CHAPTER I
INTRODUCTION

1.1 Background

Education is one of the basic human needs that can be used to live a life. With education, people can achieve his goals and gain happiness through the knowledge he has. With education human can forged to be a thinker and can live in society.

Education gives knowledge, good thinking patterns, and a more systematic framework. Education needs logical thinking to connect the abstract part in mind to apply problem in real life. To construct this logical thinking, it needs mathematics.

Mathematics is a field of study which studied by all students at every level of education from elementary school to high school and even also in universities. It shows that the field of mathematics study is important in education, and it's essential in life. Many reasons that make math is very necessary to be taught in education. It was proposed by Cockroft (1982 : 1) they are:

> (1) Mathematics is regarded by most people as being essential (2) Mathematics is only one of many subjects which are included in the school curriculum(3) Mathematics provides a means of communication which is powerful, concise and unambiguous (4) Mathematics can be used to present information in many ways (5) Develop powers of logical thinking, accuracy, and spatial awareness (6) Give satisfaction to attempt to solve challenging problems.

Correspondingly, to Nurhayati, (2006:107) argues that mathematics learning objectives which required in the curriculum are

> *(1) Melatih cara berpikir dan bernalar dalam menarik kesimpulan, misalnya melalui kegiatan penyelidikan; eksplorasi; eksperimen; menunjukkan kesamaan, perbedaan, konsisten, dan inkonsistensi. (2) Mengembangkan aktivitas kreatif yang melibatkan imajinasi, intuisi, dan penemuan dengan mengembangkan pemikiran divergen, orisinil, rasa ingin tahu, membuat prediksi dan dugaan, serta mencoba-coba. (3)*

> *Mengembangkan kemampuan memecahkan masalah. Mengembangkan kemampuan menyampaikan informasi atau mengkomunikasikan gagasan antara lain melalui pembicaraan lisan, grafik, peta, diagram, dalam menjelaskan gagasan.*

It can be infered from the explanation above, one of the aspects emphasized in the learning is to improve students problem solving ability. Problem solving is part of a very important mathematical curriculum because in the learning process and in its completion, students are allowed to solve the problems by critical thinking and develop their skills with new knowledge. It is also realated to Hamdani (2017:84)

> *Metode pemecahan masalah adalah suatu cara menyajikan pelajaran dengan cara mendorong siswa untuk mencari dan memecahkan masalah atau persoalan dalam rangka pencapaian tujuan pengajaran.*
> *Problem solving merupakan metode dalam kegiatan pembelajaran dengan jalan melatih siswa menghadapi berbagai masalah, baik masalah pribadi maupun masalah kelompok untuk dipecahkan sendiri atau bersama sama.*

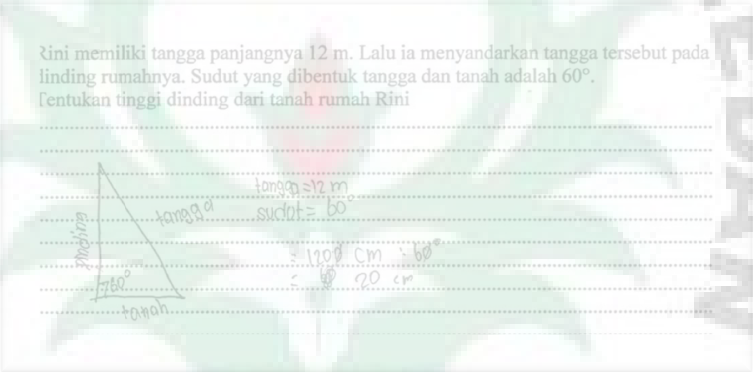
For those reasons, the ability to solve the problem needs to focused. Problem Solving can develop students to think critically and develop their ability to adapt the new knowledge. Problem solving as an approach used to discover and understand mathematical material or concepts. Thus, problem solving ability is an important activity to be implemented in teaching and learning activities at schools.

Students' skills to solve problems must be possessed by students so that these skills can help the learning activities of mathematics. However, in fact many students find difficultly to solve mathematic problems. Students have difficulty in problem solving ability, especially on story problem. This difficulty is seen when students translatate the mathematical sentence on the problem. This is because the student can able to memorize the formula when working on the problem but can not apply their knowledge in problem solving, so it can make students complicated when students meet mathematical problems solving ability problems.

This is same statement with Mrs. Tety Roberta Gultom, S. Pd as mathematics teacher:

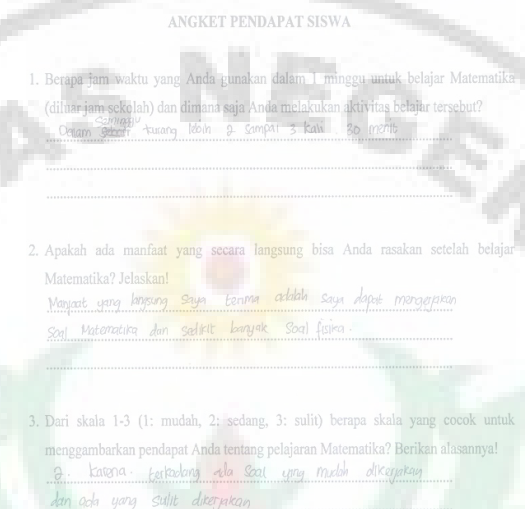
> *Apabila siswa diberikan soal yang berhubungan dengan masalah sehari –hari siswa kurang mampu memecahkan masalah matematika. Siswa lebih bisa menyelesaikan soal ketika mereka menyelesaikan soal yang bentuknya sama dengan contoh yang sudah dijeleskan .*

Based on first observations at SMA Negeri 2 Kisaran in grade X, students have problems related to mathematics learning there are:



Based on the results of the test, on 32 students obtained the data, 34.37% (11 students) were able to solve the problem and 65.62% (21 people) were unable to complete the indicators and were unable to solve the problem. From the data can be seen that the problem solving of mathematic is still low.

From the picture above, it is clear tha the problem solving ability of students's is low. Students can not explain problem solving steps properly such as understanding the problems, plan the problem, do the problem and looking back. To find out the cause of this problem, the researcher gave another questionnaire like the picture below.



ANGKET PENDAPAT SISWA

1. Berapa jam waktu yang Anda gunakan dalam 1 minggu untuk belajar Matematika (diluar jam sekolah) dan dimana saja Anda melakukan aktivitas belajar tersebut?
   Dalam seminggu kurang lebih 2 sampai 3 kali 20 menit

2. Apakah ada manfaat yang secara langsung bisa Anda rasakan setelah belajar Matematika? Jelaskan!
   Manfaat yang langsung saya terima adalah saya dapat mengerjakan soal Matematika dan sedikit banyak soal fisika

3. Dari skala 1-3 (1: mudah, 2: sedang, 3: sulit) berapa skala yang cocok untuk menggambarkan pendapat Anda tentang pelajaran Matematika? Berikan alasannya!
   2. karena terkadang ada soal yang mudah dikerjakan dan ada yang sulit dikerjakan

In fact students know how important mathematics is and they need to learn math. But that does not motivate them enough to learn mathematic. Based on the observations, 56.25% of students said that math is difficult, 43.75% said it is not difficult if they study seriously and no one students said mathematics is easy. Can be seen 25% of students do not like mathematics, 46,87% of students admitted difficult in understanding mathematics and giveup when their can not solve the problem, 28,12% said mathematics is difficult depending on the material taught

Based on the results of observations and questionnaires, it can be concluded that the problem solving ability of students in SMA Negeri 2 Kisaran is still low because students consider mathematics is important and difficult for them.

There are many factors that cause the ability of students less in mathematical understanding, but teachers and the environment also have an effect. Based on observations, the author observes the process of learning mathematics in the classroom is still centered on the teacher. So students do not play an active role in the learning process. The teacher applies the lecture method (direct) during the learning process in the classroom. The applied

method is not varied and innovative, just applying the lecture method in the learning process when learning process.

From these conditions, it is necessary a model can facilitate the needs of students when learning so as to train students problem solving ability. At this time, there are several models of learning mathematic one of them is cooperative learning. Researchers assume by applying cooperative learning model can improve student problem solving ability. This is because cooperative learning model is a model that involves students to work in groups where the group consists of members who have different backgrounds but have the same goal to solve mathematic problems.

This is consistent with expert opinion, Sohimin, (2016 : 45) about Cooperative Learning:

> *Cooperative Learning adalah kegiatan pebelajaran dengan cara berkelompok untuk bekerja sama saling membantu mengontruksi konsep dan menyelesaikan persoalan. Menurut teori dan pengalaman agar kelompok kohesif (kompak – partisipatif) tiap anggota kelompok terdiri dari 4 – 5 orang, heterogen (kemampuan, gender, karakter) ada kontrol dan fasilitasi dan meminta tanggung jawab hasil kelompok berupa laporan atau persentasi.*

Cooperative Learning is a students learning activity in small groups that have different levels of ability. In their group, students must finished their assignments with mutually cooperates and helps make all members of group understand with the problems. Learning can not be stopperd if the members of group doesnot understand about mathematical problem. In Cooperative Learning students are involved in learning, where students are trained to be able and willing to work together in groups to achieve common goals. Part of cooperative learning models is Think Talk Write type and Think Pair Share type. This learning model is attempted to increase students' attractiveness in mathematical problem solving.

Cooperative learning model Think Talk Write type was introduced by Huinker & Laughin in 1966. This learning model is basically one of the alternatives that can develop the students' mathematical problem solving

abilities. In this learning strategy is divided into three steps the first steps is thinking, both is and the last is write.

Flow of Think Talk Write involvement of students in thinking that the student should be able to think of a way to solve a mathematical problem. Next talks where students are expected to communicate the results of their thoughts in discussions with other friends then the students share ideas with their friends before writing. In this group the students are expected to be able to read, take notes, explain, listen, and share ideas with friends and then express them through writing. Members in the group are heterogeneously selected to enable students to exchange ideas, solve problems and encourage students to work together. When student has more friends to exchange the idea in solve mathematical problem, it can make less mistakes.

Cooperative learning model Think Pair Share type first developed by Frank Lyman at University of Maryland. As the name suggests, this learning begins with Think, then Pair and last Share. In Think the teacher gives the students the opportunity to think about what answers to the problem solving, then Pair at this stage students are asked to pair, when pairs students are expected to pair up for discussion. And lastly is Share at this stage student expected to share result of discussion with all partner in class. Through cooperative learning type Think Pair Share students are expected to actively develop their ability to share ideas with their friends. So this method indirectly, teaches students to get the more comprehension.

Based on the description above, it can be seen, that the learning model Think Talk Write type and Think Pair Share type are two models of learning that are considered to generate students interest in mathematics, encouraging students to work together, making students more active and can improve math problems solving.

So in this study, researchers want to know which has better affect mathematical problem solving abillity by using cooperative learning Think Talk Write type and Think Pair Share type . Based on the explanation above, researchers interested in conducting research entitled: **"THE**

COMPARISON OF STUDENT MATHEMATICAL PROBLEM SOLVING ABILITY BY USING COOPERATIVE LEARNING MODEL OF THINK TALK WRITE TYPE AND THINK PAIR SHARE TYPE IN SMA NEGERI 2 KISARAN"

1.2 Problem Identification

Based on the description on the background issues raised above are obtained some identification of problems, it can be identified as follows:

1. Students ability to solve mathematical problems is low
2. Use of learning models that are not varied and innovative
3. Teaching learning is still teacher centered
4. Students still consider mathematics as difficult lesson

1.3 Problem Limitation

Based on the identification of the problem mentioned above the researcher limits the problems, so that the results of this study can be more focused and clear. The problem in this study is limited to mathematical problem solving abillity by using cooperative learning model of Think Talk Write and Think Pair Share type.

1.4 Problem Formulation

Based on the problem limitation above, then the problem formulation in this research: whether students problem solving ability which taught by cooperative learning model of Think Talk Write type is greater than Think Pair Share type?

1.5 Research Objectives

Based on the problem formulation above the purpose of this study is "To compare student's mathematical problem solving ability

through Cooperative Learning model of Think Talk Write type and Think Pair Share type"

1.6 Research Benefits

The expected research benefits are:

1. For researchers, as information when teaching mathematics lesson.
2. For teachers, to be an alternatives sources for teachers in selecting the appropriate instructional model in classroom to enhancing the mathematical problem solving ability.
3. For students, student can enchance mathematical problem solving abilitiy.
4. For other researchers, the results of this study will add information and input for further research.

1.7 Operational Definition

In order to avoid the differences of clarity meaning about important term contain in this research, the operational definitions will be noted as:

1. Problem solving ability is an action to solve a problem or process that uses the strengths and benefits of mathematics in problem solving, which is also a method of finding solutions through the troubleshooting steps.
2. Cooperative learning is a series of learning activities together in a small group of people who help each other. Classes are organized based on groups consisting of several people where members of each group possess a heterogeneous ability. It can be useful for students to train students to accept different ways of working with friends of different backgrounds.
3. Think Talk Write type cooperative learning model is a measurable learning model and encourages students to thinking, speaking and

writing a particular topic. Think Talk Write is used to develop writing fluently and practice language before it is written. This model is formed based on the group specified by the teacher. In this study Think Talk Write is used in Experiment I.

4. Model of cooperative learning type Think Pair Share is an effective model to create a variety of class discussion atmosphere. The procedures used in Think Pair Share can give students more time to think, to respond, and to help each other. Think Pair Share is relatively simple because it does not take a long time to organize seating or grouping students. In this study Think Pair Share is used in Experiment II.

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