

1.) Find the value of x which satisfies the equation below:

a. $\frac{1}{2}(3x + 17) = \frac{1}{6}(8x - 10)$

$$\begin{aligned} \frac{3}{2}x + 8.5 &= \frac{8}{6}x - \frac{10}{6} \\ \frac{3}{2}x + 8.5 &= \frac{4}{3}x - \frac{5}{3} \end{aligned}$$

$$\begin{array}{r} \frac{3}{2}x + 8.5 \\ - \frac{3}{2}x \\ \hline 8.5 = -\frac{1}{6}x - \frac{10}{6} \\ +10 \qquad +10 \\ \hline 6 \qquad \qquad 16 \end{array}$$

$$\frac{6}{6}x = -\frac{1}{6}x$$

$$-1x = \frac{61}{-1}$$

$$x = -61$$

b. $-2(x - 3) = 17$

$$\begin{aligned} -2x + 6 &= 17 \\ -6 \quad -6 \\ \hline -2x &= 11 \\ x &= -\frac{11}{2} \end{aligned}$$

2.) Which approximate value of x satisfies the equation shown?

$$\frac{8}{7}\left(x - \frac{101}{220}\right) + 4\left(x + \frac{8}{9}\right) = 38$$

A) 4.29

B) 4.65

C) 6.6

D) 6.8

$$\frac{8}{7}x - \frac{808}{1540} + 4x + \frac{32}{9} = 38$$

$$\frac{36}{7}x + \frac{10502}{3465} = 38$$

$$\frac{36}{7}x = \frac{121168}{3465}$$

3.) The number k can be determined in the following way: Multiply m by 2, add $3n$ to the result, and subtract $(4m - 5n)$ from this sum. What is the value of k in terms of m and n ?

$$\begin{aligned} k &= 2m + 3n - (4m - 5n) \\ k &= 2m + 3n - 4m + 5n \\ k &= -2m + 8n \end{aligned}$$

1.) Solve.

Sect. 2-4 Cont.

$$5 - 2(W + 6) = 4 + W - 13 - 3W$$

$$\begin{aligned} 5 - 2W - 12 &= -9 - 2W \\ -7 - 2W &= -9 - 2W \\ -7 &\neq -9 \end{aligned}$$

2.) $9M + 23 = 6M$

$$\begin{aligned} &- 9m - 9m \\ \hline &23 = -3m \\ &m = \frac{23}{-3} \end{aligned}$$

- 1.) Two classes, 1st and 2nd hours, are trying to raise some money for charity. After one day 1st hour has \$5.30 and 2nd hour has \$3.65. First hour averages \$0.40 a day after the first day and 2nd hour averages \$0.55 a day.

Write and solve an equation to find the number of days it will take for the two classes to end up with the same amount of money.

1st hour = 2nd hour

$$\begin{aligned} 0.4d + 5.50 &= .55d + 3.65 \\ 5.50 &= .15d + 3.65 \\ 1.85 &= .15d \\ d &= 12.3 \text{ days} \end{aligned}$$

- 2.) **Recreation** You can buy used in-line skates from your friend for \$40, or you can rent some. Either way you must rent safety equipment. How many hours must you skate for the cost of renting and buying skates to be the same?

Relate

cost of friend's skates	plus	safety equipment rental	equals	skates plus equipment rental
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Define Let h = the number of hours you must skate.

SKATE RENTALS	
In-line skates and safety equipment	\$3.50/hour
Safety equipment	\$1.50/hour

$$\begin{aligned} \text{Buying} &= \text{rent} \\ 40 + 1.5h &= 3.50h \\ 40 &= 2h \\ h &= 20 \text{ hrs} \end{aligned}$$

1. Container A and container B have leaks. Container A has 800 ml of water, and is leaking 6 ml per minute. Container B has 1000 ml, and is leaking 10 ml per minute. How many minutes, m , will it take for the two containers to have the same amount of water?

$$A = B$$

$$800 - 6m = 1000 - 10m$$

$$800 = 1000 - 4m$$

$$-200 = -4m \quad m = 50 \text{ min}$$

2. Tim is choosing between two cell phone plans that offer the same amount of free minutes. Cingular's plan charges \$39.99 per month with additional minutes costing \$0.45. Verizon's plan costs \$44.99 with additional minutes at \$0.40. How many additional minutes, m , will it take for the two plans to cost the same?

$$CP = VP$$

$$39.99 + 0.45m = 44.99 + .40m$$

$$39.99 + .05m = 44.99$$

$$.05m = 5$$

$$m = 100 \text{ min}$$

3. The cost to purchase a song from iTunes is \$0.99 per song. To purchase a song from Napster, you must be a member. The Napster membership fee is \$10. In addition, each purchased song costs \$0.89. How many downloaded songs, x , must be purchased for the monthly price of Napster to be the same as iTunes?

$$0.99x = 10 + .89x$$

$$.1x = 10$$

$$x = 100 \text{ songs}$$

4. Container A has 200 L of water, and is being filled at a rate of 6 liters per minute. Container B has 500 L of water, and is being drained at 6 liters per minute. How many minutes, m , will it take for the two containers to have the same amount of water?

$$A = B$$

$$200 + 6m = 500 - 6m$$

$$200 + 12m = 500$$

$$12m = 300$$

$$m = 25$$