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NAME :_____

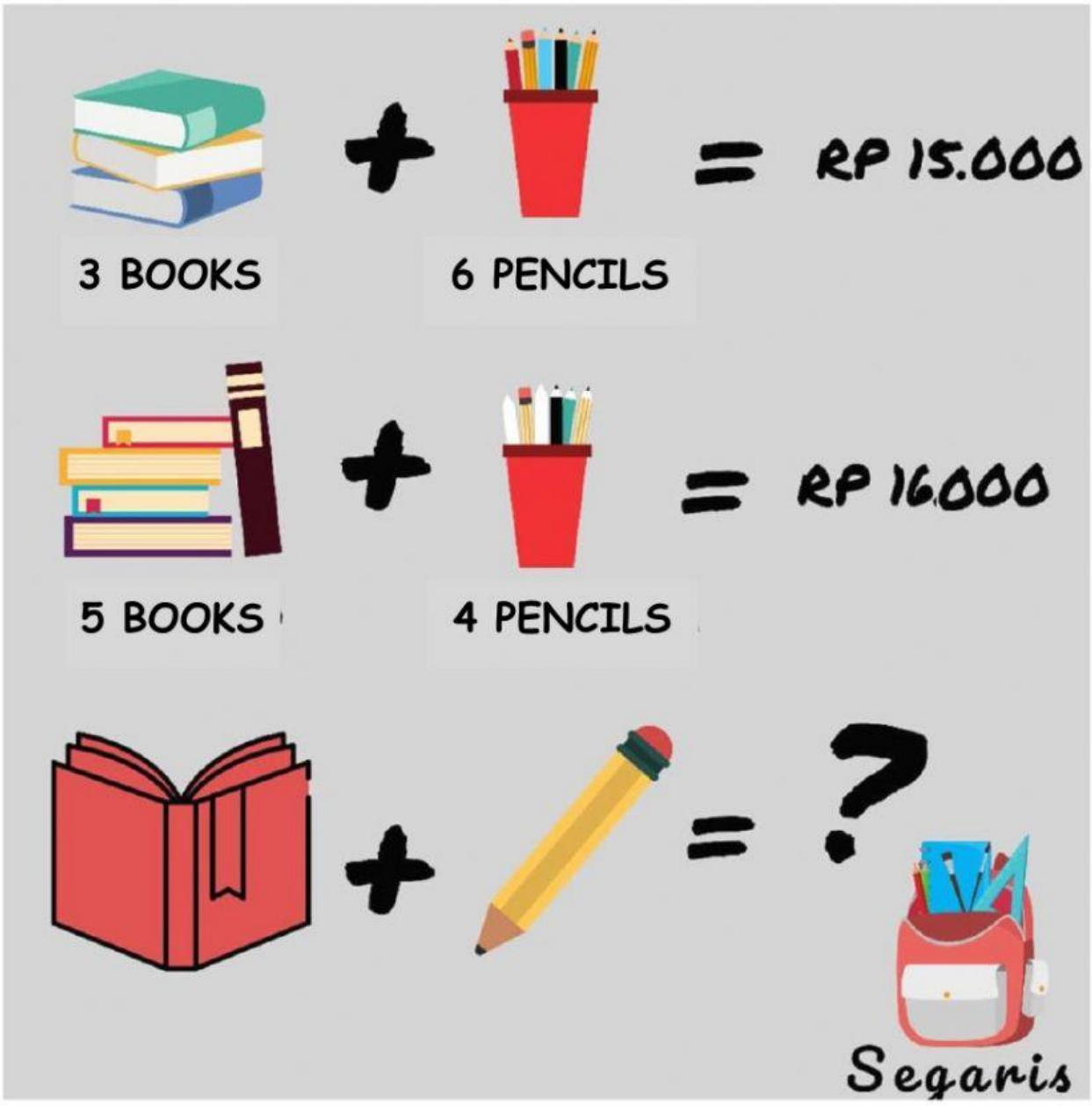
CLASS :_____

NO. :_____

MATHEMATICS

SIMULTANEOUS LINEAR EQUATION

PROBLEM



In the New School Year all students are enthusiastic about buying school supplies. At the "SEGARIS" shop, many students came, including Arshita who bought 3 books and 6 pencils at a price of Rp. 15,000, - while Erna bought 5 books and 4 pencils at a price of Rp. 16,000,-. Now then there is a student named KALA who is eating Snack in front of the shop while trying to think that his savings is enough to buy how many books and pencils. KALA calculates the price of 1 book and 1 pencil that must be paid at the line shop.

SOLUTION

"The problem of selling books and pencils above is one of the daily problems that can be modeled in Simultaneous Linear Equation"

Steps for solve the Simultaneous Linear Equations problem:

1. Replace each values in the problem with a variable (usually denoted by letters or symbols).
2. Make a mathematical model of the problem. This Mathematical Model formulated following the general form of Simultaneous Linear Equations.

$$\begin{cases} a_1x + b_1y = c_1 \\ a_2x + b_2y = c_2 \end{cases}$$

3. Finding solutions to the problem model using the method Simultaneous Linear Equation solution. There are 3 methods to solve the Simultaneous Linear Equation solution problem.
   - **Graph**
   - **Elimination**
   - **Substitution**

<u>Fill in the blanks below to understand the steps for formulating a mathematical model!</u>

1. Identification of unknown values. There are two unknown values in this problem, namely the price of books and ...
2. Express the unknown values in the form of a variable.

   x= .....

   y=.....

3. State the problem in a mathematical model

 The price of ..... books and 6 pencils is Rp ..... , then it is obtained equality:

... x + 6y = ... (1)

 Prices of ..... books and ..... pencil is IDR 16,000.00, then we get equality :

... x + ... y = 16.000 (2)

So we have,

... x + 6y = ... (1)

... x + ... y = 16.000 (2)

After we get the mathematical model, we can solve the problem by using the solution methods from the simultaneous linear equation:

1. Graph Method

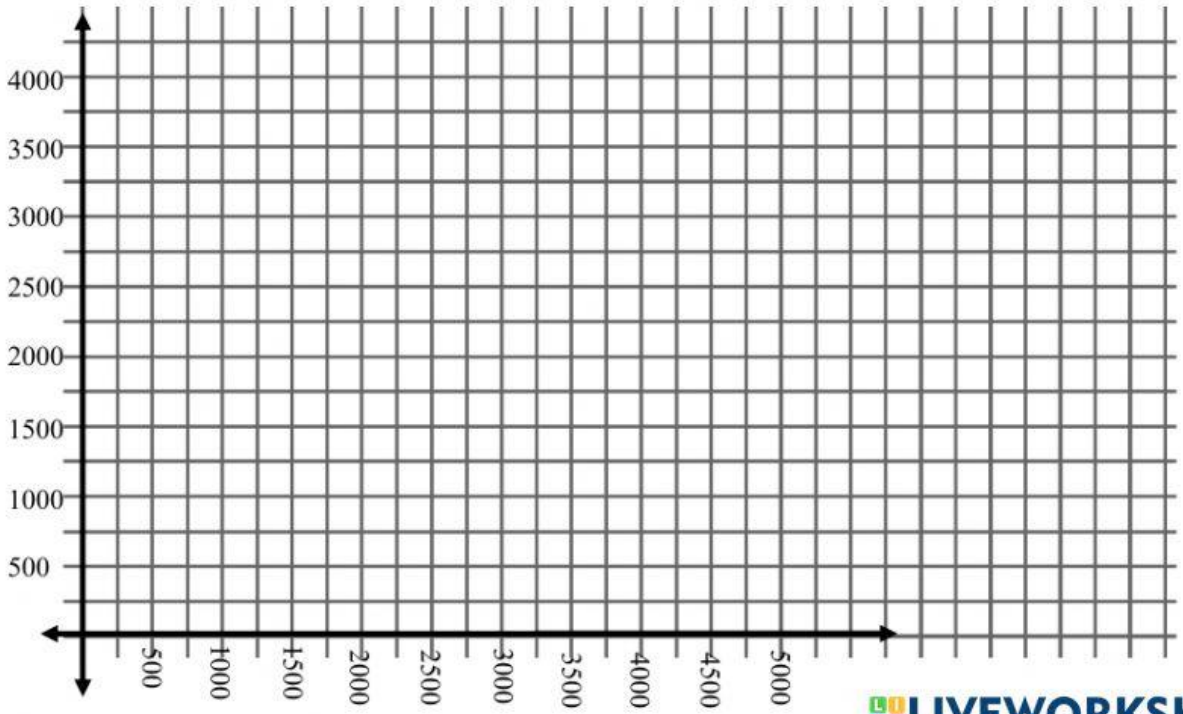
(Draw a line from each equations in a Cartesian plane and determine the coordinates of the intersection of the two lines. The coordinates of the intersection point as a solution to the problem)

... x + 6y = ... (1)

x	0	
y		

... x + ... y = 16.000 (2)

x	0	
y		



Based on the graph above, it is known that the two lines intersect at the point (..... , ...) so that the value of x = ... and y = ...

So, the price of 1 book = ...

the price of 1 pencil = ...

2. Elimination Method

(Elimination method is a way of solving by eliminating one of the variables. to eliminate variables the coefficients of these variables must be the same value)

{ ... x + 6y = ... (1)

... x + ... y = 16.000 (2)

- Eliminate variable x

... x + 6y = ...	.5	... x + 30y = ...
... x + ... y = 16.000	. ...	... x + ... y = ...

—

..... y = ...

y = ...

- Eliminate variable y

... x + 6y = ...	. 2	... x + 12y = ...
... x + ... y = 16.000	. ...	... x + ... y = ...

—

..... x = ...

x = ...

The solution is { ..... , ... }

So, the price of 1 book = ...

the price of 1 pencil = ...

3. Subtitution Method

(the substitution method is a solution method by entering the value of one of the variables from equation 1 to the variable in equation 2)

Finding Solution for

$$\begin{cases} \ldots x + 6y = \ldots\ldots & (1) \\ \ldots x + \ldots y = 16.000 & (2) \end{cases}$$

- Find Value of x from equation (1)

$\ldots x + 6y = \ldots\ldots$

$\ldots x = \ldots\ldots - 6y$

$x = \frac{\ldots\ldots - 6y}{\ldots\ldots}$ equation (3)

- Subtitution value of x from equation (3) to equation 2

$\ldots x + \ldots y = 16.000$

$\ldots \left(\frac{\ldots\ldots - 6y}{\ldots\ldots} \right) + \ldots y = 16.000$

$\ldots y = \ldots\ldots\ldots$

$y = \ldots\ldots$

- Subtitution Value of y to equation (3)

$y = \ldots\ldots \rightarrow x = \frac{\ldots\ldots - 6y}{\ldots\ldots}$ equation (3)

$x = \ldots\ldots$

The solution is { ..... , ... } **So, the price of 1 book = ...**

the price of 1 pencil = ...