

X = med Fries

Y = Small Soda

$$\begin{array}{r} 340 \\ 3 \overline{) 1020} \\ \underline{9} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

340 cal/med Fries
140 cal/small soda

X = cost of Diapers

Y = cost of Formula

$$\begin{array}{r} 37 \\ \overline{) 87} \\ \underline{74} \\ 13 \end{array}$$

The sum of two numbers is 39. Their difference is 9. Find the numbers.

$$\begin{aligned} X + Y &= 39 \\ (+) X - Y &= 9 \\ \hline 2X &= 48 \\ X &= 24 \end{aligned}$$

$$\begin{aligned} 24 + Y &= 39 \\ -24 & \quad -24 \\ \hline Y &= 15 \end{aligned}$$

24 and 15

Joe stops at a burger restaurant everyday on his way to work. Monday he had one order of medium fries and two small sodas, which had a total of 620 calories. Tuesday he had two orders of medium fries and one small soda, for a total of 820 calories. How many calories are there in one order of medium fries? How many calories in one small soda?

$$\begin{aligned} X + 2Y &= 620 \\ -2(2X + Y &= 820) \quad (+) \quad -4X - 2Y = -1640 \\ \hline -3X &= -1020 \end{aligned}$$

$$\begin{aligned} 340 + 2Y &= 620 \\ -340 & \\ 2Y &= 280 \\ Y &= 140 \end{aligned}$$

$$\begin{aligned} X + 2Y &= 620 \\ X &= 340 \end{aligned}$$

Malik stops at the grocery store to buy a bag of diapers and 2 cans of formula. He spends a total of \$37. The next week he stops and buys 2 bags of diapers and 5 cans of formula for a total of \$87. How much does a bag of diapers cost? How much is one can of formula?

$$\begin{aligned} -2(X + 2Y &= 37) & \quad -2X - 4Y = -74 \\ 2X + 5Y &= 87 & \quad (+) \quad 2X + 5Y = 87 \\ \hline & & \quad Y = 13 \end{aligned}$$

$$X + 2(13) = 37$$

$$X + 26 = 37$$

$$X = 11$$

\$11 - Bag Diapers

\$13 - can formula

What you will learn about:
Solve Application with System of Equations

Translate to a system of equations: The sum of two numbers is negative fourteen. One number is four less than the other. Find the numbers.

$$\begin{aligned}x + y &= -14 & y &= x - 4 \\x + x - 4 &= -14 & y &= -5 - 4 \\2x &= -10 & &= -9 \\x &= -5 & &\end{aligned}$$

Translate to a system of equations: A married couple together earns \$110,000. The wife earns \$16,000 less than twice what her husband earns. What does the husband earn?

$$\begin{aligned}h + w &= 110,000 & w &= 2h - 16,000 \\h + 2h - 16,000 &= 110,000 \\3h - 16,000 &= 110,000 \\3h &= 126,000 \\h &= 42,000\end{aligned}$$

Translate to a system of equations: A senior employee makes \$5 less than twice what a new employee makes per hour. Together they make \$43 per hour. How much does each employee make per hour?

$$\begin{aligned}S + N &= 43 & S &= 2N - 5 \\2N + N - 5 &= 43 & S &= 2(16) - 5 \\3N - 5 &= 43 & &= 32 - 5 \\3N &= 48 & &= 27 \\N &= 16 & &\end{aligned}$$

Translate to a system of equations and then solve: Devon is 26 years older than his son Cooper. The sum of their ages is 50. Find their ages.

Translate to a system of equations and then solve: When Jenna spent 10 minutes on the elliptical trainer and then did circuit training for 20 minutes, her fitness app says she burned 278 calories. When she spent 20 minutes on the elliptical trainer and 30 minutes circuit training she burned 473 calories. How many calories does she burn for each minute on the elliptical trainer? How many calories does she burn for each minute of circuit training?

Translate to a system of equations and then solve: Mark went to the gym and did 40 minutes of Bikram hot yoga and 10 minutes of jumping jacks. He burned 510 calories. The next time he went to the gym, he did 30 minutes of Bikram hot yoga and 20 minutes of jumping jacks burning 470 calories. How many calories were burned of each minute of yoga? How many calories were burned for each minute of jumping jacks?

x = calories from yoga

y = calories from jumping jacks

11 cal/min yoga

7 cal/min JJ

$$4(11) + y = 51$$

$$44 + y = 51$$

$$y = 7$$

$$\begin{aligned} 40x + 10y &= 510 &= (4x + y = 51) \cdot 2 \\ 30x + 20y &= 470 &= 3x + 2y = 47 \end{aligned}$$

$$\begin{array}{r} (+) \quad -8x - 2y = -102 \\ \hline \end{array}$$

$$-5x = -55$$

$$x = 11$$

Complementary Angles

Supplementary Angles

Translate to a system of equations and then solve: The difference of two complementary angles is 26 degrees. Find the measure of the angles.

Translate to a system of equations and then solve: Two angles are supplementary. The measure of the larger angle is twelve degrees less than five times the measure of the smaller angle. Find the measure of both angles.

Translate to a system of equations and then solve: Randall has 125 feet of fencing to enclose the rectangular part of his backyard adjacent to his house. He will only need to fence three sides, because the fourth side will be the wall of the house. He wants the length of the fenced yard (parallel to the house wall) to be 5 feet more than four times as long as the width. Find the length and width.



$$P = 2w + l$$

$$125 = 2w + l$$

$$125 = 2w + 4w + 5$$

$$125 = 6w + 5$$

$$120 = 6w$$

$$l = 4w + 5$$

$$\text{width} = 20 \text{ ft}$$

$$\text{length} = 105 \text{ ft}$$