Class Practice on Word Problems (1)

In each word problem below, define an appropriate variable, create an equation, and solve that equation by showing your work. Also, give a summary statement at the end of each problem.

1. A number added to 4 gives 13. Find the number.

2. Trisha has three times as many tee shirts as Tasha. Together they have 24 tee shirts. How many does each person have?

3. The population of a small city is 12,000 and is growing by 650 each year. In how many years will the population be 23,700?

4. You rent a car for a day that costs $35 plus 24 cents a mile. If you have $100 to spend on the car, how far can you travel?
Answers

1. A number added to 4 gives 13. Find the number.

   Let \(x\) = the number

   \[
   x + 4 = 13
   \]

   \[
   \begin{array}{c|c}
   -4 & -4 \\
   \hline
   x & 9 \\
   \end{array}
   \]

   So, in summary, the number is 9. \(\leftarrow\) Answer

2. Trisha has three times as many tee shirts as Tasha. Together they have 24 tee shirts. How many does each person have?

   Let \(x\) = the number of shirts that Tasha has

   So, \(3x\) = the number of shirts that Trisha has

   \[
   x + 3x = 24
   \]

   \[
   4x = 24
   \]

   And if we divide both sides by 4 we get

   \[
   x = 6
   \]

   So, in summary, Tasha has 6 shirts and Trisha has three times as many which is 18. \(\leftarrow\) Answer
3. The population of a small city is 12,000 and is growing by 650 each year. In how many years will the population be 23,700?

Let \( n \) = number of years

Original Population + Growth = New Population

\[
12,000 + \text{Growth} = 23,700
\]

\[
12,000 + 650n = 23,700
\]

\[
\begin{align*}
-12,000 & \quad -12,000 \\
650n & = 11,700 \\
\frac{650n}{650} & = \frac{11,700}{650}
\end{align*}
\]

\[
n = 18 \text{ years.}
\]

In summary, it will take 18 years for the population to grow to 23,700. \( \Leftarrow \) Answer

4. You rent a car for a day that costs $35 plus 24 cents a mile. If you have $100 to spend on the car, how far can you travel?

Let \( d \) = distance that can be driven

Basic Cost + Cost of Mileage = Total Cost

\[
\begin{align*}
$35 + $0.24d & = $100 \\
\frac{-35}{-35} & \quad \frac{-35}{-35} \\
$0.24d & = $65
\end{align*}
\]

Dividing both sides by $0.24 gives

\[
d = 270.8333333 \text{ miles}
\]

So, in summary, this car can be rented for the prices mentioned above and driven for about 270 miles. \( \Leftarrow \) Answer