

STUDENTS' ABILITY WITH GUARDIAN PERSONALITY TYPE TO PRESENT MATHEMATICAL STATEMENTS IN GRAPHS AT CARTESIAN COORDINATE SYSTEM

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Abstract

Reasoning ability is needed by students to understand mathematical concepts. In fact, a lot of students tend to be passive in reasoning. The characteristic of such students will affect their success in learning. One of the important indicators to figure out students' mathematical reasoning ability is presenting mathematical statements in graphs, and one of students' characteristics that should be noted by teacher is their personality. According to Keirse, there are four types of personality. One of the four personality types is guardian. This research is a descriptive qualitative where the subjects are two students with guardian personality; a male and a female students. Both subjects are eighth grade students of junior high school 2 Ngemplak Boyolali who have received straight line equation concept. Students' ability to present mathematical statements in graphs is explored by interviews based on the outcome of a written test and then analyzed by descriptive qualitative method. The data analysis of the written test and interview conclude that guardian students were able to present mathematics concept in graphs; students were able to draw a straight line at cartesian coordinate system. But, students were only able to draw the line if the points of the coordinate are given in a complete manner. Students were not able to draw the line if they were given only one point and one gradient aid instrument. Students realized that to draw a straight line is needed two points but they were unable to find another point referred to. In conclusion, detailed instructions were needed by guardian students to present mathematical statements in the graphs at cartesian coordinate system.

Keywords: Straight Line Equation, Graph, Guardian Personality Type

Introduction

The math and mathematical reasoning is two things that cannot be separated. Maths are understood through reasoning, and reasoning is understood and trained through learn maths, so the ability of mathematical reasoning is very important and needed in studying math. The ability of reasoning mathematical is important, so in the process of learning mathematics, teachers should teach students to use their reasoning. But the fact is in learning mathematics, students only sat as they listened to the explanation of their teachers and noted back what is noted by teachers in front of the class, and then doing the exercise that the solve of it is similar to what teachers done. So, the knowledge of students is possessed by only what teachers taught. According to one of mathematics teachers in eighth grade of junior high school 2 Ngemplak Boyolali, students tend to memorize math's formula without

understanding and thinking how to obtain the formula so they are easy to forget material that has been taught by teachers. Many of them do not want to and do not like to use their reasoning to solve the problem of math. The personality or the characteristic of students that tends to passive in reasoning will affect their success of learning. One of the characteristic of students that is needed to noteworthy by teachers is their personality. The differences of personality are possible influenced on the ability of mathematical reasoning students. According to Keirsey (1998:20–21), there are four types of personality. One of the four personality types is guardian.

Based on the description above, researcher conducted research in junior high school 2 ngemplak boyolali. The aim of the research is to review the ability of reasoning students in particular to present mathematical statements in graphs. These ability is one of seven indicators which is discussed in training held by PPPG mathematics team (Romadhina, 2007: 29). Finally, this research is expected to contribute knowledge in education especially math education, due to students' ability with guardian personality type to present mathematical statements in graph.

Finding and Discussion

The data sources of this research are two eight grade students of junior high schools 2 ngemplak Boyolali in uneven lessons of years 2016/2017, they are a male and a female students. Both of them have received straight line equation concept and have guardian personality type. The guardian is one of personality type that be presented by Keirsey. The classification of the personality is designed by Keirsey to help people understand themselves. The subdivisions of personality are started from understanding that everyone can be observed and introspected. Keirsey name it as sensing and intuitive.

When a man uses his senses such touch an object, see football game, eat foods, and others, it is said that he uses “observe”. When a man reflects himself and shows attention to what happens in his mind, it is said that he uses “instropective”. Keirsey believes that a man cannot be an observant and introvert in the same time, and the propensity one of them has an effect to his behaviour directly. Someone who is more observe will be grounded and more concrete to see the world, and aims to see more on events practical and relationships immediately. An observant will consider that all important things are born from his experiences. That experiences will be ascertained as something right (judging) or be left to stay open as it is (perceiving). In another word, someones will use more function in arrangement his life, either through judging or perceiving. Keirsey calls a man who concretes as guardian when he uses his sensing and judging. He also reveals that the propensity of learning for guardian student is they prefer to traditional class with a routine procedure. Students with this type like teacher who explains the materials and takes command real and precisely. The guardians have strong memory, like to reverb and drill receive matter, and structured explanation but they prefer to toward words than to draw picture. The material have to be connected with material past and usefulness in the future.

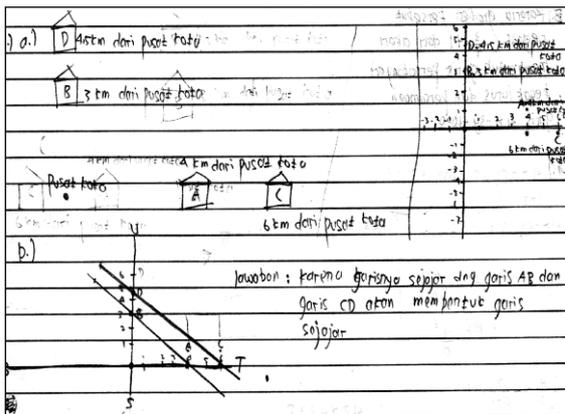
Next, to describe students' ability with guardian personality type to present mathematical statements in graph, both of subjects are asked to do a written test first. The test consists of 2 description questions. Both of description questions are prepared in accordance with an indicator of the ability to present mathematical statements in graph. Students' ability is explored through interview that chime in test results so from the results of the answer of written tes and interview are

obtained a data of the ability to present mathematical statements in graph. The following is given the results of the analysis written test and interview to both of subjects.

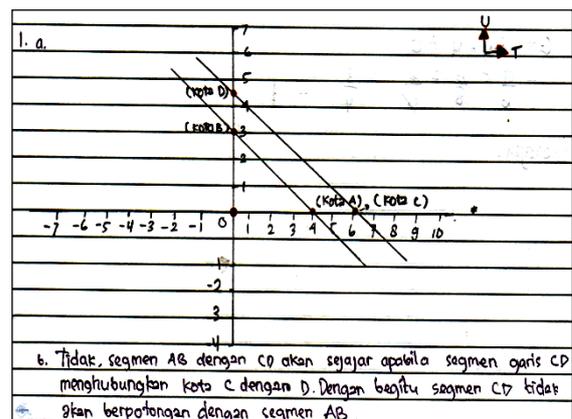
- Question number one: Known, the position of cities in a region that based on the direction of the wind is:
 - City A is located on east with distance of 4 kilometers from the center of city.
 - City B is located on north with distance of 3 kilometers from the center of city.
 - City C is located on east with distance of 6 kilometers from the center of city.
 - City D is located on north with distance of 4,5 kilometers from the center of city.
- a. Sketch the illustration above! Hint: Let the center of city as a point O (0,0).
- b. For example, the line segment AB is the road that connects city A to city B and the line segment CD is the road that connects city C to city D. Is the line segment AB parallel with the line segment CD? Explain your answer!

answer :

The pictures below are the answers of male and female students.



male student answer



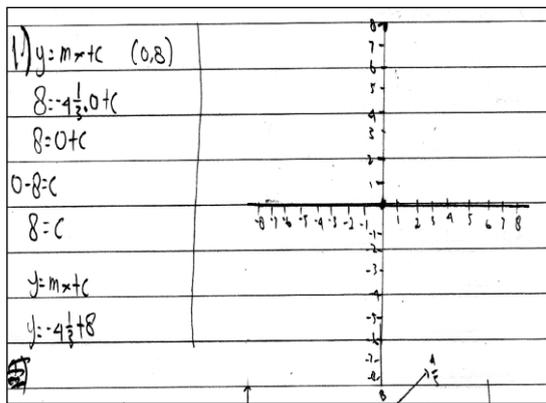
female student answer

From the answer of question number one and by interviews of the subjects, the researcher concludes that both of subjects are able to determine the position coordinate of the four cities. They do not have difficulty about it. Both of subjects also capable to draw the line segment AB and line segment CD and claim that the two lines are parallel visually. They cannot show it with mathematical sentences systematically.

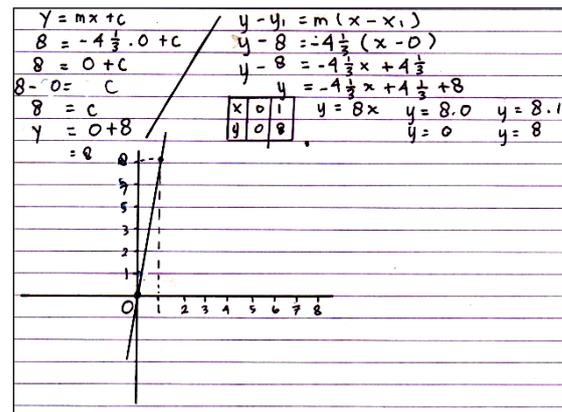
- Question number two: Known, line k has a gradient $-4\frac{1}{3}$ and through the point (0, 8). Find the equation of line k and then draw the line on the cartesian coordinate system!

answer:

The pictures below are the answers of male and female students



male student answer



female student answer

From the answer of question number 2 and by interviews of the subjects, the researcher concludes that the male student is able to find the line equation correctly but the female student seems to give a confusing answer. The result of both answers is that they have difficulties in drawing the graph if the points are not given completely. They are not able to draw the line if they are only given one point and one gradient aid instrument.

Conclusions

From the analysis of the data written tests and interviews, the research concludes that students' ability with guardian personality can present mathematical statements in graph. They are able to draw a straight line on a cartesian coordinate system. However, they are only able to draw the line if the points are given completely. They are not able to draw the line if they are only given one point and one gradient aid instrument. They know that to draw a straight line takes two points, but students can not find another point of the question. Thus, detailed instructions are needed by guardian students to present mathematical statements in graph at cartesian coordinate system.

References

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