CHAPTER I
INTRODUCTION

1.1 Background

Education is one of the human soul forming which allows humans grow and develop in accordance with the potential and ability. This was supported by Jaino (2010:58) who stated that "the educational process is a process of development that has aims. The aim of the process of development naturally is maturity, because the most natural human potential is to grow toward a level of maturity". Therefore, there was no one who did not need education. In Act No. 20 Of 2003 on National Education System Chapter 1 Article 1 is written:

> Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively developing the potential for him to have the spiritual power of religion, self-control, personality, intelligence, noble character, and skills needed him, society, nation, and state.

One of the subject that have an important role in education is the education of mathematics. Cockroft (1982:1) stated that "mathematics is only one of many subjects which are included in the school curriculum, yet there is greater pressure for children to succeed at mathematics. This suggests that mathematics is in some way thought to be of especial importance".

According to Hudojo (2016: 37), mathematics is not only related to numbers and operations, but also the element of space as a target. From the description, it is clear that the object of study of mathematics is not just the quantity, but more focused on relationships, patterns, shapes and structures from the fact that the target quantity does not make much sense in mathematics.

There are many reasons for the need for students to learn mathematics. Cockroft (1982:2) argues that mathematics needs to be taught to students because:

> (1) is always used in all facets of life; (2) all fields of study require appropriate math skills; (3) is a powerful means of communication, concise, and clear; (4) can be used to present information in a variety of ways; (5) improve the ability to think logically, accuracy, and spatial awareness; (6) give satisfaction to attempt to solve a challenging problem.

The National Council of Teachers of Mathematics (NCTM, 2000) formulates five basic capability standards: problem solving, reasoning and proof, communication, connections, and representation. One of the goals of learning mathematics is that students have problem-solving skills that include the ability to understand the problems, devise mathematical models, carry out and interpret the solutions obtained (BSNP, 2006:139).

Ironically, mathematics is one of the subjects that is not liked student and as subjects looked at the most difficult, tedious and daunting. For that math, subjects tend to be seen as less desirable and if it can be avoided. This is in accordance with the opinion Aunurrahman (2018: 202) states that "from various fields of study that are taught in school, math is a field of study that is considered the most difficult by the students, both of which are not learning disabilities and more so for students who are learning disabilities".

One of the things that cause the students do not like math lesson and tend to view mathematics as a difficult subject is the learning process that is not made to attract students. The learning process that takes place in the classroom has not been able to make the students become active and taking its role in learning. As expressed by Ernawati (2013: 3) that "the students always passive in learning while the teacher is active and all the initiative came from the teachers so that there is a reciprocal relationship between teachers and students which has implications on quality in teaching and learning of mathematics". Because the learning process does not make students active will result in poorly trained students in constructing or developing a problem that is presented in mathematics and was unable to find a settlement in solving mathematical concepts.

Problem solving is part of the mathematics curriculum is very important because in the learning process and its completion, the student is possible to gain experience and skills already possessed to be applied to solving routine problems. Abdurrahman (2018: 206) states the national council for the teaching of mathematics in the United States proposed that the curriculum includes 10 basic skills as follows:

> (1) problem solving; (2) the application of math in daily life situations; (3) the sharpness of the attention to the feasibility of the results; (4) the estimates; (5) the appropriate calculation skills; (6) geometry; (7) measurement; (8) read, interpret, create tables, and graphics; (9) use mathematics to predict; and (10) of computer literacy.

According with the statement in Permendiknas No.22 Year 2006 "mathematical problem solving ability that includes the ability to understand the problem, designing a mathematical model, complete a model, and interpret the obtained solution is one of the goals the subjects of mathematics". Thus the mathematics problem-solving ability of students should not escape the attention of the teacher and should be developed on students.

To improve the mathematical problem solving ability of the students, then the students should have a good understanding of the concept. This can be achieved through a better learning process, where the learning process that should be applied is student centered. Peterson (in Suryadi, 2011: 20) states that "direct instructional model managed to improve student achievement in relation to the ability to think mathematically low level, while for matters relating to the ability of a high level such as problem solving, students generally show learning outcomes not good". This suggests that the learning model that is directly necessary for renewed learning model that can increase the activity of students in the learning process.

Based on this, researcher conducts an observation to knowing the learning process in SMA Negeri 1 Perbaungan. Through observations conducted shows that students are less active in the learning process. This is due to the learning model applied less attracted the attention of students to participate in the learning process. Inactivity students in the learning process are causing the problem solving ability of students to be low.

Supported by diagnostic tests conducted by researchers at SMA Negeri 1 Perbaungan which shows students' problem solving ability is still very low. This can be seen when the researchers gave a problem in the form of a diagnostic test to 33 students of class X MIA 3 SMA Negeri 1 Perbaungan about the material

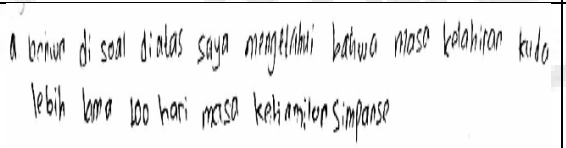
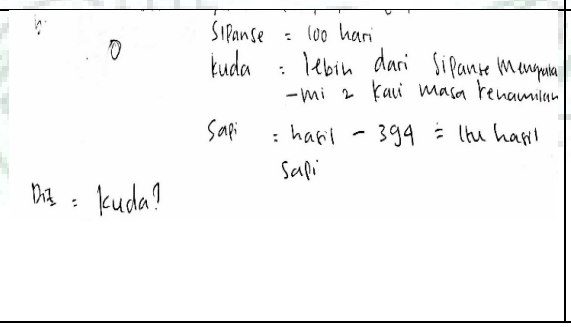
linear equations system of three variables that have been studied previously. Here are the questions are given by the researchers:

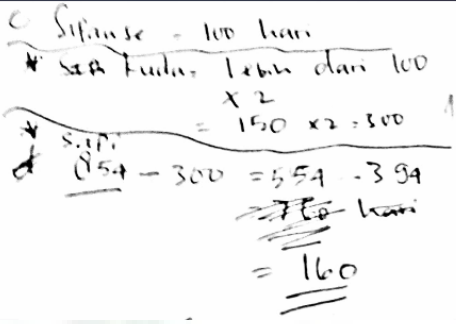
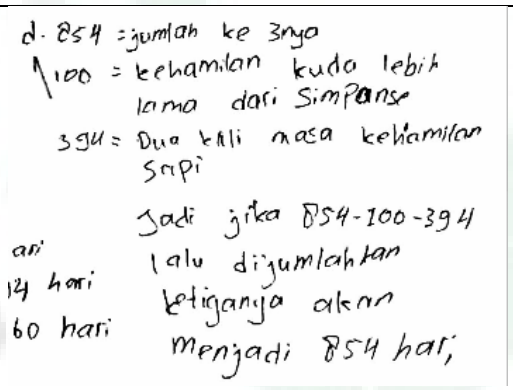
Masa kehamilan rata-rata dari tiga jenis hewan yaitu kuda, simpanse, dan sapi apabila ketiganya dijumlahkan akan menghasilkan 854 (dalam hari). Masa kehamilan kuda lebih lama 100 hari dari masa kehamilan simpanse. Dua kali masa kehamilan kuda yang kemudian dikurangi dengan 394 merupakan masa kehamilan sapi. Tentukan berapa hari masa kehamilan dari tiap-tiap hewan tersebut!

a. Tuliskan informasi yang anda peroleh dari soal diatas!
b. Bagaimana cara menentukan masa kehamilan dari ketiga jenis hewan tersebut?
c. Tentukan berapa hari masa kehamilan dari masing-masing hewan tersebut!
d. Apakah kamu menggunakan semua data untuk menyelesaikan masalah di atas? Kesimpulan apa yang kamu peroleh?

Here are the results of the work are some students who make mistakes in solving the above description, seen in the table below:

Table 1.1. Students Mistakes in Problem Solving

No	The results of the student's work	The error analysis
A		Students are not able to understand the problem in order to write what are known and what are asked in the problem.
B		Students are not able to plan a solution.

No	The results of the student's work	The error analysis
C		Students are not able to solve the problem, where the end result is wrong.
D		Students are not able to conclude or check back and the answer is given was wrong.

From the table above, it can be seen that the students have difficulties in resolving problems relating to problem-solving. Based on the results of the diagnostic tests were given to 33 students of class X MIA 3 SMA Negeri 1 Perbaungan, there were only 16 students (48.48%) who understand the problem, 9 students (27.27%) who make a solution plan, 4 students (12.12%) to solve the problem and 3 students (9.09%) to draw conclusions. The test results showed that the students' problem solving ability is still low. Students still have difficulty to understand the purpose of the given problem, identify the elements that are known and the elements that were asked, making a mathematical model of the problem, planning the solution of problems and calculation process so that the answers that made by students are not correct.

The active learning is a way of learning that is required of the students so that they can improve their academic achievement. Therefore, teachers are required to encourage students to learn actively and to improve the ability of problem solving in mathematics which are important factors in mathematics. As argued by Slameto (2003: 31):

> In the interaction of teaching and learning, teachers have a lot to give freedom to the students to be able to investigate itself, observing himself, teaching himself, finding solutions to their own problems. This will create a great sense of responsibility towards what will be done, and trust in themselves so that students do not always rely on others.

Therefore, a teacher centered learning naturally converted to student centered learning. Therefore teacher need a model of effective learning that can involve students in the learning process so that it will accelerate the ability to learn mathematics and through the learning model students feel interested to follow the teaching and learning process.

Inquiry learning model is one model that can encourage students to be active in the learning process. It is also supported by Gulo (in Trianto, 2016: 166) states that:

> Strategies inquiry means a series of learning activities that involve maximally throughout the student's ability to search and investigate in a systematic, critical, logical, analytical so that they can formulate their own findings with aplomb.

Meanwhile, according to Duran (2016: 2888) "*The IBL is a way of asking questions, seeking information, and finding new ideas related to an event. That is, in the IBL, students learn by using cause and effect, relational and critical thinking, and combining both scientific knowledge and operations"*. The main goal of inquiry oriented learning is to develop attitudes and skills of students so that they can become independent problem solvers. It involves students in the task of applying critical thinking skills, comparing the problem and use a variety of skills in synthesizing and solve problems.

Inquiry learning model is most appropriate to the learning of mathematics because learning by inquiry model requires the active involvement of learners that is expected to improve learning achievement and the child's attitude towards learning, especially the ability of understanding and communication of learners. Inquiry based learning will train students to be able to understand and digest all the information it receives, and then

applied to in the form of mathematical problem. Thus, students will become more active, as students become active in the classroom, learning to be going well and the students can develop their potential to the fullest.

Based on the background described above, a researcher interested in conducting a study entitled "**The Effect of Inquiry Learning Model to Students' Mathematical Problem Solving Ability In Grade X SMA Negeri 1 Perbaungan**".

1.2 Identification of Problem

Based on the description of the background above, the obtained identification of problem are as follows:

1. The mathematical problem solving ability of students in mathematics learning is still low.
2. The learning models used are less varied.
3. Students are less active in the learning process.
4. The process of students' solving the problem is still not quite right/ not complete.

1.3 Limitation of Problem

Based on the background and the identification of problem have been exposed, then the limitation of problem in this research is the effect of Inquiry Learning Model to students' mathematical problem solving ability in grade X SMA Negeri 1 Perbaungan.

1.4 Formulation of Problem

Based on the above limitation of problem, the formulation of the problem in this research is does the Inquiry Learning Model effects the mathematical problem solving ability?

1.5 Objective of Research

In line with the formulation of the problem, then the research objective is to determine and examine whether the Inquiry Learning Model effect the students' mathematical problem solving ability.

1.6 Benefits of Research

With the implementation of the objective of research, it can be expected to benefit are as follows:

1. For student

   As an effort to improve students' mathematical problem solving ability.

2. For teachers

   As resources in expanding knowledge about inquiry learning model in helping students to improve problem solving abilities.

3. For researchers

   For information and at the same grip material for researchers in performing their duties as a prospective faculty teaching in the future.

1.7 Operational Definition

The operational definition of this research are:

a. The meaning of Effect in this research is the changes to the ability of the mathematical problem solving of students. Inquiry learning model is said have an effect if the mathematical problem solving ability of students who are taught by Inquiry Learning Model is higher than the ability of those who are taught by Direct Learning Model.

b. Inquiry learning model is a student centered learning model, where students are encouraged to be directly involved such as asking question, formulating problems, conducting experiments, collecting and analyzing data, drawing conclusion, discussion and communicating.

c. Mathematics problem solving ability is the ability of students in solving mathematical problems, starting from understanding the problem, devising a plan, carrying out the plan until looking back to the plan.