

Define a variable. Write an equation that models each situation. Use correct solving steps to find a solution, and be sure to include units in your answer.

1. Math-hero is looking at two different travel agencies to plan his vacation. ABC Travel offers a plane ticket for \$295 and a rental car for \$39 per day. M & M Travel offers a plane ticket for \$350 and a rental car for \$33 per day. What is the minimum number of days that Math-hero's vacation should be for M & M Travel to have the better deal?

$x = \#$ of days

$$\begin{array}{r} \text{ABC} \qquad \qquad \text{M \& M} \\ 39x + 295 = 33x + 350 \\ -33x \qquad \qquad -33x \\ \hline 6x + 295 = 350 \end{array}$$

$$\begin{aligned} 6x &= 55 \\ x &= \frac{55}{6} \\ x &\approx 9.17 \end{aligned}$$

10 days should be the minimum.

ABC
9 days = \$646
10 days = \$685
M & M
9 days = \$647
*10 days = \$680

2. General admission tickets to the fair cost \$3.50 per person. Ride passes cost an additional \$5.50 per person. Parking costs \$6 for the family. The total costs for ride passes and parking was \$51. How many people in the family attended the fair?

$x = \#$ of people

$$\begin{array}{r} 3.5x + 5.5x + 6 = 51 \\ 9x + 6 = 51 \\ -6 \qquad -6 \\ \hline 9x = 45 \\ \frac{9x}{9} = \frac{45}{9} \\ x = 5 \end{array}$$

Five people attended the fair.

3. The sum of three integers is 228. The second integer is 1 more than the first, and the third integer is 2 more than the first. Write an equation to determine the integers. Solve your equation. Show your work.

$x = 1^{\text{st}}$ integer
 $x+1 = 2^{\text{nd}}$ integer
 $x+2 = 3^{\text{rd}}$ integer

$$\begin{array}{r} \textcircled{1} \quad x + x + 1 + x + 2 = 228 \\ 3x + 3 = 228 \\ -3 \qquad -3 \\ \hline 3x = 225 \\ \frac{3x}{3} = \frac{225}{3} \\ x = 75 \end{array}$$

$\textcircled{2}$ The integers are 75, 76, 77

4. A square and a rectangle have the same perimeters. The length of a side of the square is $4x - 1$. The length of the rectangle is $2x + 1$ and the width is $x + 2$. Write and solve an equation to find x .

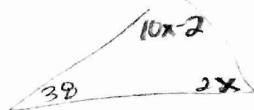
$x = \text{the value}$

$$\begin{array}{r} \textcircled{1} \quad 4(4x - 1) = 2(2x + 1) + 2(x + 2) \\ 16x - 4 = 4x + 2 + 2x + 4 \\ 16x - 4 = 6x + 6 \\ -6x \qquad -6x \\ \hline 10x - 4 = 6 \\ +4 \qquad +4 \\ \hline 10x = 10 \\ \frac{10x}{10} = \frac{10}{10} \\ x = 1 \end{array}$$

$\textcircled{2}$ The value of x is 1.

5. Connor has a triangular garden. The angles of the garden have the degrees of $10x - 2$, $2x$, and 38. Find the value of x and the value of each angle of the garden.

$x = \text{the value}$



$$\begin{array}{r} \textcircled{1} \quad 38 + 2x + 10x - 2 = 180 \\ 12x + 36 = 180 \\ -36 \qquad -36 \\ \hline 12x = 144 \\ \frac{12x}{12} = \frac{144}{12} \\ x = 12 \end{array}$$

$\textcircled{2}$ angles
38°
 $2(12) = 24^\circ$
 $10(12) - 2 = 118^\circ$

$\textcircled{1}$ The value of x is 12.