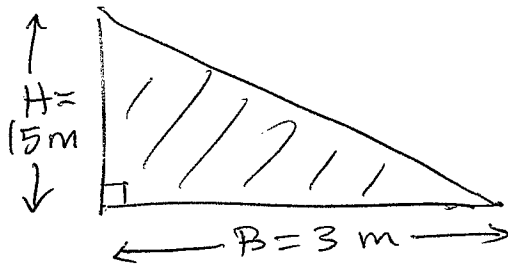**2.7-12** You are varnishing the background for a mural shaped like a right triangle. The base of the mural is 3 meters and the height of the mural is 15 meters. How many cans of varnish will you need if each can covers 10 square meters?

- ⊙A. 9 cans of varnish
- ○B. 23 cans of varnish
- ○C. 5 cans of varnish
- ○D. 3 cans of varnish

Right triangle

Area to be painted $A = \frac{1}{2} BH$

$$= \frac{1}{2}(3)(15)$$

$$= \frac{45}{2}$$

$$= 22.5 \text{ sq. m.}$$

Each can covers 10 sq m.

1st can
$$\begin{array}{r} 22.5 \\ -10 \\ \hline 12.5 \end{array}$$

2nd can
$$\begin{array}{r} -10 \\ \hline 2.5 \end{array}$$

3rd can needed.

$\boxed{3 \text{ cans}}$

2.7-16   On a road trip, five friends drove at 60 miles per hour to California. On the way home, they took the same route but drove 70 miles per hour. How many miles did they drive on the way to California if t round trip took 10 hours? Round to the nearest tenth of a mile if necessary.

○A. 323.1 miles

○B. 5.4 miles

○C. 646.2 miles

○D. 4,200 miles

$$D = R \cdot T$$

D	60	$\frac{D}{60}$
D	70	$\frac{D}{70}$

total 10.

Total time ⟹ add times

$$\frac{D}{60} + \frac{D}{70} = 10$$

$$7D + 6D = 4200$$

$$\frac{13D}{13} = \frac{4200}{13}$$

$$D = 323.076923077\ldots$$

$$D \approx 323.1 \text{ mi}$$

Take formula and ÷ R:

$$\frac{D}{R} = \frac{R \cdot T}{R}$$

$$\frac{D}{R} = T$$

Use $T = \frac{D}{R}$ to complete T column of chart
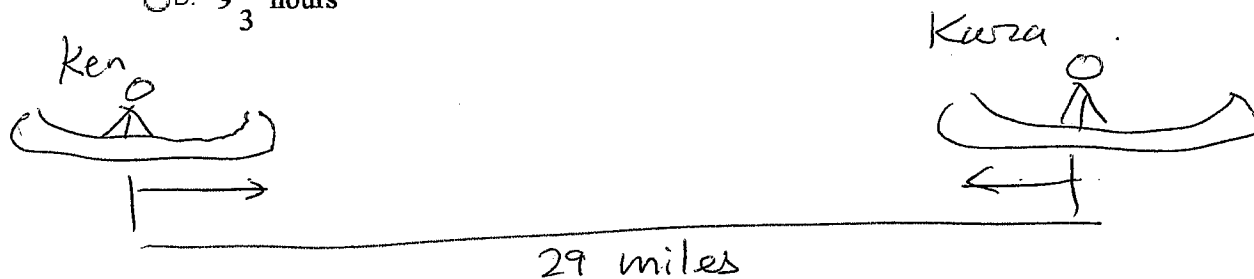
Multiply by LCD. 420.

2.7-22   Ken and Kara are 29 miles apart on a calm lake paddling toward each other. Ken paddles at 4 miles per hour, while Kara paddles at 7 miles per hour. How long will it take them to meet?

A. $2\frac{1}{8}$ hours

B. $2\frac{7}{11}$ hours

C. 18 hours

D. $9\frac{2}{3}$ hours

Ken

Kara

29 miles

↑
total distance
add the two distances

$D = R \cdot T$

	D	R	T
Ken	$4T$	4	T
Kara	$7T$	7	T
Total	29.		

paddle for the same amount of time, T

$$4T + 7T = 29$$

$$11T = 29$$

$$T = \frac{29}{11}$$

$$\boxed{T = 2\frac{7}{11} \text{ hrs}}$$

2.7-23 At 1 P.M. a freight train leaves Chicago traveling at 40 miles per hour. At 5 P.M., a passenger train leaves the same station traveling in the same direction at 60 miles per hour. How long will it take the passenger train to overtake the freight train?

- ○ A. 1 hours
- ○ B. 16 hours
- ● C. 8 hours
- ○ D. 4 hours

$$D = R \cdot T$$

	D	R	T
freight	40(T+4)	40	T+4
passenger	60T	60	T

How long $\Rightarrow$ time T.

Freight leaves 4 hrs earlier
$\Rightarrow$ travels 4 hrs longer
T+4

overtake $\Rightarrow$ be in the same place
$\Rightarrow$ same distance
$\Rightarrow$ set distances equal.

$$40(T+4) = 60T$$
$$40T + 160 = 60T$$
$$-40T \qquad\quad -40T$$
$$\frac{160}{20} = \frac{20T}{20}$$

$$\boxed{8 = T \ \text{hrs}}$$

2.7-24   A freight train leaves a station traveling at 32 km/h. Two hours later, a passenger train leaves the same station traveling in the same direction at 52 km/h. How long does it takes the passenger train to catch up to the freight train?

A. 2.2 hours

B. 3.2 hours ✓

C. 4.2 hours

D. 5.2 hours

$$D = R \cdot T$$

	D	R	T
freight	$32(T+2)$	32	$T+2$
passenger	$52T$	52	T

How long $\Rightarrow$ time T

Freight leaves
2 hours earlier
$\Rightarrow$ travels 2 hrs. longer
$T+2$

overtake $\Rightarrow$ be in the same place
$\Rightarrow$ same distance
$\Rightarrow$ set distances equal.

$$32(T+2) = 52T$$

$$32T + 64 = 52T$$
$$-32T \qquad\qquad -32T$$
$$\frac{64}{20} = \frac{20T}{20}$$

$$\boxed{3.2 = T \\ hr}$$