Class: Day/ Date:

Group:

Members:
1.
2.
3.
4.

Basic of Competency:

3. 2 Solving the mathematics model from the problems that related to linear equations and linear inequalities in one variable.

Indicators:
- Solving the PISA’s problem that related to algebraic expressions by substituting number in it.
- Solving the PISA’s problem that related to linear equation in one variable by finding the solution of the equations.

Time Allocation: 2 x 40 minutes
Directions:
1. With your friends in group, solve the problems by using four steps. Those are:
   1. Understanding the problem
   2. Making a plan to solve
   3. Solving the problem
   4. Checking your solution/ Communicating your solution.
2. Ask to the teacher if you have any questions about the text.
3. You should solve the problems on the time which be given by the teacher and present it in front of the class.

Problem 1-Lichen

A result of global warming is that the ice of some glaciers is melting. Twelve years after the ice disappears, tiny plants, called lichen, start to grow on the rocks.

Each Lichen grows approximately in the shape of a circle. The relationship between the diameter of this circle and the age of the lichen can be approximated with the formula:

\[ d = 7.0 \times \sqrt{t - 12} \text{ for } t \geq 12 \]

Where \( d \) represents the diameter of the lichen in millimeters, and \( t \) represents the number of years after the ice has disappeared.

Figure 1. Lichenes

QUESTION:

Ann measured the diameter of some lichen and found it was 35 millimeters. How many years ago did the ice disappear at this spot? Show your calculation?
Answer:

Write the identified and asked information!

Let's Solve the problem!!!
Let's check your solution!
**Problem 2 - Heartbeat**

For health reasons people should limit their efforts, for instance during sports, in order not to exceed a certain heartbeat frequency.

For years the relationship between a person’s recommended maximum heart rate and the person’s age was described by the following formula:

\[
\text{Recommended max imum heart rate} = 220 - \text{age}
\]

Recent research showed that this formula should be modified slightly. The new formula is as follows:

\[
\text{Recommended max imum heart rate} = 208 - (0.7 \times \text{age})
\]

**Question:**

A newspaper article stated: “A result of using the new formula instead of the old one is that the recommended maximum number of heartbeats per minutes for young people decreases slightly and for old people it increases slightly.”

From with age onwards does the recommended maximum heart rate increase as a result of the introduction of the new formula? Show your work.