

Congrats on finishing your MAPs test!

Solve the following equations for x.

1) $ax-2x=bc$ 2) $5x+11=2x+4$ 3) $3x+cx+d=-2x+bx-5$

Estimate to the nearest integer

4) $\sqrt{159}$

Classify the number below according to the real number system

5) -12



$$\textcircled{1} \quad ax - 2x = bc$$

$$x(a-2) = bc$$

$$\boxed{x = \frac{bc}{a-2}}$$

$$\textcircled{2} \quad 5x + 11 = 2x + 4$$

$$\begin{array}{r} -2x \quad -2x \\ \hline 3x + 11 = 4 \end{array}$$

$$\begin{array}{r} -11 \quad -11 \\ \hline 3x = -7 \end{array}$$

$$3x = -7$$

$$\boxed{x = -\frac{7}{3} = -2\frac{1}{3}}$$

$$\textcircled{3} \quad 3x + cx + d = -2x + bx - 5$$

$$\begin{array}{r} +2x \quad -2x \\ \hline 5x + cx + d = bx - 5 \end{array}$$

$$\begin{array}{r} -bx \quad -bx \\ \hline 5x + cx - bx + d = -5 \end{array}$$

$$\begin{array}{r} -d \quad -d \\ \hline 5x + cx - bx = -5 - d \end{array}$$

$$5x + cx - bx = -5 - d$$

$$\begin{array}{r} 5+c-b \quad 5+c-b \\ \hline x(5+c-b) = -5-d \end{array}$$

$$x(5+c-b) = -5-d$$

$$\begin{array}{r} 5+c-b \quad 5+c-b \\ \hline x = \frac{-5-d}{5+c-b} \end{array}$$

$$\boxed{x = \frac{-5-d}{5+c-b}}$$

$$\textcircled{4}$$

$$\begin{array}{r} 15 \sqrt{159} \\ \hline \end{array}$$

$$\sqrt{144}$$

$$12$$

$$\begin{array}{r} 10 \sqrt{169} \\ \hline \end{array}$$

$$\sqrt{169}$$

$$\textcircled{13}$$

$$\textcircled{5}$$

real }
rational } -12
integer }

Equation Word Problems

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Equation Word Problems

Word problems that give you the total or the amount needed and give you a unit rate and ask you how many items, or how much time is needed to accomplish the total/amount needed.

Ex. Jeannette is selling boxes of cookies and has a goal

profit of \$300. If she is selling the boxes of cookies at \$5 a box, how many boxes must she sell to reach her goal?



let b represent the # of boxes of cookies


$$5b = 300$$

$$\frac{5}{5} = \frac{5}{5}$$

$$b = 60$$

60 boxes of cookies

Steps to Solving an Equation Word Problem

1. Read the question carefully and make sure to understand what they are asking.
 2. Define the variable.
 3. Write out the equation.
 4. Simplify the equation if needed.
 5. Solve for the variable.
 6. Plug in and check.
 7. Don't forget your units.
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Equation Word Problem Example 1

Scott wants to buy a new video game for \$60. He decides to get the money he will offer to cut neighbors' grass for \$12 a yard. How many yards will he need to cut in order to have enough money to buy the video game?

Define the variable:

Write the equation:

Solve:



let y represent the # of yards

$$12y = 60$$

$$y = 5$$

5 yards

Equations Word Problem Example 2

Chad goes to the candy store and wants to get a bar of chocolate and some saltwater taffy. The bar of chocolate is \$2.20 and the saltwater taffy is 3 for a dollar. How much saltwater taffy can Chad get with 10 dollars?

Define the variable:

Write the equation:

Solve:



let t represent the amount of salt water taffy

$$2.20 + \frac{1}{3}t = 10$$

$$\begin{array}{r} -2.20 \\ \hline \end{array} \qquad \begin{array}{r} -2.20 \\ \hline \end{array}$$

$$\frac{1}{3}t = 7.8$$

$$\begin{array}{r} \times 3 \\ \hline \end{array} \qquad \begin{array}{r} \times 3 \\ \hline \end{array}$$

$$t = 23.4$$

23 whole pieces of taffy

Equation Word Problem Example 3

The sum of three consecutive integers is 24. Find the three integers.

Define the variable:

Write the equation:

Solve:



let x represent the first variable

$$x + (x+1) + (x+2) = 24$$

$$3x + 3 = 24$$

$$\begin{array}{r} -3 \quad -3 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{21}{3}$$

$$x = 7$$

$$x = 7$$

7, 8, 9

Think about it →
the next consecutive
number after x ,
whatever x is, will be
one more than x . The
next number will be two
more than x .

Equation Word Problem Example 4

The sum of three consecutive odd integers is 45. Find the three integers.

Define the variable:

Write the equation:

Solve:



let X represent the first odd integer

$$X + (X+2) + (X+4) = 45$$

$$3X + 6 = 45$$

$$\begin{array}{r} -6 \quad -6 \\ \hline \end{array}$$

$$3X = 39$$

$$X = 13$$


13, 15, 17

Think about it →
the next odd number
after x , whatever x is,
will be two more than x .
The next number will be
four more than x .

Literal Equations Word Problems

There are also word problems that require you to solve literal equations with several variables.

Ex. 1: The formula that describes an object's motion is given by $S=ut+\frac{1}{2}at^2$, where S is the distance traveled, u is the initial velocity, a is the acceleration, and t is the time. Which equation represents a in terms of the other variables?



$$S = ut + \frac{1}{2} at^2$$

$$- ut - ut$$


$$\frac{S - ut}{\times 2} = \frac{\frac{1}{2} at^2}{\times 2}$$

$$\frac{2S - 2ut}{t^2} = \frac{at^2}{t^2}$$

$$\frac{2S - 2ut}{t^2} = a$$

Literal Equation Word Problem Example 2

Cindy has 500 feet of fencing around a rectangular pen that has a width of a feet and length of b feet. This is represented by the equation $2(a+b)=500$. Cindy plans to change the width of the pen and wants to solve for b to see how the new length will be affected. Write a new equation for b in terms of a .



$$2(a+b) = 500$$

$$\frac{2}{2} \quad \frac{2}{2}$$

$$a+b = 250$$

$$\frac{-a \quad -a}{-a \quad -a}$$

$$b = 250 - a$$

Homework

Pg.99-100 # 55, 56, 59-65, & 69

Test Monday

