the question by demonstrating how they work using Hole Numbered Arena. The other group listened to the presentator and gave correction together with the teacher. The teacher also gave the reward to the best group

Criteria of the best group are:

(1) The group who can finish their job in the fastest time

(2) The group with the highest score

Both criteria are cumulated in a score.

According to the observation of group test in doing worksheet of Hole Numbered Arena with the material of factor and the greatest common factor,, teaching and learning activity passed well. The students can actively and creatively involved in the activity, they can asked and gave their opinion. After correction, test score of each group can be displayed in the table below:

Table 4.7

Test Score HNA in Group in the cycle 2

of Mathematics subject for 4th Grade

Group	Score	Status
1	80	Pass
2	90	Pass
3	80	Pass
4	85	Pass
5	85	Pass
6	80	Pass
7	75	Pass

Minimum Completeness Criteria = 65

According to the table above, it can be concluded that all of the group can work well. Compared with the result of teamwork in the cycle 1 the average score is 75,71 and teamwork result in cycle 2 the average score reached until 82, 14. All of the groups improved their score and they were passed. The result of teamwork score above showed us that there is a progress both in the motivation and the conceptual ability of students. All of them are enthusiastic with the competition among all groups and every group wants to be the best group. They also can learn by playing with the attractive media "Hole Numbered Arena."

After running the competition the teacher asked the students to collect the media. The teacher started explaining the concept of Greatest Common Factor (GCF) without media of "Hole Numbered Arena" but using the table of factor which has the same way with media in determining factor of a number and

greatest common factor. The teacher gave a chance to the students to ask if there is the material that can't be understood. There were some students asked some question. The teacher answered them by relating with the Hole Numbered Arena.

It can be concluded that this teaching and learning activity by implementing Hole Numbered Arena is effective to encourage motivation and improve conceptual ability of Greatest Common Factor (GCF). The rule of the teacher here is controlling thoroughly and helping if there is some group who face any difficulties in understanding the materials and worksheet. The teacher also guided the students to solve the problem related to LCM and GCF without media of Hole Numbered Arena.

c) Closing Activity

In closing activity, the teacher evaluated the students by asking the point of determining Common Multiples and how to solve the problem related to common multiple. The teacher also gave opportunity to the students to conclude the materials that have studied.

Assessment was done when the group doing their worksheet. It can be looked from their activeness in expressing idea, dialog with the team, and togetherness in teamwork. Individual assessment can be seen from the result of individual worksheet.

Before the meeting was closed the teacher gave the motivation to the students to keep spirit in studying, the teacher also announce that for the next meeting the students will do evaluation for this chapter so they should study of the material from multiples until GCF then the lesson was closed by praying together.

Table 4.9

Observation Data of Students in the first meeting of cycle 2

During the teaching and learning activity

NO	Activity	Total of Students	Total Maximum
1	a. Listening to the teacher explanation	31	33
	b. Listening to the opinion of friends	28	33
2	Expressing idea		
	a. Asking to the other friends in a team	28	33
	b. Answering friend's question	5	10
	c. Asking or answering teacher's question	7	10
3	Cooperativeness in a team	28	33
4	Emotional feeling		
	a. Enthusiastic	31	33
	b. cheerfully face	31	33
	Total	189	218
	Score	86%	

$$\text{Score} = \frac{\text{Total}}{\text{Total Maximum}} \times 100\%$$

According to the observation above the score of motivation is improved from 72% to 86%.

2) Second Meeting

The second meeting was conducted on Wednesday 24 October 2012 at 09.30-11.00 in the classroom of 4th grade B of MI Attaraqqie Malang. This meeting is used to evaluation for this chapter.

In the second meeting, the researcher did evaluation for this chapter toward the students to know how far the understanding of students toward the material which have learned from the first meeting. The teaching and learning activity in the second meeting include three steps, they are:

a) Opening activity

As conducted in the previous meeting, activities in the opening section are greeting, praying together, asking students' condition, and apperception about the material of previous meeting.

b) Core activity

Then the activity was continued by doing individual test. Before the test was started, the students had chance to study about 5 minutes. Then, the teacher asked the students to close all of their books and saved it in their desk. The teacher gave the question sheet to all of the students.

Students could do the test without any cheating moreover some of them closed their job so that other students couldn't copy her answer. The students finished their test very fast. After all of the students had finished answering the questions, the teacher asked them to exchange their answer with other student. They corrected the answer together.

c) Closing Activity

In this activity, the teacher together with the students concluded the materials, conducted catechizing about the materials that hadn't understood yet, the students collected the question sheet. The teacher advised the students to keep their spirit of study. Then, the second meeting was closed by praying together.

In the second meeting, the researcher got reached the goal of teaching. It can be concluded from the result of individual test as planned in the planning step. The evaluation score as displayed in the table below:

Table 4.10

Distribution of Post-Test Score of Mathematics

4th Grade Students

No	Score Intervals	Frequency	Status
1	96 – 100	2	Pass

2	91 – 95	3	Pass
3	86 – 90	5	Pass
4	81 – 85	7	Pass
5	76 – 80	7	Pass
6	71 – 75	4	Pass
7	66 – 70	3	Pass
8	61 – 65	1	Fail
10	56 – 60	-	Fail
11	51 – 55	-	Fail
12	0 – 50	-	Fail
	Total	32	

Minimum Completeness Criteria = 65

According to the distribution table of individual test above, it can be concluded that the success level of teaching and learning is 96%, about 31 of 33 test participant are pass. And the 1 left are fail or 4 %, because her test score is still under 65. In this meeting there is a student who can't attend the class because of sick. But she did individual test in the nest meeting. The result of individual test above showed us that their progress is very good, both in the motivation and the conceptual ability of Least Common Multiples (LCM) Greatest Common Factor (GCF). The average of students score increased until 82,34.

During the rest time at 10.10 on 22nd October 2012 in the fourth grade of MI Attaraqqie, the teacher interviewed some students about the teaching and learning that have done:

The researcher	: Apakah kalian senang belajar sambil bermain?
Savannah	: Senang sekali bu
The researcher	: Apa yang membuat kalian menyukai / tidak menyukai belajar sambil bermain?
Savannah	: Karena HNA bagus bu, ada bunganya warna warni terus bisa main-main jadi tidak membosankan bu
The Researcher	: Kamu lebih suka belajar sendiri atau berkelompok?
Savannah	: Berkelompok
The Researcher	: Belajar KPK dan FPB dengan Hole Numbered Arena lebih mudah difahami atau tidak?
Savannah	: saya lebih faham belajar dengan HNA, ternyata KPK dan FPB itu nggak sulit
The Researcher	: Bagaimanakah perasaan kalian setelah mengikuti pembelajaran dengan menggunakan Hole Numbered Arena ?
Savannah	: Senang bu, besok lagi ya.[47]

Then the teacher continued to ask another student about the teaching and learning that have done:

The researcher	: Apakah kalian senang belajar sambil bermain?
Nafisah	: Suka bu bu
The researcher	: Apa yang membuat kalian menyukai / tidak menyukai belajar sambil bermain?
Nafisah	: Karena Hole Numbered Arena bagus bu (menarik). Saya suka belajar KPK dan FPB dengan Hole Numbered Arena
The Researcher	: Kamu lebih suka belajar sendiri atau berkelompok?
Nafisah	: Berkelompok
The Researcher	: Belajar KPK dan FPB dengan Hole Numbered Arena lebih mudah difahami atau tidak?
Nafisah	: lebih mudah bu, saya lebih faham
The Researcher	: Bagaimanakah perasaan kalian setelah mengikuti pembelajaran dengan menggunakan Hole Numbered Arena ?
Nafisah	: Suka sekali bu (dengan wajah gembira)[48]

[47] Interview with Savanah as the fourth grade students of MI Attaraqqie at 10.10, 22nd 2012

[48] Interview with Nafisah as the fourth grade students of MI Attaraqqie at 10.20, 22nd 2012

It can be concluded that this teaching and learning activity by implementing Hole Numbered Arena is effective to encourage motivation and improve conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF). The rule of the teacher here is controlling thoroughly and helping if there is some group who face any difficulties in understanding the materials and worksheet. The teacher also guided the students to solve the problem related to LCM and GCF without media of Hole Numbered Arena.

c. Observation of Cycle 2

Observation was conducted during the teaching and learning activity of each meeting they were 22-24 October 2012 in the classroom of 4th grade B of MI Attaraqqie Malang. The first meeting was conducted on Monday 22 October 2012 at 07.00-09.00. The students looked enthusiastic in joining the activity. They are interested in learning the material of Greatest Common Factor. Moreover, they were much challenged when the teacher made a competition among the group/team.

After implementing Hole Numbered Arena in the teaching and learning of Greatest Common Factor (GCF) in the cycle 2, it can be observed from the result of teamwork learning by using Hole Numbered Arena. The Students' motivation can be encouraged. It was affected to students' ability to understand the concept of Greatest Common Factor, therefore students achievement also improved. If we compare with the result of cycle 1, the average of students' score is improved. It can be seen from the activity during cycle 1, in cycle two the students are very enthusiastic, active in discussion, confident in expressing idea, and answer the question both from the teacher and other students. They were very happy and cooperating with their team well because each of them was accustomed to be confidence and didn't afraid of wrong.

During the teaching and learning activity in the cycle 2, the students learned happily, they were confident to raise their hands when they want to ask or answer the question. Only one until two people who still shy but it is because their characteristic it's not inconfidence.

They are try to be competitive with other students, thus they weren't bored in receiving the materials of Least Common Multiple (LCM) and Greatest Common Factor (GCF). They start to be responsible, discipline, and easy to interact with their friends in a learning team. Indicator of motivation progress can be seen from their spirit, enthusiasm, curiosity, and confidence during the process of teaching and learning.

According to the result of observation in cycle 1 and cycle 2 which is conducted in two meetings, their motivation achieved the maximum target. And

also from assessment result that showed a progress of class average score from 74,12 to 82, 34. The score of motivation is also improved from 72% to 86%

d. Reflection of cycle 2

The implementation of cycle 2 is pretty similar with cycle 1 which has the goal to encourage motivation and improve conceptual ability of LCM and GCF. The difference is, in the cycle 2 there is a competition among the team to be the best team. It is purposed to encourage their motivation more. In this cycle the students have understood well about the implementation of Hole Numbered Arena. During the discussion, the students can receive the opinion of their friends so that they can make a good cooperation with the team.

There is a significant learning improvement during the observation in the cycle 2. This improvement can be seen from the result of group and individual test. Through the observation in every cycle, it can be concluded that Hole Numbered Arena can encourage motivation and improve conceptual ability of LCM and GCF toward the students of 4th Grade in MI Attaraqqie Malang. Those observations were conducted gradually through group and individual tests, which showed the improvement from the cycle 1 until cycle 2.

Optimal teaching implementation to encourage motivation and improve conceptual ability of LCM and GCF is using Hole Numbered Arena, well instruction of rule from the teacher and well organization in teamwork. Based on the above analyses showed that in this cycle 2 the implementation of Hole Numbered Arena can encourage motivation and improve conceptual ability of LCM and GCF toward the students of 4th Grade, this can be observed from:

1) The activity of teamwork can make the students more active in asking and answering the question, and expressing idea. It can be seen from the change of students behavior in the previous cycle the active students dominated the teaching and learning, but in the cycle two almost all of the are active in teaching and learning activity
2) The students' ability in solving the problem related to LCM and GCF was very good. It can be seen from the result of group and individual test
3) Learning motivation of studying mathematics which only emerged from the active students in the cycle 1, now almost all 4th Grade students are encouraged in studying Mathematics.

Therefore, the researcher assumed that it is no need to continue the next action and finish this Classroom Action Research toward the students of 4th Grade in MI Attariqqie Malang.

C. Research Findings

Based on the above data explanation, here the explanation of research findings in every cycle and research findings generally:

1. Research Finding in cycle 1

a. The students enjoy the teaching and learning activity and they are confident to ask and answer the question.
b. The passive students try to show her enthusiasm little by little.
c. The students try to be responsible to their work, discipline, and interact with other friends in a team.

d. The students look enthusiastic, optimistic, and curious in the implementation of Hole Numbered Arena although they haven't capable thoroughly the materials
e. Some of the students still depend on the other friends, thus the teaching and learning activity still dominated by the active students
f. Some group still inharmonic with their friends in a group
g. Some students still confuse in understanding the rule of Hole Numbered Arena
h. There is the motivation progress before the action and after the action. It is proved from the improvement of motivation score, 58% resulted from pre-test, 72% resulted from cycle 1, and 86% resulted from cycle 2
i. There is improvement of individual test score from 65,15 to 74, 12
j. There is the students who still fail in the individual test.

2. Research Findings in cycle 2

a. The students are accustomed to ask and express their idea
b. The students are enthusiastic in following the teaching and learning activity by using Hole Numbered Arena
c. Students are confident to communicate and cooperate well with friends in a team.
d. Most of them are accustomed with the implementation of Hole Numbered Arena
e. The students have responsibility and discipline in doing assignment

b. The students can rely on their ability to solve the problem related to LCM and GCF and apply it in the real activity

c. The learning motivation progress achieved 86% and the improvement of average test score achieved from 74,12 to 82, 34

CHAPTER V

DISCUSSION

This Classroom Action Research was conducted in 4th Grade of MI Attaraqqie Malang. The researcher implemented Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF).

A. Planning of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF)

This implementation consists of two cycles. Every cycle consist of two meetings. In every meeting consists of 2 x 35 minutes. The researcher conducted pre-test before the action to know how far the understanding of the students related to the material which will be conveyed by using the method which was implemented before action. The Competence Standard and Basic Competence are:

Table 2.1. Competence Standard and Basic Competence[49]

Competence Standard	Basic Competence
2. Understanding and applying factors and multiples in solving the problem.	2.1 Describing the concept of factors and multiples 2.2 Determining multiples and factor of given number 2.3 Determining Least Common Multiples (LCM) and Greatest Common Factors (GCF) 2.4 Solving the problem related to LCM and GCF

[49] PERMENDIKNAS, Op.Cit., p. 424

The indicator that should be achieved by the students are:

1. Determining the multiples of a number
2. Determining the Least Common Multiples (LCM) of two numbers
3. Determining the factors of a number
4. Determining the Greatest Common Factor (GCF) of two number
5. Solving the problem related to LCM and GCF

In the implementation of Hole Numbered Arena, the students learn the Mathematics in teamwork. The students are divided into 7 groups to do the worksheet of group by using Hole Numbered Arena.

Before the action was implemented, the researcher conducted a pre-test. this is purposed to know what the students already know. "Effective mathematics teaching requires a serious commitment to the development of students' understanding of mathematics. Because students learn by connecting new ideas to prior knowledge, teachers must understand what their students already know."[50]

The resource of learning is taken from student book " Pelajaran Matematika Penekanan pada Berhitung" for 4th Grade of Elementary School by M. Khafid and Suyati. The teaching and learning media is Hole Numbered Arena.

The researcher also prepareed lesson plan, observation sheet, worksheet of group, individual worksheet, pre-test and post-test, camera for documentation.

[50] The National Council of Teachers of Mathematics, Op. cit., p. 18

B. The Implementation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF)

The Implementation of Hole Numbered Arena to encourage Motivation and Improve Conceptual Ability of Least Common Multiple and Greatest Common Factor toward Fourth Grade Students of MI Attaraqqie Malang is conducted in two cycles. The first cycle consisted of two meetings, they were conducted on 15 and 17 October 2012. The second cycle consisted of two meeting they were conducted on 22 and 24 October 2012.

Before the action of this teaching and learning, the researcher conducts the pre-test by using the usual strategy of teaching before, it was conventional strategy where the teacher gives an example then the students listen to her explanation.

After finishing that activity the teacher gives a chance to the students to ask about the material that haven't understood yet. This is intended to know the students understanding about the materials.

Through pre-test, it can be known that the teaching and learning activity of Mathematics can't rise up student activeness and caused the students discouraged. The students tend to be passive and less of learning motivation. The students just play by themselves or have a chat when the teacher explains the materials. The students look very bored and act as themselves.

Moreover, when the teacher gave assignment they don't have responsibility to do it. If the teacher asked them, they just keep silent and have no spirit to

answer it. Most of them only listen and the one who answer the teacher question is the most active students. Thus, the success of teaching and learning is less from the target.

The teaching and learning which less involve the students, caused the students feel bored and pessimistic. It can affect the decrease of students learning motivation. If the learning motivation is less, then the student achievement can achieve the maximum target.

In the material of LCM and GCF most of the previous fourth grade students confused what to do if there is a question. There is a case, there is a question to determine the LCM of two numbers, but the first step that the students do is determining the factor of two numbers. It is the wrong step, therefore the researcher recommended this media to help them to distinguish LCM and GCF.

Based on the result of pre-test to encourage the students' learning motivation, it is needed the conducive learning environment. By implementing Hole Numbered Arena the students are expected to have high motivation and good conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF).

The researcher conducted the first cycle divided into two meetings. The first meeting is the implementation of Hole Numbered Arena in a teamwork activity. This method stimulates the loyalty in team work, responsibility to do the work, cooperative, competitive, and activeness among the students, thus the behavior and attitude of the students develop to democratic class. Furthermore, the

implementation of teamwork encourage the students to study Mathematics without any afraid of wrongness.

By using the media of Hole Numbered Arena can help the students in understanding the concept of LCM and GCF. Hole Numbered Arena was designed very attractive for the students. It also made same as the concept in the book, but the students can touch and play the games through it.

To distinguish the concept of LCM and GCF, the students just have to remember that the range of multiples is more that the number itself. The range of factor is 1 until the number itself, no more of it.

Response to the result of pre- test, in the first meeting of cycle 1, the researcher implemented Hole Numbered Arena. This method is implemented in teamwork activity. By using this teaching and learning media the students are expected to have high motivation, help each other to finish the work, cooperate, and express the idea to solve the problem, and display their idea in order to be presented in front of the class, so that get they can achieve the maximum target. As formulated in PERMENDIKNAS No 22 one of the objectives of mathematic teaching is "Mengomunikasikan gagasan dengan simbol, tabel, diagram, atau media lain untuk memperjelas keadaan atau masalah."[51]

In the first meeting by implementing Hole Numbered Arena the students started to be active to ask and answer the question than compared during the pre-test, because in this meeting every group try to cooperate with their team to finish the worksheet from the teacher. They start to be confidence in expressing idea,

[51] PERMENDIKNAS, No. 22, 2006., p. 417

asking about the materials that haven't understood yet. But the teaching and learning activity is still dominated by the active students.

In the second meeting the teacher tries to disused the media of Hole Numbered Arena. The function of media here just helps the students understanding the materials. The students can't use the media forever. When they do evaluation, they work without media. In this step the student didn't face any difficulties because the media of Hole Numbered Arena is designed same as the original concept. Therefore, the students can understand rapidly. The teaching and learning activity was continued by doing individual test. "In effective teaching, worthwhile mathematical tasks are used to introduce important mathematical ideas and to engage and challenge students intellectually. Well-chosen tasks can pique students' curiosity and draw them into mathematics."[52] The students did the individual test to assess their understanding of multiples and Least Common Multiples. The average score of this test improved until 74,12 compared with the average score of pre-test which only achieve 65, 15.

By implementing Hole Numbered Arena, the students are accustomed to be more active in expressing idea, so that cause a learning fair competition in the class. The way to get high motivation is being confident in asking and answering the teacher's question, doing the assignment from the teacher, having high curiosity.

The result of observation in the cycle 1, the progress of learning motivation and conceptual ability of LCM is good. The

[52] The National Council of Teachers of Mathematics, Op. cit., p. 18

In the cycle 2, the researcher still implemented Hole Numbered Arena with the competition among the team. This cycle consists of two meeting. The first meeting was used to convey the material of factor and Greatest Common Factor (GCF). The second meeting was used for the post-test.

In this first meeting the students were more encouraged than during cycle 1, because, the researcher was conducted a competition among the team. As explained in second chapter that one of the ways to encourage students motivation is conducting a competition among the students.[53] Every team wants to be the best team because the teacher gave the reward for the best team. Beside that, the students are accustomed with the implementation of Hole Numbered Arena. It made the students easier and faster to master the concept of GCF.

In this meeting the most of the students were more encouraged. This is proved from their activeness in following the teaching and learning activity. They also look very happy and enjoy the games or competition among the team. Most of them cooperate to finish the assignment and wants to be the best team. The passive students started to be more active. So that the class activity not only dominated by active students.

The second meeting of cycle two was used to do the post test. Post test was used to compare the improvement of the students during two cycles. Post-test evaluated of some indicators, they are:

1. Describing the meaning of factor
2. Determining the factor of a number

[53] Sardiman, *Opcit.*, p.92

3. Determining the Greatest Common Factor (GCF) of two numbers
4. Solving the problem related to LCM and GCF

In this meeting the learning environment looks conducive. The students do the test without any cheating. They try to do the best by themselves and didn't depend on other people.

Generally the implementation of Hole Numbered Arena in cycle two showed a good progress. The students' motivation can be encouraged. The conceptual ability of LCM and GCF can be improved.

Through the observation in the cycle 2, there was a high curiosity which showed by the students by being active in teamwork and learning activity. This showed their enthusiasm during the implementation of Hole Numbered Arena.

Therefore, the observation result of cycle 2 showed the improvement of learning motivation in a very good level and the test score both individually and group.

C. The Evaluation of Hole Numbered Arena to encourage motivation and improve conceptual ability of Least Common Multiples (LCM) and Greatest Common Factor (GCF)

The evaluation of this teaching and learning was conducted in every meeting of every cycle. Evaluation is conducted to know how far the understanding of students about the material and assess the success of teaching and learning process. The conceptual ability of students can be seen from the

score of assessment. The cognitive domain as stated by Anderson and Kathwohl can be displayed as the table below:[54]

Category of Cognitive Process	Aspects
1. Knowledge	Recognize, remember
2. Comprehension	Interpretation, giving example, classifying, summarizing, concluding, comparing, and explaining
3. Implementation/ Application	Executing, implementing, and operating
4. Analysis	Distinguishing, organizing, distributing
5. Evaluation	Correcting, criticizing, and apreciating
6. Creating	Formulating, planning, producing

Some aspects above can be showed in the indicator of teaching and learning LCM and GCF. Thus, the researcher decides to consider students score as the measurement to assess conceptual ability.

The indicators of LCM and GCF:

1. Explaining the definition of multiple and factors of a number
2. Determining the multiples and factors of a number
3. Determining the Least Common Multiples of two numbers
4. Determining the Greatest Common Factor of two Numbers

The result of students score showed the improvement in each cycle, it is displayed in the table below:

[54] http://repository.upi.edu/kampus-daerah/fulltext/upload/s_pwk_0801641_chapter2.pdf, accessed on 24 March 2013 at 13.45 WIB

Table 5.11

Result of Research

No	Score	Session		
		Pre test	Cycle 1	Cycle 2
1	Percentage of student achievement	51%	78%	96%
2	Class average	65,15	74,12	82,34
3	Percentage of motivation	58%	72%	86%

From the table above it can be seen that students score is always improved, thus we can conclude that conceptual ability is also improved.

The class achievement was progressed in every cycle. Started from pre-test 51% improved in the cycle 1 become 78 %, improved again in the cycle 2 until 93%, the class average started from pre-test 65,15, improved in the cycle 1 become 74, 12, in the cycle 2 improved until 82,34.

Learning motivation can't be seen directly, but it can be observed from its indicator, such as behavior, selection of assignment, effort, and verbal expressions. As stated by Hamzah B. Uno, The indicator of learning motivation can be classified as below:

a. There is a will to success.
b. There is encouragement and need to learn.
c. There is expectation in the future.
d. There is reward in learning process.
e. There is an attractive activity in learning.

f. There is a conducive learning environment which enables students to learn well.[55]

Then the researcher develops the indicator so that it can be observed and assessed directly:

a. Students Attention
    1) Listening to the teacher explanation
    2) Listening to the opinion of friends
b. Expressing idea
    1) Asking to the other friends in a team
    2) Answering friend's question
    3) Asking or answering teacher's question
c. Cooperativeness in a team and assignment submission
d. Emotional feeling
    1) Enthusiastic
    2) cheerfully face

In the aspect of learning motivation the students also showed progress, started from pre-test 58%, cycle 1 72%, improved in the cycle 2 become 86%. This all are the evidence of quantitative data.

The evidence of the qualitative data can be explained from the result of observation and interview with the students which stated they were very happy and enjoyable with the implementation of Hole Numbered Arena. This can be

[55] Hamzah B. Uno, *Opcit.*,p. 23

seen from their enthusiasm in following the teaching and learning activity during the cycle 1 and cycle 2.

They learn together in teamwork and want to be the best team. In the cycle 2 they were very confident to ask and answer the teacher's question. They cooperated with the member of team, and make class condition more conducive.

From the result of evaluation can be proved that the implementation of Hole Numbered Arena can encourage motivation and improve conceptual ability of Least Common Multiples(LCM) and Greatest Common Factor(GCF) toward the students of 4^{th} Grade in MI Attaraqqie Malang.

Based on empirical data and analysis can be concluded that the implementation of Hole Numbered Arena can encourage motivation and improve conceptual ability of LCM and GCF and its effective implementation is conducted as the procedure that have made before.

The indicators of achievement of this implementation are:

1. During the teaching and learning activity, the students look very enthusiastic, happy, and enjoyable, so that they can finish the assignment on time, because it was done by teamwork.
2. Students have high curiosity, it is being active in the discussion by expressing idea in the group. It showed that the students is confident express their idea.
3. There is the improvement of average class score and motivation. It can be seen in the improvement in every cycle.

CHAPTER VI

CONCLUSION AND SUGGESTION

A. Conclusion

From the analysis and discussion of data in the classroo which explained in the previous chapter, the result of research can be concluded as below:

1. Planning of Implementation of Hole Numbered Arena to Encourage Motivation and Improve Conceptual ability of Least Common Multiple and Greatest Common factor toward 4th Grade students of MI Attaraqqie Malang was suited with the goal of teaching and learning of MI Attaraqqie. The planning activities are: determining standard competence and basic competence which will be achieved, making syllabus, making lesson plan, making the material substance, preparing the resource of materials, making media of Hole Nummbered Arena, making observation sheet, making worksheet both of individual and group.
2. Implementation of Hole Numbered Arena can encourage motivation and improve conceptual ability of Least Common Multiple and Greatest Common Factor of 4th Grade students of MI Attaraqqie Malang was conducted in two cycles. Every cycle consisted of 2 meetings. The progress can be proved from indicator data of motivation progress of students during two cycles improved from 72% to 86% or improved 14%. The result of learning motivation above can be seen from the improvement of students' activeness in every cycle. The conceptual ability of students

about the material can be seen from the result of group or individual score test. Compared from pre-test the average class score is 65,15 and after post test the average class score improved until 82, 34.

3. Evaluation of Hole Numbered Arena to Encourage Motivation and Improve Conceptual ability of Least Common Multiple and Greatest Common factor toward 4th Grade students of MI Attaraqqie Malang was conducted in every meeting. This evaluation was purposed to know how far the students achievement toward this material and know the success level of Implementation of Hole Numbered Arena. from the result of evaluation can be proved that this teaching and learning can encourage motivation and improve conceptual ability of LCM and GCF toward 4th Grade Students of MI Attaraqqie Malang. It can be proved from the progress of average class score which improved from 65, 15 to 82,34.

B. Suggestion

Based on the result of research, the researcher suggests to the teacher in the Implementation of Hole Numbered Arena with material of Least Common Multiple and Greatest Common Factor should consider the following matters:

a. The instruction of the rule of Hole Numbered Arena
b. Teamwork organization
c. Process of disusing Hole Numbered Arena to avoid students' dependency to media.

BIBLIOGRAPHY

Arsyad, Azhar. 2007. *Media Pembelajaran.* Jakarta: PT. Grafindo Tinggi

B.Uno, Hamzah. 2007. *Teori Motivasi dan Pengukurannya Analisis di Bidang Pendidikan.* Jakarta: Bumi Aksara.

Bennet, Nevil, dkk. 2005. *Teaching Through Play Teacher's Thinking and Classroom Practice.* Jakarta: Grasindo.

Burhan Mustaqim, Ary Astuti, 2008. *Ayo belajar matematika 4 : untuk SD dan MI kelas IV.* Jakarta :Pusat Perbukuan, Departemen Pendidikan Nasional

Dimyati and Mudjiono. 2006. *Belajar dan Pembelajaran.* Jakarta: Rineka Cipta.

Fatkhurrohman, Pupuh dan Sobry Sutikno. 2009. *Strategi Belajar Mengajar melalui Penanaman Konsep Umum & Konsep Islami.* Bandung: PT. Refika Aditama.

Harjanto, Bob.2011. *Agar Anak Anda Tidak Takut pada Matematika.* Yogyakarta: Manika Books

Hudojo, Herman.2005.*Pengembangan Kurikulum dan Pembelajaran Matematika.*Malang:UM Press

PERMENDIKNAS Republic of Indonesia No. 22, 2006

Prastowo, Andi. 2011. *Metode Penelitian Kualitatif dalam Perspektif Rancangan Penelitian.* Yogyakarta: Ar-Ruzz Media.

Suharsimi Arikunto, Suhardjono,Supardi. 2006. *Penelitian Tindakan Kelas*. Jakarta: PT Bumi Aksara

Moleong, Lexy J. 2007. *Metodologi Penelitian Kualitatif.* Bandung: Remaja Rosdakarya

National Council of Teachers of Mathematics.200. *Principles and Standards for School Mathematics*. Association Drive, Reston, VA 20191-9988

Nur Wahyuni, Esa. 2010. *Motivasi dalam Pembelajaran.* Malang: UIN-Malang Press

Sanjaya, Wina. 2009. *Penelitian Tindakan Kelas.* Jakarta: Kencana Prenada Media Group

Sardiman. 2011. *Interaksi & Motivasi Belajar Mengajar*. Jakarta: Raja Grafindo Persada.

Sugiyono. 2008. *Metode Penelitian Kuantitatif, Kualitatif dan R&D.* Bandung: Alfabeta.

Supatmono, Catur. 2009. *Matematika Asyik, Asyik Mengajarnya, Asyik Belajarnya*. Jakarta: PT. Gramedia Widiasarana Indonesia.

Wahidmurni dan Nur Ali. 2008. *Penelitian Tindakan Kelas Pendidikan Agama Islam dan Umum.* Malang: UM Press.

Interview with Khusnul Hidayah, S.Pd, The Mathematics teacher of fourth grade in MI Attaraqqie Malang on 8th September 2012

Interview with Savanah as the fourth grade students of MI Attaraqqie at 10.10, 22nd 2012

Interview with Nafisah as the fourth grade students of MI Attaraqqie at 10.20, 22nd 2012

http://repository.upi.edu/kampusdaerah/fulltext/upload/s_pwk_0801641_chapter2.pdf, accessed on 24 March 2013 at 13.45 WIB

http://staff.uny.ac.id/sites/default/files/PengembanganPembelajaranMatematika_UNIT_2_0.pdf, accessed on 20 May 2012 at 18.09 WIB

http://narlinyppi.blogspot.com/2009/05/permainan-dakon-untuk-fpb.html, accessed on 23 May 2012 at 16.17 WIB

APPENDICES

APPENDIX 1

PROFILE OF MI ATTARAQQIE MALANG

Madrasah Ibtidaiyah Attaraqqie terletak di ***JL ADE IRMA SURYANI NO 50 MALANG, TELP. (0341) 367182 dan JL. SYARIF AL-QODRI NO 35 MALANG, TELP. (0341) 367198.***

Tentang MI. Attaraqqie

Madrasah Ibtidaiyah Attaraqqie adalah Sekolah setingkat dengan sekolah dasar namun dengan nilai plus yakni lebih luas dalam mempelajari ilmu agama Islam.

Madrasah Ibtidaiyah Attaraqqie mempunyai banyak tenaga pendidik dan pengajar profesional yang siap mendidik dan mengajar para siswa dengan penuh tanggung jawab.

Madrasah Ibtidaiyah mempunyai beberapa kelas paralel yakni **24** kelas yang antara siswa putra dengan putri terpisah atau tidak dalam satu kelas.

TUJUAN PENDIDIKAN, VISI, MISI, DAN TUJUAN MADRASAH

1. Tujuan Pendidikan

Tujuan Pendidikan Nasional adalah berkembangnya potensi peserta didik agar menjadi manusia yang: beriman dan bertakwa kepada Tuhan Yang Maha Esa, berakhlak mulia, sehat, berilmu, cakap, kreatif, mandiri, dan menjadi warga negara yang demokratis serta bertanggung jawab.

Tujuan pendidikan dasar adalah meletakkan dasar kecerdasan, pengetahuan, kepribadian, akhlak mulia, serta keterampilan untuk hidup mandiri dan mengikuti pendidikan lebih lanjut.

2. Visi Madrasah

Terwujudnya insan beriman, bertaqwa, kreatif dan berakhlaqul karimah, menguasai ilmu pengetahuan dan teknologi, dan berwawasan luas, bertanggung jawab terhadap diri dan lingkungannya, dan mengabdi kepada bangsa dan agama serta berperan serta dalam dakwah syiar Islam Ahlussunnah Waljamaah

3. Misi Madrasah

1.Mengembangkan akhlaqul karimah dalam bertindak sesuai dengan Al Qur`an dan Al Hadits, sehingga menjadi sumber pijakan dalam bertindak dan bersosialisasi dalam diri peserta didik.

2. Menumbuhkan semangat mempelajari ilmu pengetahuan dan teknologi dalam diri peserta didik.

3. Mengembangkan kreatifitas dan rasa tanggung jawab, wawasan luas serta wawasan masa depan dalam diri peserta didik.

4. Mengembangkan dakwah syiar Islam Ahlussunnah Waljamaah dalam diri peserta didik.

5. Mempertahankan dan meningkatkan penyelenggaraan pendidikan, secara adil dan merata.

Penjabaran misi di atas meliputi :

1. Melaksanakan pembelajaran dan bimbingan setiap siswa untuk berkembang secara optimal, sesuai dengan potensi yang dimiliki
2. Menumbuhkan semangat keunggulan secara intensif kepada seluruh warga madrasah
3. Mendorong dan membantu setiap siswa untuk mengenali potensi dirinya, sehingga dapat berkembang secara optimal.
4. Menumbuhkan dan mendorong keunggulan dalam penerapan ilmu pengetahuan, tekhnologi dan seni
5. Menumbuhkan penghayatan terhadap ajaran agama Islam dan budaya bangsa sehingga terbangun siswa yang kompetensi dan berakhlaqul karimah
6. Mendorong lulusan yang berkualitas, berprestasi, berakhlaqul karimah, dan bertaqwa kepada Allah SWT.

4. TujuanMadrasah

Tujuan Madrasah mengacu pada tujuan umum pendidikan dasar yaitu meletakkan dasar kecerdasan, pengetahuan, kepribadian, akhlak mulia, serta keterampilan untuk hidup mandiri dan mengikuti pendidikan lebih lanjut. Adapun secara khusus, sesuai dengan visi dan misi madrasah, serta tujuan MI Attaraqqie Malangpada akhir tahun pelajaran 2011/ 2012, madrasah mengantarkan siswa didik untuk:

a. Nilai raport setiap anak tuntas
b. Nilai Hasil Ujian Madrasah lulus sesuai standar minimal
c. Semua siswa yang lulus memiliki perilaku berakhlaq mulia
d. mengoptimalkan proses pembelajaran dengan pendekatan pembelajaran yang berpusat pada siswa (*student centered learning*), antara lain *CTL*, PAKEM, serta layanan bimbingan dan konseling dengan tenaga guru yang tersedia;
e. memiliki jiwa toleransi serta melaksanakan syariat agama Islam dengan benar
f. meraih kejuaraan dalam bidang lomba keagamaan tingkat Kecamatan/Kota
g. memperoleh kejuaraan beberapa cabang lomba kreatifitas tingkat Kecamatan/Kota
h. melestarikan budaya daerah melalui muatan lokal bahasa daerah
i. memiliki kesadaran terhadap kelestarian lingkungan hidup di sekitarnya

Tujuan Madrasah tersebut secara bertahap akan dimonitoring, dievaluasi, dan dikendalikan setiap kurun waktu tertentu, untuk mencapai Standar Kompetensi Lulusan (SKL) yang dibakukan secara nasional, terdiri atas :

1. Menjalankan ajaran agama sesuai dengan tahap perkembangan anak
2. Mengenal kekurangan dan kelebihan diri sendiri
3. Mematuhi aturan sosial yang berlaku dalam lingkungannya
4. Menghargai keberagaman agama, budaya, suku, ras, golongan, dan sosial ekonomi di lingkungan sekitar
5. Menggunakan informasi tentang lingkungan sekitar secara logis, kritis, dan kreatif
6. Menunjukkan kemampuan berpikir logis, kritis, dan kreatif dengan bimbingan guru
7. Menunjukkan rasa keingintahuan yang tinggi dan menyadari potensinya
8. Menunjukkan kemampuan memecahkan masalah sederhana dalam kehidupan sehari-hari

9. Menunjukkan kemampuan mengenali gejala alam dan sosial di lingkungan sekitar
10. Menunjukkan kecintaan dan kepedulian terhadap lingkungan
11. Menunjukkan kecintaan dan kebanggaan terhadap bangsa, negara, dan tanah air Indonesia
12. Menunjukkan kemampuan untuk melakukan kegiatan seni dan budaya lokal yang tidak bertentangan dengan syariat Islam
13. Menunjukkan kebiasaan hidup bersih, sehat, bugar, aman, dan memanfaatkan waktu luang
14. Berkomunikasi secara jelas dan santun
15. Bekerja sama dalam kelompok, tolong-menolong, dan menjaga diri sendiri dalam lingkungan keluarga dan teman sebaya
16. Menunjukkan kegemaran membaca dan menulis
17. Menunjukkan ketrampilan menyimak, berbicara, membaca, menulis, dan berhitung

Selanjutnya atas keputusan bersama guru dan siswa, SKL tersebut lebih kami rinci sebagai Profil siswa MI Attaraqqie sebagai berikut :

1. Mampu menampilkan kebiasaan sopan santun dan berbudi pekerti sebagai cerminan akhlaq mulia dan iman taqwa.
2. Mampu mengaktualisasikan diri dalam berbagai seni dan olahraga sesuai pilihannya.
3. Mampu mendalami cabang pengetahuan yang dipilih.
4. Mampu melanjutkan ke SMP/MTs/Pondok Pesantren terbaik sesuai pilihannya melalui pencapaian target pilihan yang ditentukan sendiri.
5. Mampu memiliki kecakapan hidup personal, sosial, *environmental* dan *pravocasional.*
6. Mampu membaca Al-Qur'an
7. Mampu menghafal Al-Qur'an dalam Juz 30

APPENDIX 2

LEARNING ACHIEVEMENT

Dalam penetapan ketuntasan belajar, madrasah menetapkan kriteria ketuntasan minimal dengan mempertimbangkan tingkat kompleksitas, daya dukung, dan tingkat kemampuan awal peserta didik (*intake*) dalam penyelenggaraan pembelajaran.

Madrasah secara bertahap dan berkelanjutan menetapkan Kriteria Ketuntasan Minimal (KKM) untuk mencapai ketuntasan ideal. Setiap mata pelajaran memiliki karakteristik dan hasil analisis yang berbeda. Oleh karena itu, maka ditetapkan KKM sebagai berikut ini.

Penetapan KKM Tahun Pelajaran 2011/2012

NO	KOMPONEN	KKM / Kelas					
		I	II	III	IV	V	VI
A.	**Mata Pelajaran Agama Islam**						
	1. Al Quran Hadist	70	75	70	70	70	70
	2. Fiqih	70	75	70	70	70	70
	3. Bahasa Arab	70	70	70	70	70	70
	4. Aqidah Akhlaq	70	75	70	70	70	70
	5. Sejarah Kebudayaan Islam			65	65	65	65
B.	**Mata Pelajaran Umum**						
	1. Pendidikan kewarganegaraan dan kepribadian	70	70	70	70	70	70
	2. Bahasa Indonesia	70	70	70	70	70	70
	3. Matematika	65	70	70	65	70	70
	4. Ilmu Pengetahuan Alam	65	75	65	70	70	75
	5. Ilmu Pengetahuan Sosial	65	70	70	65	75	70
	6. Seni Budaya dan ketrampilan	65	75	70	65	70	70
	7. Pendidikan jasmani olah raga dan kesehatan	70	75	75	75	70	75
C.	**Muatan Lokal**						
	1. Bahasa Jawa	60	60	60	60	60	60
	2. Bahasa Inggris	65	65	65	65	65	65
	3. Kitabah	70	70				
	4. Tajwid		75	75	75		
	5. Nahwu				70	70	70

	6. Sorof				70	70	70
	7. Tafsir						75
	8. Arbain Nawawiyah						75
	9. Aqidatul Awwam				75	75	75
	10. Juz Amma	75	75	75			75
	11. Siroh						
D.	**Pengembangan Diri**						
	1. Seni Hadrah			B	B	B	B
	2. Qiro'ah			B	B	B	B
	3. Khitobah			B	B	B	B
	4. Qiroati	B	B	B	B	B	B
	5. Zafin			B	B	B	B
	6. Seni Lukis			B	B	B	B
	7. Pencak Silat			B	B	B	B
	8. Renang			B	B	B	B
	9. Komputer			B	B	B	B

Satuan pendidikan ini menggunakan prinsip *mastery learning* (ketuntasan belajar), ada perlakuan khusus untuk peserta didik yang belum maupun sudah mencapai ketuntasan. Peserta didik yang belum mencapai KKM harus mengikuti kegiatan remedial, sedangkan peserta didik yang sudah mencapai KKM mengikuti kegiatan pengayaan.

1. Program Remedial(Perbaikan)
   a. Remedial wajib diikuti oleh peserta didik yang belum mencapai KKM dalam setiap kompetensi dasar dan/atau indikator.
   b. Kegiatan remedial dilaksanakan di dalam/di luar jam pembelajaran.
   c. Kegiatan remedial meliputi remedial pembelajaran dan remedial penilaian.
   d. Penilaian dalam program remedial dapat berupa tes maupun nontes.
   e. Kesempatan mengikuti kegiatan remedial.
   f. Nilai remedial dapat melampaui KKM.
2. Program Pengayaan
   a. Pengayaan bolehdiikuti oleh peserta didik yang telah mencapai KKM dalam setiap kompetensi dasar.
   b. Kegiatan pengayaan dilaksanakan di dalam/di luar jam pembelajaran.
   c. Penilaian dalam program pengayaan dapat berupa tes maupun nontes.
   d. Nilai pengayaan yang lebih tinggi dari nilai sebelumnya dapat digunakan.

APPENDIX 3

THE RESPONDENT OF INTERVIEW

Name of Person	Position
Khusnul Hidayah, S.Pd	The Mathematics teacher of 4th Grade in MI Attaraqqie
Savannah Maulidah Riski	4th Grade Student of MI Attaraqqie Malang
Dzurrotun Nafisah	4th Grade Student of MI Attaraqqie Malang

APPENDIX 4

INTERVIEW GUIDE

Interview to the Student

1. Apakah kalian senang belajar sambil bermain ?
2. Apa yang membuat kalian menyukai / tidak menyukai belajar sambil bermain ?
3. Kamu lebih suka belajar sendiri atau berkelompok?
4. Belajar KPK dan FPB dengan Hole Numbered Arena lebih mudah difahami atau tidak?
5. Bagaimanakah perasaan kalian setelah mengikuti pembelajaran dengan menggunakan Hole Numbered Arena ?

Result	
Respondent 1: 1. Senang sekali bu 2. Karena HNA bagus bu, ada bunganya warna warni terus bisa main-main jadi tidak membosankan bu 3. Berkelompok 4. saya lebih faham belajar dengan HNA, ternyata KPK dan FPB itu nggak sulit 5. Senang bu, besok lagi ya	Respondent 2: 1. Suka bu bu 2. Karena Hole Numbered Arena bagus bu (menarik) 3. Berkelompok 4. lebih mudah bu, saya lebih faham 5. Suka sekali bu

APPENDIX 5

INTERVIEW GUIDE

Interview to the Teacher

1. Bagaimana keadaan siswa kelas 4B?
2. Pada kompetensi apakah siswa sulit untuk mencapainya?
3. Apakah Hole Numbered Arena memungkinkan untuk diterapkan untuk kelas ini?
4. Apakah sebelumnya juga pernah menggunakan teknik permainan?
5. Apakah siswa sudah mahir perkalian dan pembagian?

Result

1. Siswa kelas 4B heterogen, sebagian besar cepat memahami apa yang disampaikan guru, tetapi memang ada yang masih lambat tingkat pemahamannya.
2. Kalau di semester 1 ini ya kompetensi KPK dan FPB ini, biasanya anak-anak nilainya jelek karena memang terbatasnya waktu karena materi sebelumnya adalah perkalian dan pembagian jadi mereka harus matang dulu di pemebagian dan perkalian
3. Bisa, soalnya anak-anak senang kalau diajak bermain sambil belajar
4. Pernah tetapi memang memerlukan waktu yang lama. Kalau saya biasanya untuk membuat anak-anak aktif dengan metode kuis.
5. Sudah. Tetapi memang masih ada yang belum hafal.

APPENDIX 6

SILABUS

Nama Sekolah : **MI Attaraqqie**

Mata Pelajaran : **Matematika**

Kelas/ semester : **4/1**

Standar kompetensi : **2. Memahami dan menggunakan faktor dan kelipatan dalam pemecahan masalah**

Kompetensi Dasar	Materi Pokok	Pengalaman Belajar	Indikator	Karakter	Penilaian			Alokasi Waktu	Sumber bahan/ media
					Bentuk	Teknik	Contoh		
2.1 Mendeskripsikan konsep faktor dan kelipatan 2.2 Menentukan kelipatan dan faktor bilangan	Faktor dan kelipatan	- Siswa dan guru melakukan tanya jawab tentang perkaliandan pembagian yang kemudian dihubungkan dengan	- Menjelaskan arti faktor suatu bilangan - Menjelaskan arti kelipatan suatu bilangan - Menentukan faktor-faktor suatu	- Disiplin (*Discipline)* - Rasa ingin tahu - Tekun (*diligence*) - Tanggung jawab (*responsibilit*	Tes lisan Tes	Tanya jawab Uraian	1. Jelaskan apa yang dimaksud dengan kelipatan 2. Isilah titik –titik di bawah ini dengan jawaban yang benar!	1 pertemuan: 2 x 35 menit	- Sumber: Buku Paket “Pelajaran Matematika Penekanan pada Berhitung untuk Sekolah Dasar kelas 4 Oleh M. Khafid dan Suyati, Jakarta: Erlangga 2002, “Ayo Belajar Matematika

		konsep faktor dan kelipatan - Siswa menjelaskan konsep kelipatan dan faktor berdasarkan arahan tanya jawab dari guru.	bilangan - Menentukan kelipatan suatu bilangan	*y*) - Percaya diri - Ketelitian (*carefulnes*)	tulis		3, 6, ..., ..., ..., ... 3. 3 x 4 = 12, maka 12 adalah kelipatan dari ... dan		untuk SD dan MI kelas 4 oleh Burhan Mustaqim dan Ary Astuty, Jakarta : Pusat Perbukuan, Departemen Pendidikan Nasional, 2008 - LKS Matematika Media: tabel perkalian dan pembagian, whiteboard, spidol
2.3. Menentukan kelipatan persekutuan terkecil (KPK) dan faktor persekutuan terbesar (FPB)	KPK dan FPB	- Siswa secara berkelompok belajar menentukan KPK dan FPB dari dua bilangan dengan bantuan media pembelajaran	- Menentukan kelipatan persekutuan dari dua bilangan - Menetukan KPK dari dua bilangan - Menentukan	- Disiplin (*Discipline)* - Rasa ingin tahu - Tekun (*diligence*) - Tanggung jawab (*responsibilit*	Tes unjuk kerja	Permainan dalam kelompok	1. Kelipatan dari 5 adalah ...., ..., ..., ..., Kelipatan dari 4 adalah ...., ..., ..., ..., Kelipatan persekutua	2 pertemuan 4 x 35 menit	- Sumber: Buku Paket "Pelajaran Matematika Penekanan pada Berhitung untuk Sekolah Dasar kelas 4 Oleh M. Khafid dan Suyati, Jakarta: Erlangga 2002, "Ayo Belajar Matematika

		Hole Numebered Arena - Siswa menentukan KPK dan FPB dari suatu bilangan tanpa menggunakan bantuan media tetapi berdasrkan apa yang mereka pahami dari media pembelajaran Hole Numbered Arena	faktor persekutuan dari dua bilangan - Menentukan kelipatan persekutuan dari dua bilangan	*y*) - Percaya diri - Ketelitian (*carefulnes*) - jujur - kerja sama (cooperative)	Tes tulis		n dari 4 dan 5 adalah .... KPK dari 4 dan 5 adalah.... 2. Faktor dari 16 adalah ...., ..., ..., ..., ..., ... Faktor dari 28 adalah ...., ..., ..., ..., ..., ..., faktor persekutuan dari 16 dan 28 adalah.... FPB dari 16 dan 28 adalah		untuk SD dan MI kelas 4 oleh Burhan Mustaqim dan Ary Astuty, Jakarta : Pusat Perbukuan, Departemen Pendidikan Nasional, 2008 - LKS Matematika Media: tabel perkalian dan pembagian,Hole Numbered Arena, whiteboard, spidol

APPENDIX 7

Rencana Pelaksanaan Pembelajaran

(RPP)

Madrasah/Sekolah : MI Attaroqqie
Kelas/Semester : IV/ganjil
Mata Pelajaran : Matematika
Alokasi Waktu : 2 JP (Pertemuan Ke-1-2)
Standar Kompetensi : 2. Memahami dan menggunakan faktor dan kelipatan dalam pemecahan masalah

I. Kompetensi Dasar :

2.1 Mendeskripsikan konsep faktor dan kelipatan

2.2 Menentukan kelipatan dan faktor bilangan

II. KKM: :

2.1. Mendeskripsikan konsep faktor dan kelipatan

- Menjelaskan arti faktor suatu bilangan
- Menjelaskan arti kelipatan suatu bilangan

2.2. Menentukan kelipatan dan faktor suatu bilangan

- Menentukan faktor-faktor
- Menentukan kelipatan suatu bilangan

2.3. Menentukan kelipatan persekutuan terkecil (KPK) dan faktor persekutuan terbesar (FPB)

- Menentukan kelipatan persekutuan dari dua bilangan
- Menentukan KPK dari dua bilangan
- Menentukan faktor persekutuan dari dua bilangan
- Menentukan FPB dari dua bilangan

III. Indikator :

Pertemuan 1 : - Menjelaskan arti kelipatan suatu bilangan
- Menentukan kelipatan suatu bilangan
- Menentukan kelipatan persekutuan dari dua bilangan
- Menentukan KPK dari dua bilangan

IV. Tujuan Pembelajaran :

a. Siswa mampu menjelaskan arti kelipatan suatu bilangan
b. Siswa mampu menentukan kelipatan suatu bilangan
c. Siswa mapu menentukan kelipatan persekutuan dari dua bilangan
d. Siswa mampu menentukan KPK dari dua bilangan

V. Karakter Siswa yang diharapkan :

Rasa ingin tahu , Mandiri, Kreatif, Kerja keras, Disiplin, Demokratis, Tanggung-jawab , Menghargai Prestasi.

VI. Materi Pembelajaran :

a. konsep kelipatan, kelipatan persekutuan, dan KPK
b. **Menentukan kelipatan suatu bilangan**
   1) Menentukan kelipatan suatu bilangan
   2) Kelipatan persekutuan dua bilangan
   3) KPK dari dua bilangan

VII. Strategi/ Metode Pembelajaran

a. Strategi pembelajaran : Strategi Pembelajaran Langsung
b. Metode Pembelajaran : ceramah, diskusi, permainan, tanya jawab, penugasan

VIII. Langkah-langkah Kegiatan Pembelajaran

Pertemuan 1

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
A. Kegiatan Awal				
• Apersepsi : mengulang materi sebelumnya	Ceramah dan tanya jawab	Disiplin	5 menit	Buku siswa
• Motivasi: Memberi motivasi bahwa materi yang akan disampaikan mudah dan menyenangkan • Guru menyampaikan tujuan pembelajaran • Guru memberikan instruksi tentang langkah-langkah pembelajaran yang akan dilaksanakan	Ceramah	Disiplin, tanggung jawab	5 menit	
B. Kegiatan Inti				
• Fase eksplorasi: ☞ Guru membagi siswa menjadi 7 kelompok yang masing-masing terdiri atas 5 orang. ☞ Guru memberikan instruksi aturan dari permainan Hole Numbered Arena/ dakon	Ceramah, demonstrasi, penugasan, teknik permainan	Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	10 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
bilangan untuk materi kelipatan bilangan serta mempraktekkan cara bermainnya menggunakan Hole Numbered Arena ☞ Siswa dapat melakukan percobaan dengan menggunakan media Hole Numbered Arena (dakon bilangan), pengamatan, analisis data dan diskusi untuk dapat menentukan kelipatan dan suatu bilangan				
• Fase elaborasi ☞ Guru memberi perintah dan bermain dan memberikan Lembar Kerja Kelompok ☞ Setiap kelompok siswa melakukan diskusi dan latihan dengan fasilitas soal-soal untuk dapat menentukan kelipatan suatu bilangan melalui permainan Hole Numbered Arena		Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	20 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
☞ Guru mengulangi langkah pembelajaran untuk materi berikutnya yaitu tentang kelipatan persekutuan dan KPK dari dua bilangan				
• Fase konfirmasi. ☞ Guru bertanya jawab tentang hal-hal yang belum diketahui siswa ☞ Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan	Permainan Hole Numbered Arena			
C. Penutup				
• Membuat rangkuman/ kesimpulan				
• Memberikan penilaian/refleksi	Penugasan			
• Memberikan umpan balik				
• Memberikan tindak lanjut				

Pertemuan 2

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
B. Kegiatan Awal				
• Apersepsi : mengulang materi sebelumnya	Ceramah dan tanya jawab	Disiplin	5 menit	Buku siswa
• Motivasi: Memberi motivasi bahwa materi yang akan disampaikan mudah dan menyenangkan • Guru menyampaikan tujuan pembelajaran • Guru memberikan instruksi tentang langkah-langkah pembelajaran yang akan dilaksanakan	Ceramah	Disiplin, tanggung jawab	5 menit	
D. Kegiatan Inti				
• Fase eksplorasi: ☞ Guru mengingatkan siswa tentang cara menentukan kelipatan dan KPK dari dua bilangan dengan menggunakan media Hole Numbered Arena. Kemudian menuliskan langkah-langkahnya secara jelas di papan	Ceramah, demonstrasi, penugasan, teknik permainan	Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	10 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
tulis. ☞ Siswa mendengarkan dengan seksama penjelasan guru ☞ Guru memberikan satu contoh soal menentukan KPK dari dua bilangan ☞ Siswa bersama guru mengerjakannya tanpa menggunakan media				
• Fase elaborasi ☞ Guru memberikan kesempatan kepada siswa untuk belajar selama 10 menit ☞ Guru meminta siswa mengumpulkan buku ajar dan buku catatan serta membagikan soal tes individu ☞ Siswa mengerjakan dengan seksama soal individu dari guru.		Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	20 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.
• Fase konfirmasi. ☞ Guru bersama siswa mencocokkan jawaban serta membahas jawaban dari soal yang ada	Permainan Hole Numbered Arena			

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
☞ Guru bertanya jawab tentang hal-hal yang belum diketahui siswa ☞ Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan				
E. Penutup				
• Membuat rangkuman/ kesimpulan				
• Memberikan penilaian/refleksi	Penugasan			
• Memberikan umpan balik				
• Memberikan tindak lanjut				

VII. Sumber/Bahan Alat/Kebutuhan

a. Buku Pelajaran Matematika untuk Sekolah Dasar Kelas 4 .
b. Soal Latihan
c. Hole Numbered Arena Dakon Bilangan
d. Buku siswa

VIII. PENILAIAN

a. Penilaian Proses

- Instrumen penilaian

b. Penilaian Hasil

- Jenis : tes
- Bentuk : tertulis
- Instrumen : lembar soal

c. Penilaian Kognitif

Indikator Pencapaian	Teknik Penilaian	Bentuk Penilaian	Instrumen
1. Siswa mampu mendeskripsikan konsep kelipatan dan faktor bilangan	Tes tertulis	Tes uraian	Terlampir

d. Penilaian Kognitif

- Pedoman Penskoran

Soal No	Uraian	Skor

e. Penilaian afektif

Nama Siswa	Aspek/Nilai karakter yang diobservasi					
	Kedislipinan	Minat dalam belajar	Aktivitas dalam diskusi	Mendengarkan pendapat orang lain	Jumlah	Skor rata-rata

Keterangan : Skala nilai

1= sangat kurang; 2= kurang; 3= sedang; 4= baik ; 5= sangat baik

f. Penilaian Psikomotor

Nama Siswa : _____

No	Ketrampilan yang Diukur	A	B	C	D
Jumlah					

Keterangan :

A= mampu mengerjakan 100% (skor 10)

B= mampu mengerjakan 75 % (skor 7,5)

C= mampu mengerjakan 50 % (skor 5)

D= mampu mengerjakan 25 % (skor 2.5)

- **LAMPIRAN**
  - Instrumen Penilaian
  - *Hand Out* Materi

Mengetahui
Kepala Madrasah
Matematika

_____

NIP.

Blitar, _____
Guru Mata Pelajaran

_____

NIP.

Latihan 1

Isilah titik-titik di bawah ini!

1. Bilangan kelipatan 4 adalah .... , ... , ... , ...
2. Bilangan kelipatan 5 adalah .... , ... , ... , ...
3. Bilangan kelipatan 6 adalah .... , ... , ... , ...
4. Bilangan kelipatan 7 adalah .... , ... , ... , ...
5. Bilangan kelipatan 8 adalah .... , ... , ... , ...
6. Bilangan kelipatan 9 adalah .... , ... , ... , ...
7. Bilangan kelipatan 10 adalah .... , ... , ... , ...

Latihan 2

Isilah dengan bilangan kelipatannya!

1. 2, 4, ..., ..., ..., ..., ..., ..., ..., ..., ..., ...
2. ....., ..., ..., ..., ..., ..., 28, 32, ..., ..., ..., ...,
3. ....., ..., ..., ..., ..., ..., ..., ..., ..., ..., 55, 60.
4. 6, 12, ..., ..., ..., ..., ..., ..., ..., ..., ..., ...
5. ....., ..., ..., ..., 40, 48, ..., ..., ..., ..., ..., ...
6. ....., ..., ..., ..., ..., ..., 14, 16, ..., ..., ..., ...
7. 4, 8, ..., ..., ..., ..., ..., ..., ..., ..., ..., ...

Latihan 3

Isilah titik-titik di bawah ini dengan jawaban yang benar!

1. 2 x 6 = 12, maka 12 adalah kelipatan 2 dan 6.
2. 6 x 4 = 24, maka ..... adalah kelipatan 6 dan 4.
3. 7 x 2 = 14, maka ..... adalah kelipatan 7 dan 2.
4. 8 x 5 = ..., maka ..... adalah kelipatan ..... dan .....
5. 54 : 6 = ..., maka ..... adalah kelipatan ..... dan .....

Latihan 4

Kerjakanlah soal-soal berikut ini!

1. Bilangan kelipatan 2 adalah ...., ..., ..., ..., ..., ...
   Bilangan kelipatan 4 adalah ...., ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 2 dan 4 adalah .....
2. Bilangan kelipatan 2 adalah ...., ..., ..., ..., ..., ...
   Bilangan kelipatan 5 adalah ...., ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 2 dan 5 adalah .....
3. Bilangan kelipatan 4 adalah ...., ..., ..., ..., ..., ...
   Bilangan kelipatan 5 adalah ...., ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 4 dan 5 adalah .....
4. Bilangan kelipatan 4 adalah ...., ..., ..., ..., ..., ...
   Bilangan kelipatan 6 adalah ...., ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 4 dan 6 adalah .....
5. Bilangan kelipatan 5 adalah ...., ..., ..., ..., ..., ...
   Bilangan kelipatan 9 adalah ...., ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 5 dan 9 adalah .....

APPENDIX 8

Rencana Pelaksanaan Pembelajaran

(RPP)

Madrasah/Sekolah : MI Attaroqqie
Kelas/Semester : IV/ganjil
Mata Pelajaran : Matematika
Alokasi Waktu : 2 JP (Pertemuan Ke- 3-4)
Standar Kompetensi : 2. Memahami dan menggunakan faktor dan kelipatan dalam pemecahan masalah

I. Kompetensi Dasar :

2.2 Menentukan kelipatan dan faktor bilangan

2.3 Menentukan kelipatan persekutuan terkecil (KPK) dan faktor persekutuan terbesar (FPB)

II. KKM: :

2.3. Mendeskripsikan konsep faktor dan kelipatan

- Menjelaskan arti faktor suatu bilangan

2.4. Menentukan kelipatan dan faktor suatu bilangan

- Menentukan faktor-faktor

2.5. Menentukan kelipatan persekutuan terkecil (KPK) dan faktor persekutuan terbesar (FPB)

- Menentukan KPK dari dua bilangan
- Menentukan faktor persekutuan dari dua bilangan
- Menentukan FPB dari dua bilangan

III. Indikator :

Pertemuan 2 : - Menjelaskan arti faktor suatu bilangan
- Menentukan faktor suatu bilangan
- Menentukan faktor persekutuan dari dua bilangan
- Menentukan FPB dari dua bilangan

IV. Tujuan Pembelajaran :

a. Siswa dapat menjelaskan arti faktor
b. menentukan faktor suatu bilanagan dengan benar
c. Siswa dapat menentukan faktor persekutuan dua bilangan dengan benar
d. Siswa dapat menentukan FPB dari dua bilangan dengan benar

V. Karakter Siswa yang diharapkan :

Rasa ingin tahu , Mandiri, Kreatif, Kerja keras, Disiplin, Demokratis, Tanggung-jawab , Menghargai Prestasi.

VI. Materi Pembelajaran :

konsep faktor, faktor persekutuan dua bilangan, dan FPB

VII. Strategi/ Metode Pembelajaran

c. Strategi pembelajaran : Strategi Pembelajaran Langsung
d. Metode Pembelajaran : Ceramah, Quiz, Tanya jawab, penugasan, dan tes

VIII. Langkah-langkah Kegiatan Pembelajaran

Pertemuan 3

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
A. Kegiatan Awal				
• Apersepsi : mengulang materi sebelumnya	Ceramah dan tanya jawab		5 menit	Buku siswa
• Motivasi: Memberi motivasi tentang penerapan materi faktor dan fpb dalam kehidupan sehari-hari	Ceramah		5 menit	
B. Kegiatan Inti				
• Fase eksplorasi: ☞ Guru memberikan instruksi tentang langkah-langkah pembelajaran yang akan dilaksanakan ☞ Guru membagi siswa menjadi 7 kelompok yang masing-masing terdiri atas 5 orang. ☞ Guru memberikan instruksi aturan dari quiz Hole Numbered Arena/ dakon bilangan untuk materi faktor bilangan, faktor persekutuan dua bilangan, dan fpb serta	Ceramah dan demonstrasi		10 menit	

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
mempraktekkan cara bermainnya				
• Fase elaborasi ☞ Guru memberi perintah dan bermain dan memberikan beberapa pertanyaan ☞ Setiap kelompok siswa dapat melaksanakan pembelajaran dengan metode quiz Hole Numbered Arena (dakon bilangan). ☞ Setiap kelompok berkompetisi untuk menjadi kelompok terbaik ☞ Guru memberikan soal tes kepada tiap kelompok dan memberikan instruksi cara mengerjakannya ☞ Kelompok tercepat mempresentasikan jawaban mereka ke depan kelas ☞ Kelompok tercepat dan mendapat nilai terbaik mendapat reward dari guru			20 menit	
Fase Konfirmasi • Guru bersama siswa mencocokkan jawaban	Permainan Hole Numbered Arena			

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
serta membahas jawaban dari soal yang ada • Guru bertanya jawab tentang hal-hal yang belum diketahui siswa • Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan				
C. Penutup				
• Membuat rangkuman/ kesimpulan				
• Memberikan penilaian/refleksi	Penugasan			
• Memberikan tindak lanjut				

Pertemuan 4

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
C. Kegiatan Awal				
• Apersepsi : mengulang materi sebelumnya	Ceramah dan tanya jawab	Disiplin	5 menit	Buku siswa
• Motivasi: Memberi motivasi bahwa materi yang akan	Ceramah	Disiplin, tanggung jawab	5 menit	

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
disampaikan mudah dan menyenangkan • Guru menyampaikan tujuan pembelajaran • Guru memberikan instruksi tentang langkah-langkah pembelajaran yang akan dilaksanakan				
F. Kegiatan Inti				
• Fase eksplorasi: ☞ Guru mengingatkan kembali materi sebelumnya ☞ Guru memberikan kesempatan kepada siswa untuk belajar selama 15 menit	Ceramah, demonstrasi, penugasan, teknik permainan	Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	10 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.
• Fase elaborasi ☞ Guru meminta siswa mengumpulkan buku ajar dan buku catatan serta membagikan soal tes individu ☞ Siswa mengerjakan dengan seksama soal individu dari guru.		Cooperative, rasa ingin tahu, tanggung jawab, mandiri, kreatif	20 menit	Hole Numbered Arena, Manik-manik warna-warni, LKS.

Tahapan Pembelajaran	Strategi/metode	Nilai Karakter	Waktu	Sumber/Bahan Alat/Kebutuhan
• Fase konfirmasi. ☞ Guru bersama siswa mencocokkan jawaban serta membahas jawaban dari soal yang ada ☞ Guru bertanya jawab tentang hal-hal yang belum diketahui siswa ☞ Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan	Permainan Hole Numbered Arena			
G. Penutup				
• Membuat rangkuman/ kesimpulan				
• Memberikan penilaian/refleksi	Penugasan			
• Memberikan umpan balik				
• Memberikan tindak lanjut				

IX. Sumber/Bahan Alat/Kebutuhan

a. Buku Pelajaran Matematika untuk Sekolah Dasar Kelas 4 .
b. Soal Latihan
c. Hole Numbered Arena Dakon Bilangan
d. Buku siswa

X. PENILAIAN

a. Penilaian Proses

- Instrumen penilaian

b. Penilaian Hasil

- Jenis : tes
- Bentuk : tertulis
- Instrumen : lembar soal

c. Penilaian Kognitif

Indikator Pencapaian	Teknik Penilaian	Bentuk Penilaian	Instrumen
2. Siswa mampu mendeskripsikan konsep dan faktor bilangan, faktor persekutuan dua bilangan, dan fpb	Tes tertulis	Tes uraian	Terlampir

d. Penilaian afektif

Nama Siswa	Aspek/Nilai karakter yang diobservasi					
	Kedislipinan	Minat dalam belajar	Aktivitas dalam pembelajaran	Mendengarkan pendapat orang lain	Jumlah	Skor rata-rata

Keterangan : Skala nilai

1= sangat kurang; 2= kurang; 3= sedang; 4= baik ; 5= sangat baik

e. Penilaian Psikomotor

Nama Siswa : _____

No	Ketrampilan yang Diukur	A	B	C	D
Jumlah					

Keterangan :

A= mampu mengerjakan 100% (skor 10)

B= mampu mengerjakan 75 % (skor 7,5)

C= mampu mengerjakan 50 % (skor 5)

D= mampu mengerjakan 25 % (skor 2.5)

- **LAMPIRAN**
  - Instrumen Penilaian
  - *Hand Out* Materi

Mengetahui
Kepala Madrasah

Blitar, _____
Guru Mata Pelajaran
Matematika

_____ _____

NIP. NIP.

Latihan 5

Tulislah nomor soal untuk bilangan yang dapat dibagi 2!

1. 20	6. 178
2. 35	7. 276
3. 43	8. 387
4. 56	9. 465
5. 71	10. 652

Sebutkanlah bilangan-bilangan berikut yang habis dibagi 3!

1. 17	6. 214
2. 38	7. 353
3. 65	8. 479
4. 87	9. 715
5. 90	10. 906

Latihan 6

Berilah tanda di bawah bilangan-bilangan seperti contoh!

28	87	90	35
X			
48	56	27	64
63	50	54	44
81	32	144	115

256	320	720	906

X = bila habis dibagi 2

▲ = bila habis dibagi 3

■ = bila habis dibagi 4

● = bila habis dibagi 5

Tugas Individu

Isilah titik berikut dengan jawaban yang benar

1. Bilangan kelipatan 6 adalah ....., ..., ..., ..., ..., ...
2. Kelipatan 5 adalah ...., ..., ..., ..., ..., ...
3. ....., ..., 12, 16, ..., ..., ..., ..., ..., ..., ..., ...,
4. 9 x 7 = 63, maka 63 adalah kelipatan ..... dan .....
5. 7 x 8 = ..., maka ..... adalah kelipatan .... dan ....
6. Bilangan kelipatan 3 adalah ....., ..., ..., ..., ...
   Bilangan kelipatan 5 adalah ....., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 3 dan 5 adalah.....
7. 64 adalah bilangan yang habis dibagi .....
8. 72 adalah bilangan yang habis dibagi .....
9. Faktor dari bilangan 36 adalah ...., ..., ..., ..., ..., ..., ..., ...
10. Faktor persekutuan dari 12 dan 24 adalah....

selamat mengerjakan

Latihan 7

Carilah faktor bilangan berikut ini!

1. Faktor bilangan 21 adalah .....
2. Faktor bilangan 28 adalah .....
3. Faktor bilangan 36 adalah .....
4. Faktor bilangan 42 adalah .....
5. Faktor bilangan 48 adalah .....

Latihan 8

Tentukan faktor persekutuan dari bilangan-bilangan berikut!

1. 8 dan 14
2. 9 dan 27
3. 18 dan 24
4. 35 dan 28
5. 49 dan 21
6. 28 dan 36

Latihan 1

Tentukan KPK dari bilangan berikut!

1. 3 dan 4
2. 4 dan 9
3. 8 dan 12
4. 10 dan 15
5. 12 dan 18

Latihan 2

Tentukan FPB dari bilangan-bilangan berikut!

1. 11 dan 19
2. 18 dan 24
3. 16 dan 20
4. 24 dan 30
5. 28 dan 35

Uji Kompetensi Bab 2

Isilah titik-titik di bawah ini dengan jawaban yang benar!

1. 6 x 7 = ..., maka ..... adalah kelipatan ..... dan.....
2. 32 : 4 = ..., maka ..... adalah kelipatan ..... dan .....
3. Lanjutkan bilangan kelipatan 6 berikut:

   6, 12, ..., ..., ..., ..., ...
4. Bilangan kelipatan 5 adalah 5, 10, ..., ..., ..., ..., ...

   Bilangan kelipatan 6 adalah 6, 12, ..., ..., ..., ..., ...

   Kelipatan persekutuan dari bilangan 3 dan 4 adalah .....
5. Lingkarilah bilangan berikut ini yang habis dibagi 3!

   12, 13, 14, 15, 16, 17, 18

6. Lingkarilah bilangan berikut yang termasuk faktor dari 24!

   1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 24

7. Faktor bilangan 30 adalah 1, 2, ..., ..., ..., ..., ..., ...
8. Faktor bilangan 14 adalah 1, 2, ..., ...

   Faktor bilangan 21 adalah 1, 3, ..., ...

   Faktor persekutuan dari bilangan 14 dan 21 adalah .....
9. Tentukan KPK dari 10 dan 15!
10. Tentukan FPB dari 16 dan 24!

APPENDIX 9

ULANGAN HARIAN MATEMATIKA BAB 2

Nama :

Kelas :

No. Absen :

Isilah titik-titik di bawah ini dengan jawaban yang benar!

1. Lanjutkan bilangan kelipatan 6 berikut:
   6, 12, ..., ..., ..., ..., ...
2. Bilangan kelipatan 5 adalah 5, 10, ..., ..., ..., ..., ...
   Bilangan kelipatan 6 adalah 6, 12, ..., ..., ..., ..., ...
   Kelipatan persekutuan dari bilangan 3 dan 4 adalah .....
3. Lingkarilah bilangan berikut ini yang habis dibagi 3!
   12, 13, 14, 15, 16, 17, 18
4. Lingkarilah bilangan berikut yang termasuk faktor dari 24!
   1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 24
5. Faktor bilangan 30 adalah 1, 2, ..., ..., ..., ..., ..., ...
6. Faktor bilangan 14 adalah 1, 2, ..., ...
   Faktor bilangan 21 adalah 1, 3, ..., ...
   Faktor persekutuan dari bilangan 14 dan 21 adalah .....
7. Tentukan KPK dari 10 dan 15!
8. Tentukan FPB dari 16 dan 24!
9. Kelipatan bilangan 9 adalah ....., ..., ..., ...
   Kelipatan bilangan 12 adalah ....., ..., ..., ...
   Kelipatan persekutuan 9 dan 12 adalah .....
   Jadi, KPK dari 9 dan 12 adalah .....
10. Faktor dari 42 adalah . . . .
    Faktor dari 48 adalah . . . .
    Faktor persekutuan 42 dan 48 adalah . . . .
    Jadi, FPB dari 42 dan 48 adalah . . . .

APPENDIX 10

OBSERVATION SHEET

Competence : Determining the multiples of a number

Material : Multiples

Session : pre-test

Date : 10 October 2012

No	Name	Assessed Aspect							
		Listening teacher explanation	Listening friend's opinion	Ask to other friends in a team	Answer friend's question	Asking or answering teacher's question	Cooperativeness in a team	Enthusiastic	Cheerfully face
1	Ahda	X	X					X	X
2	Alya	X	X					X	X
3	Amalia	X							
4	Andini								
5	Anisa	X	X					X	X
6	Nafisah	X	X		X	X		X	X
7	Fadilla	X	X					X	X
8	Noval								
9	Fatimatuz	X	X					X	X
10	Fildah	X	X					X	X
11	Fyrza								
12	Inayah	X	X					X	X
13	Intan								
14	Nadia	X	X					X	X
15	Nadifa	X	X					X	X
16	Nafiatuz	X							
17	Naimah								
18	Nurika	X							

19	Aisyah	X	X					X	X
20	Reza	X	X			X		X	X
21	Rohma	X							
22	Safina	X	X					X	X
23	Sakinah	X							
24	Savannah	X	X			X		X	X
25	Syiva	X	X					X	X
26	Ummy								
27	Vidia	X	X					X	X
28	Widi	X	X					X	X
29	Zainab								
30	Masyiah	X	X					X	X
31	Erly								
32	Nabila	X	X					X	X
33	Dzurotun	X	X					X	X

APPENDIX 11

OBSERVATION SHEET

Competence : Determining Least Common Multiples (LCM)

Material : Least Common Multiples (LCM)

Session : cycle 1

Date : 15 October 2012

No	Name	Assessed Aspect							
		Listening teacher explanation	Listening friend's opinion	Ask to other friends in a team	Answer friend's question	Asking or answering teacher's question	Cooperativeness in a team	Enthusiastic	Cheerfully face
1	Ahda	X	X					X	X
2	Alya	X	X	X		X	X	X	X
3	Amalia	X	X	X			X	X	X
4	Andini	X							
5	Anisa	X	X	X			X	X	X
6	Nafisah	X	X	X	X	X	X	X	X
7	Fadilla	X	X	X			X	X	X
8	Noval								
9	Fatimatuz	X	X	X			X	X	X
10	Fildah	X	X	X			X	X	X
11	Fyrza	X							
12	Inayah	X	X	X			X	X	X
13	Intan	X	X					X	X
14	Nadia	X	X	X			X	X	X
15	Nadifa	X	X	X			X	X	X
16	Nafiatuz	X	X	X			X	X	X
17	Naimah								
18	Nurika	X							

19	Aisyah	X	X	X			X	X	X
20	Reza	X	X	X	X	X	X	X	X
21	Rohma	X	X	X			X	X	X
22	Safina	X	X	X			X	X	X
23	Sakinah	X							
24	Savannah	X	X	X	X	X	X	X	X
25	Syiva	X	X	X			X	X	X
26	Ummy	X	X	X			X	X	X
27	Vidia	X	X	X			X	X	X
28	Widi	X	X	X			X	X	X
29	Zainab	X							
30	Masyiah	X	X	X			X	X	X
31	Erly								
32	Nabila	X	X	X			X	X	X
33	Dzurotun	X	X	X		X	X	X	X

APPENDIX 12

STUDENTS' SCORE

Competence : Determining Greatest Common Factor (GCF)

Material : Greatest Common Factor (GCF)

Session : cycle 2

Date : 22 October 2012

No	Name	Assessed Aspect							
		Listening teacher explanation	Listening friend's opinion	Ask to other friends in a team	Answer friend's question	Asking or answering teacher's question	Cooperativeness in a team	Enthusiastic	Cheerfully face
1	Ahda	X	X	X			X	X	X
2	Alya	X	X	X	X	X	X	X	X
3	Amalia	X	X	X			X	X	X
4	Andini	X						X	X
5	Anisa	X	X	X			X	X	X
6	Nafisah	X	X	X	X	X	X	X	X
7	Fadilla	X	X	X			X	X	X
8	Noval								
9	Fatimatuz	X	X	X			X	X	X
10	Fildah	X	X	X		X	X	X	X
11	Fyrza	X						X	X
12	Inayah	X	X	X			X	X	X
13	Intan	X	X	X			X	X	X
14	Nadia	X	X	X			X	X	X
15	Nadifa	X	X	X	X	X	X	X	X
16	Nafiatuz	X	X	X			X	X	X
17	Naimah								
18	Nurika	X						X	X

19	Aisyah	X	X	X		X	X	X	X
20	Reza	X	X	X	X	X	X	X	X
21	Rohma	X	X	X			X	X	X
22	Safina	X	X	X			X	X	X
23	Sakinah	X	X	X			X	X	X
24	Savannah	X	X	X	X	X	X	X	X
25	Syiva	X	X	X			X	X	X
26	Ummy	X	X	X			X	X	X
27	Vidia	X	X	X			X	X	X
28	Widi	X	X	X			X	X	X
29	Zainab	X	X	X			X	X	X
30	Masyiah	X	X	X			X	X	X
31	Erly	X						X	X
32	Nabila	X	X	X			X	X	X
33	Dzurotun	X	X	X			X	X	X

APPENDIX 13

STUDENTS SCORE

School : MI Attaraqqie Malang

Class : 4B

Subject : Mathematics

No	Name	Session		
		Pre Test	**Cycle 1**	**Post Test**
1	Savannah	82	97	95
2	Dzurotun	82	95	97
3	Nadia	85	90	95
4	Reza	77	82	100
5	Vidia	77	82	87
6	Nafisah	80	80	90
7	Fadilla	72	80	90
8	Sakinah	72	80	90
9	Fatimatuz	75	80	82
10	Fildah	75	80	82
11	Fyrza	67	80	82
12	Inayah	67	85	85
13	Intan	67	85	85
14	Amalia	70	85	85
15	Nadifa	70	72	85
16	Nafiatuz	70	75	77
17	Naimah	62	75	80
18	Nurika	62	75	77
19	Aisyah	62	75	80
20	Andini	62	75	80

21	Rohma	62	70	80
22	Safina	60	70	75
23	Erly	60	70	75
24	Alya	60	70	75
25	Syiva	60	67	72
26	Ummy	60	67	75
27	Anisa	55	62	67
28	Widi	55	62	67
29	Zainab	55	60	70
30	Masyiah	47	60	70
31	Noval	50	55	70
32	Nabila	45	55	65
33	Ahda	45	50	60

DOCUMENTATION

APPENDIX 14

MEDIA OF HOLE NUMBERED ARENA

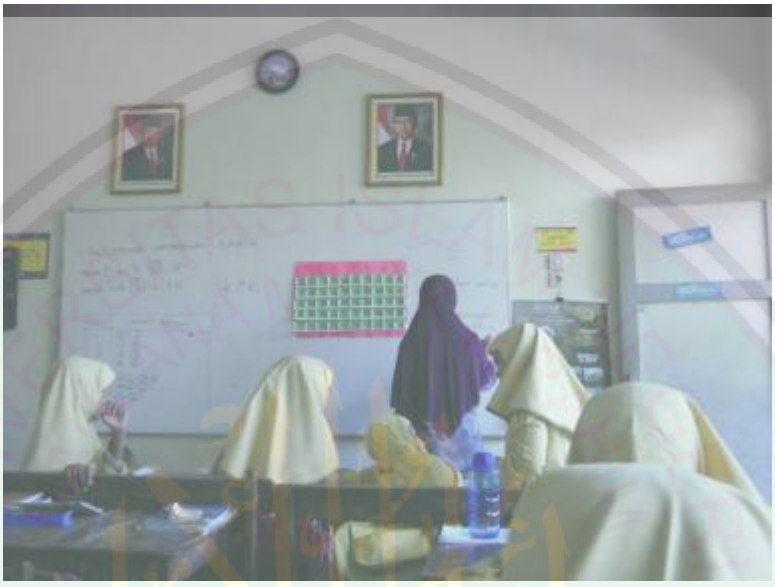
The Hole Numbered Arena

The Beads

The Example of LCM

APPENDIX 15

The Teacher Conveying The Material



The teacher explain the materials

The researcher observes the activity

The researcher convey the rule of HNA

APPENDIX 16

Students Activity during The Class

APPENDIX 17

Documentation of interview

APPENDIX 16

MINISTRY OF RELIGION
STATE ISLAMIC UNIVERSITY OF MAULANA MALIK IBRAHIM MALANG
TARBIYAH FACULTY
Gajayana Street No. 50 Malang Phone 65144 . / Fax. (0341) 558933

CONSULTATION AUTHENTICATION

Name : Nurul Husnawati
NIM : 09140073
Faculty : Tarbiyah
Department : PGMI (Pendidikan Guru Madrasah Ibtidaiyah)
Advisor : Alfiana Yuli Efiyanti
Thesis Title : "Implementation of Hole Numbered Arena to Encourage Motivation and Improve Conceptual Ability Of Least Common Multiple and Greatest Common Factor toward Fourth Grade Students of MI Attaraqqie Malang"

Date	Consulted for	Signature
October, 8 2012	Consult Chapter I, II and III	1.
October, 15th 2012	Revision Chapter I, II and III	2.
November, 20 2012	Grammar Revision, Add Review of Literatur	3.
December, 19th 2012	ACC Chapter I, II and III	4.
March, 16th 2013	Consult Chapter I, II, III and IV	5.
March, 17th 2013	Consult Chapter V and VI	6.
March, 19th 2013	ACC Chapter I- IV	7.
March, 27th 2013	Consult Chapter I- VI	8.
March, 30th 2013	ACC All	9.

Malang, March 30 2013
Acknowledge,
The Dean of Tarbiyah Faculty

Dr. H. M. Zainuddin, MA
NIP. 196205071995031001

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UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM MALANG
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Website:www.tarbiyah.uin-malang.co.id

Nomor : Un.3.1/TL.001/494/2012 20 September 2012
Lampiran : 1 (satu) berkas proposal skripsi
Perihal : **Penelitian**

Kepada:
Yth. Kepala MI Attaraqqie
di
Malang

Assalamu'alaikum Wr. Wb.

Kami mengharap dengan hormat agar mahasiswa di bawah ini:

Nama	:	Nurul Husnawati
NIM	:	09140073
Fakultas/Jurusan	:	Tarbiyah / PGMI
Semester/ Th. Ak	:	Ganjil, 2012/2013
Judul Skripsi	:	**Implementation of Hole Numbered Arena to Encourage Motivation and Improve Conceptual Ability of Least Common Multiple and Greatest Common Factor toward 4th Grade Students of MI Attaraqqie Malang**
Waktu	:	September-Oktober 2012

dalam rangka menyelesaikan tugas akhir/ menyusun skripsi yang bersangkutan mohon diberikan izin/kesempatan untuk mengadakan penelitian di lembaga/instansi yang menjadi wewenang Bapak/Ibu.

Demikian atas perkenaan dan kerjasama Bapak/Ibu disampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

Dekan,

Dr. H. M. Zainuddin, MA
NIP. 19620507 199503 1 001

Tembusan :
1. Yth. Ketua Jurusan PGMI
2. Arsip

مؤسسة التربية والتعليم الترقي - مالاع
YAYASAN PENDIDIKAN DAN PERGURUAN ATTARAQQIE
MADRASAH IBTIDAIYAH ATTARAQQIE PUTRA - PUTRI
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email: mi_attaraqqie@yahoo.co.id

SURAT KETERANGAN PENELITIAN

Nomor: 340/B.10/ATR/III/2013

Bismillahirrahmanirrahim,

Yang bertanda tangan di bawah ini Kepala Madrasah Ibtidaiyah ATTARAQQIE MALANG menerangkan bahwa:

Nama	: Nurul Husnawati
NIM	: 09140073
Jurusan	: Pendidikan Guru Madrasah Ibtidaiyah
Universitas	: UIN Maulana Malik Ibrahim Malang
Judul Penelitian	: Implementation of Hole Numbered Arena to Encovrage Motivation and Improve Conceptual Ability of Least Common Multiples and Greatest Common Factors toward 4th Grade Students of MI Attaraqqie Malang

Telah melaksanakan Penelitian Tugas Akhir di Madrasah Ibtidaiyah ATTARAQQIE Jl. Ade Irma Suryani No. 50, pada tanggal 8 Oktober s.d. 24 Oktober 2012.

Demikian surat keterangan ini kami buat untuk digunakan sebagaimana mestinya.

Malang, 30 Maret 2013
Kepala MI ATTARAQQIE

Ust. Mukhammad Zainuddin, ST.
NPP. 992 002 001

APPENDIX 19

STUDENT'S PROFILE

Name	:	Nurul Husnawati
Student Identity Number (NIM)	:	09140073
Fac./ Dept./ Program of Study	:	Tarbiyah Faculty / Islamic Elementary Education
Enrollment Year	:	2009
Address	:	St. Melati Rt 04 Rw 05 Jingglong, Sutojayan, Blitar
Telephone Number	:	085735865396

Malang, 30 Maret 2013

Student

(NURUL HUSNAWATI)