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1 Here's How

A formula is an equation that states a relationship between quantities. The quantities are often represented by variables. If you know some of the values in a formula, you can find an unknown value.

Distance = rate · time
$D = rt$

Look at these examples.

$D = rt$ — *Example 1*

$D = \mathbf{60} \cdot \mathbf{3}$ — At 60 miles an hour, how far will a car travel in 3 hours?

$D = 180$ — In this problem, r is 60 and t is 3. Multiply them to find D, a distance of 180 miles.

$D = rt$ — *Example 2*

$\mathbf{200} = r \cdot \mathbf{4}$ — What speed must a car travel in order to go 200 miles in 4 hours?

$\frac{200}{4} = \frac{4r}{4}$

$50 = r$ — In this problem, D is 200 and t is 4. Set up an equation and solve for r. Use the inverse operation. The rate, r, equals 50 miles per hour.

$D = rt$ — *Example 3*

$\mathbf{360} = \mathbf{55} \cdot t$ — How long will it take a car to travel 360 miles at 55 miles per hour?

$\frac{360}{55} = \frac{55t}{55}$

$6.55 = t$ — In this problem, D is 360 and r is 55. Set up an equation and solve for t. Use the inverse operation. The time, t, equals 6.55 hours.

2 Try It

Complete each step.

$D = rt$

A jet flew a distance of 2,850 miles in 6 hours. What was its speed?

Fill in the values you know. Use the variable for the unknown value.

Distance: _____. Rate: _____. Time: _____.
Write the formula using the values in the space at the left.

How can you isolate the variable? _____
Do that step at the left.

The speed of the jet was _____.

3 On Your Own

Use the formula *D = rt* to find each unknown value.

1. $r = 45$ mph, $t = 5$ h

2. $D = 2{,}400$ km, $t = 8$ h

3. $D = 7.7$ mi, $r = 2.2$ mph

***D* = 45 · 5**

***D* = 225**

$D =$ **225 miles** $r =$ _____ $t =$ _____

Use the formula *A = lw* for *Area = length · width* to find each unknown value.

4. $l = 2.5$ cm, $w = 4.5$ cm

5. $A = 30$ in.^{2}, $l = 6$ in.

6. $A = 625$ km^2, $w = 25$ km

$A =$ _____ $w =$ _____ $l =$ _____

Use the formula *I = prt* for *Interest = principal · rate · time* to find each unknown value.

7. $p = \$250$, $r = 5\%$, $t = 2$ years

8. $I = \$4{,}000$, $r = 8\%$, $t = 5$ years

9. $I = \$1{,}500$, $p = \$5{,}000$, $r = 10\%$

$I =$ _____ $p =$ _____ $t =$ _____

4 Think About It

Answer the question. Write your answer below.

10. A rectangular computer screen has a perimeter of 60 inches. Its length is 18 inches. How can you use formulas to find the area? Explain.