

Solve this Equation
Algebraically

$$-6(4x - 7) + 2x = -(x + 8) - 9x$$

$$-24x + 42 + 2x = -(-8x + 8)$$

$$-22x + 42 = 8x - 8$$

$$-8x \quad -8x$$

$$-30x + 42 = -8$$

$$-42 \quad -42$$

$$-30x = -50$$

$$-30 \quad -30$$

$$x = \frac{5}{3}$$

$$x = \frac{5}{3}$$

Word Problems from Core Focus Textbook

Define your variable, write the equation that represents the situation and solve.

1. Mike is thinking of two numbers. Their difference is 12. If one of the numbers is 19, what is the other number? Is there only one answer? If not, what is the other possibility for the second number? Explain your reasoning.

$$\begin{array}{r} X - 19 = 12 \\ +19 \quad +19 \\ \hline \end{array}$$

$X =$ the other number

$$\begin{array}{r} 19 - X = 12 \\ -19 \quad -19 \\ \hline \end{array}$$

$$\boxed{X = 31}$$

$$\begin{array}{r} -X = -7 \\ \times -1 \\ \hline \end{array} \quad \boxed{X = 7}$$

2. Julie weighs $5\frac{1}{2}$ times as much as her baby brother, Jeremie. Julie weighs $60\frac{1}{2}$ pounds. How much does Jeremie weigh?

multiplication

$$\begin{array}{r} 5.5x = 60\frac{1}{2} \\ \hline 5.5 \quad 5.5 \end{array}$$

$X =$ Jeremie's weight

$$\boxed{X = 11 \text{ pounds}}$$

3. The Fahrenheit and Celsius scales are related by the equation $F = \frac{9}{5}C + 32$

- A. The lowest temperature in Alaska, -62 degrees Celsius was recorded on January 23rd, 1971 at Prospect Creek Camp. Use the formula to convert the record temperature to Fahrenheit.

$$F = \frac{9}{5}(-62) + 32$$

$$F = -79\frac{3}{5}^{\circ}F$$

$$F = \frac{-558}{5} + 32$$

$$F = -111\frac{3}{5} + 32$$

- B. In February, the average high temperature in Puerto Vallarta, Mexico is 81 degrees Fahrenheit. What is the temperature in degrees Celsius?

$$\begin{array}{r} 81 = \frac{9}{5}C + 32 \\ -32 \quad -32 \\ \hline \end{array}$$

$$\left(\frac{5}{9}\right) 49 = \frac{9}{5}C \left(\frac{5}{9}\right)$$

$$\frac{245}{9} = C$$

$$\boxed{C = 27\frac{2}{9}^{\circ}C}$$

$$\begin{array}{r} 9 \overline{) 245} \\ \underline{-18} \\ 65 \\ \underline{-63} \\ 2 \end{array}$$

4. Barry begins the year with \$25 in his piggy bank. At the end of each month, Barry adds \$3.

A. How much will Barry have after 5 months have passed? Use words and/or numbers to show how you determined your answer. NO EQUATION!

	25		
1	28	5	40
2	31		
3	34		
4	37		

B. Write a formula that could be used to calculate Barry's total savings (S) based on how many months (m) he has deposited money in his bank.

$S = 25 + 3m$
y-variable *x-variable*

C. Use your formula to determine how many months have passed when Barry reaches \$100 in his account.

equation

$$100 = 25 + 3m$$

$$\begin{array}{r} -25 \\ \hline 75 = 3m \end{array}$$

$$\frac{75}{3} = \frac{3m}{3}$$

$m = 25$
 months

5. Mariah's parents got into a car accident. They took their car to the shop to be repaired. When the car finished, they received a bill of \$637. The total cost for parts was \$280 and the cost of labor was \$42 per hour. Determine how many hours the mechanics spent working on the car. Don't forget to define your variable and write the equation that represents the situation.

multiplication

$$637 = 280 + 42h$$

An internet movie rental company has two different options for renting movies.

a. Copy the table below and fill in the total amount paid for movies rented under each plan.

Option A: Pay a one-time \$20 membership fee and then pay \$0.50 for each movie rental.

Option B: Do not become a member and pay \$3 for each movie rental

Movies Rented	Total Cost Option A	Total Cost Option B
0	20	0
1	20.50	3.00
2	21.00	6.00
3	21.50	9.00
4	22.00	12.00
5	22.50	15.00
6	23.00	18.00
7	23.50	21.00
8	24.00	24.00
9	24.50	27.00
10	25.00	30.00

b. Write an expression to represent the total cost for

Option A. Use x for the number of videos rented.

$$20 + .50x$$

c. Write an expression to represent the total cost Option B.

Use x for the number of videos rented.

$$3x$$

d. Set the two expressions equal to each other. Solve for x .

$$20 + .50x = 3x$$

$$- .50x \quad - .50x$$

$$\frac{20}{2.5} = \frac{2.5x}{2.5}$$

$$x = 8$$

e. Explain what the answer to part d means in real life. Does the table in part a support your answer?

when 8 movies are rented the cost for option A + B are exactly the same.

f. Sal thinks he will rent about 15 movies this year. Which plan would be a better deal for him? Explain your reasoning.

option B $y = \text{Total Cost}$ option

$$3x = y$$

$$3(15) = y$$

$$\$45 = y$$

$$20 + .5x = y$$

$$20 + .5(15) = y$$

$$20 + 7.50 = y$$

$$\$27.50 = y$$

$x = \#$ of movies rented