Notes

Topic 07: System of Equation Real World Problems

The key to using this in real world problems is to understand
the relationship between the two variables, "y" and "x".
(Notes from Topic 05 are included below.)

Sample Problem:

Mattie is excited about going to a balloon factory tour. Factory A charges $4 per balloon, and has an entrance fee of $10. Factory B charges $2 per balloon, and has an entrance fee of $18. How many balloons would Mattie have to purchase for the total cost at both balloon factories to be the same?

Show your work!

From the facts given, you can make equations for
both Factory A and Factory B where:
"y" represents the total cost, and
"x" represents the number of balloons.

Factory A → $y = 4x + 10$

Factory B → $y = 2x + 18$

Now, set them equal to each other (because we are looking for the "same" cost).

$$4x + 10 = 2x + 18$$

Now solve!

$$4x + 10 - 2x = 2x + 18 - 2x$$

$$2x + 10 - 10 = 18 - 10$$

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

The answer is, if Mattie buys 4 balloons, her cost at either Factory A or Factory B will be the same.

Notes

Topic 05: Single Equation Real World Problems

We all know that the most famous equation in 8th grade is:

$$y = mx + b$$

The key to using this in real world problems is to understand the relationship between the two variables, "y" and "x".

Sample Problem:

Mattie is excited about going to a cupcake factory tour. There is an entrance fee of $15, and each cupcake eaten on the tour costs $2. Which equation models the relationship between total cost, y, and the number of cupcakes, x, Mattie eats during the tour?

(A) $y = \frac{x}{15} + 2$

(B) $y = 15x + 2$

(C) $y = \frac{x}{2} + 15$

(D) $y = 2x + 15$

One great way to get the answer is to set up a chart, and use that to find the equation.

X Number of Cupcakes Eaten	Y Total Cost of Visit
0	15
1	17
2	19
3	21
4	23
5	25

For example, if Mattie eats 2 cupcakes, she has to spend $4 on cupcakes (2 times $2 each), and $15 on the entrance fee, for a total cost of $19.

From this chart, you can see that Option (D) is the only choice that fits!