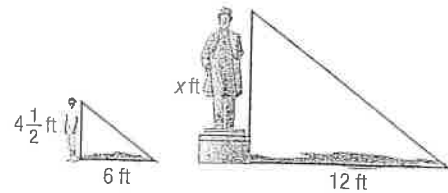6.5 Extra Practice

Name: Key

Date: _____ Per: ___

① Mila must determine the height of the statue to make a scale drawing of it. Mila is $4\frac{1}{2}$ feet tall, and her shadow is 6 feet long. At the same time, the statue's shadow is 12 feet long. What is the height of the statue?

Ⓐ $8\frac{1}{4}$ ft Ⓒ $13\frac{1}{2}$ ft

⬤ 9 ft Ⓓ 24 ft

$\dfrac{Boy}{stat} \quad \dfrac{4\frac{1}{2}}{x} = \dfrac{6}{12}$

x-statue's height

$\dfrac{4\frac{1}{2}}{x} = \dfrac{1}{2}$

$x = 9$

② **CCSS Reason Abstractly** The Giant Wheel at Cedar Point in Ohio is one of the tallest Ferris wheels in the country at 136 feet tall. If the Giant Wheel casts a 34-foot shadow, write and solve a proportion to find the height of a nearby man who casts a $1\frac{1}{2}$-foot shadow.

136ft   34ft $1\frac{1}{2}$ ft.

$\dfrac{F.W.}{Man} \quad \dfrac{136}{x} = \dfrac{34}{1\frac{1}{2}}$

The man is 6 ft tall.

x - man's height.

$x = 6$

③ How tall is the tower?

The tower is 200 ft. tall.

x ft
27 ft
60 ft
90 ft

$\dfrac{60}{x} = \dfrac{27}{90}$

$\dfrac{60}{x} = \dfrac{3}{10}$

$X = 200$

④ How tall is the taller flagpole?

h - flagpole height

$\dfrac{BF}{BF} \quad \dfrac{6}{2} = \dfrac{h}{7}$

$\dfrac{3}{1} = \dfrac{h}{7}$

$h = 21$

h ft
7 ft
6 ft
2 ft

The flagpole is 21 feet tall.

⑤ Find the height of the brace.

9 ft

h ft

7 ft

15 ft

$$\text{Small } \triangle \over \text{big } \triangle$$

$$\overset{.6 \,\div\, 1^2/_3}{\frac{7}{15}} = \frac{h}{9}$$
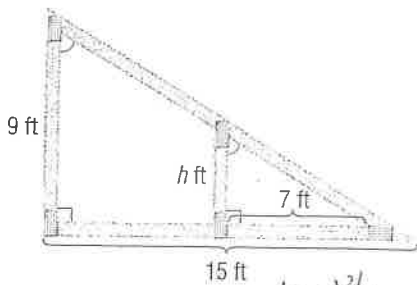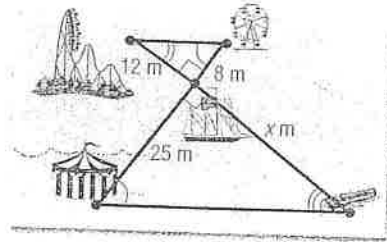
$$x.6 \,\div\, 1^2/_3$$

$$h = 4.2$$

$$7 \div 1\frac{2}{3}$$

$$7 \cdot \frac{3}{5}$$

$$\frac{21}{5}$$

The brace is around 4.2 ft tall

⑥ How far is it from the log ride to the pirate ship?

12 m   8 m

25 m   x m

$$\text{small } \triangle \over \text{big } \triangle$$

$$\frac{8}{25} \overset{x1.5}{\underset{x1.5}{=}} \frac{12}{x}$$

$$37.5 = x$$

$$\boxed{x = 37.5 \text{ m}}$$

$$\begin{array}{r} 25 \\ \times 1.5 \\ \hline 125 \\ 250 \\ \hline 375 \end{array}$$

⑦ How tall is the building?

h ft

50 ft

50 ft

12.5 ft

$$\text{Small} \over \text{big}$$

$$\frac{12.5}{50} \overset{x4}{\underset{x4}{=}} \frac{50}{h}$$
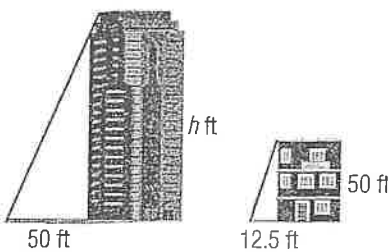
$$200 = h$$

$$\boxed{\text{The building is } 200 \text{ ft}}$$

⑧ Find the distance from the house to the street light.

X

dm   W

8 m   B   A   4 m

Z

5 m

T

$$\frac{A}{B} \qquad \frac{4}{8} = \frac{5}{d}$$

$$\overset{x5}{\downarrow} \quad \frac{1}{2} \overset{}{\underset{x5}{=}} \frac{5}{d}$$

$$\boxed{10 \text{ m}}$$

$$d = 10$$
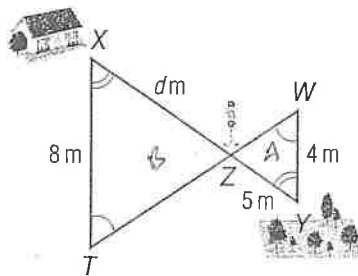
9. A fire hydrant 2.5 feet high casts a 5-foot shadow. How tall is a street light that casts a 26-foot shadow at the same time? Let h represent the height of the street light.
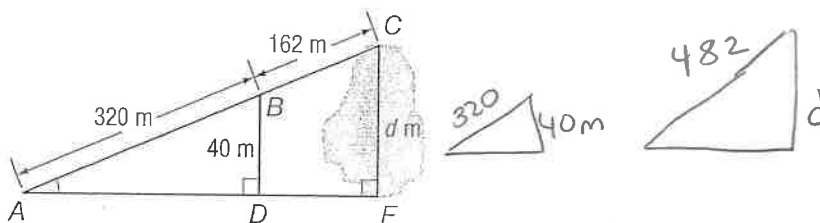
26 ft

2.5 ft

5 ft

$$\frac{P}{Light} \quad \frac{h}{2.5} \overset{\times 2}{=} \frac{26}{5}$$

$$\times 2$$
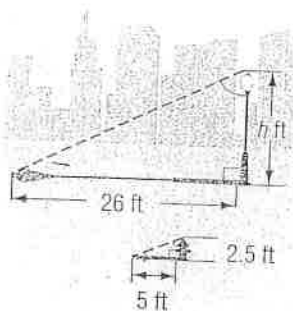
$$\boxed{h = 13\,ft}$$

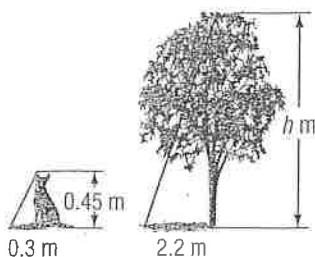**10.** In the figure at the right, triangle *DBA* is similar to triangle *ECA*. Ramon wants to know the distance across the lake.

162 m — C

320 m

B

40 m

d m

320

40m

482

d

A   D   E

$$\frac{big\,\triangle}{sm\,\triangle} \quad \frac{d}{40} = \frac{482}{320} \qquad \frac{b\triangle}{s\triangle} \quad \frac{d}{40} \overset{\div 8}{=} \frac{482}{320}$$

$$\div 8$$

$$d = 60\tfrac{1}{4}$$

$$\boxed{60\tfrac{1}{4}\,m = d}$$

11. How tall is the tree?

h m

0.45 m

0.3 m   2.2 m

$$\frac{.45}{h} \overset{\times 15}{=} \frac{.3}{2.2}$$

$$\times 1.5$$

$$\boxed{3.3 = h}$$
m

12. **Persevere with Problems** You cut a square hole $\frac{1}{4}$-inch wide in a piece of cardboard. With the cardboard 30 inches from your face, the moon fits exactly into the square hole. If the moon is about 240,000 miles from Earth, estimate the moon's diameter.

$X =$ moon's diameter

240,000

$$\frac{moon\,(miles)}{person\,(in)} \quad \frac{240,000}{30} \overset{\div 120}{=} \frac{X}{\tfrac{1}{4}\,inch}$$

$$\div 120$$

The moon's diameter is 2,000 miles.

30 inch

$X = 2,000$ miles

Key

13 Find the distance across the river.

140 m   300 m

B

A A B 350 m E

120m x m

C

$\dfrac{A}{B}$ $\dfrac{x}{300} = \dfrac{140}{350}$

A

$\dfrac{x}{300} = \dfrac{2}{5}$ $\boxed{x = 120\,m}$
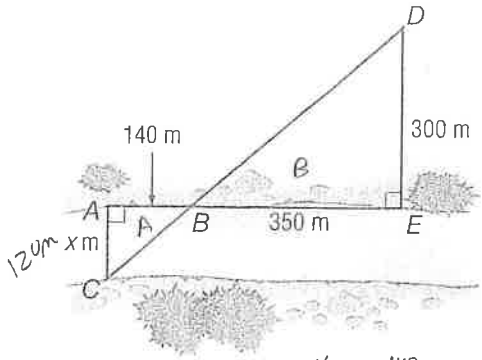
62 m

14 About how long is the log that goes across the creeks?

9 m

8 m   A   B   x m

12 m

$\dfrac{A}{B}$ $\dfrac{12}{9} = \dfrac{8}{x}$

$\dfrac{4}{3} = \dfrac{8}{x}$

6 m

$\boxed{6 = x}$
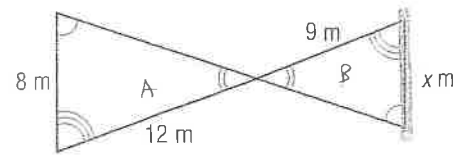
15 How deep is the water 62 meters from the shore?

3 m   62 m
V   W   Y
X   5 m

B

d m

Z

$\dfrac{length}{depth}$ $\dfrac{3}{62} : \dfrac{5}{d}$

$\dfrac{5}{3}$

$3\overline{)5.0}$

$103\frac{1}{3}\,m = d$
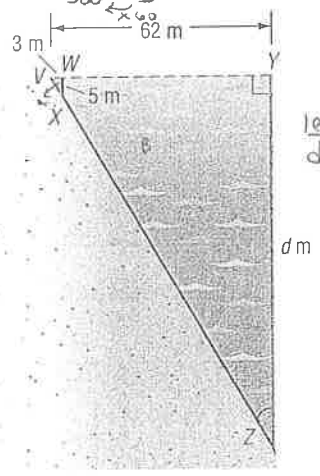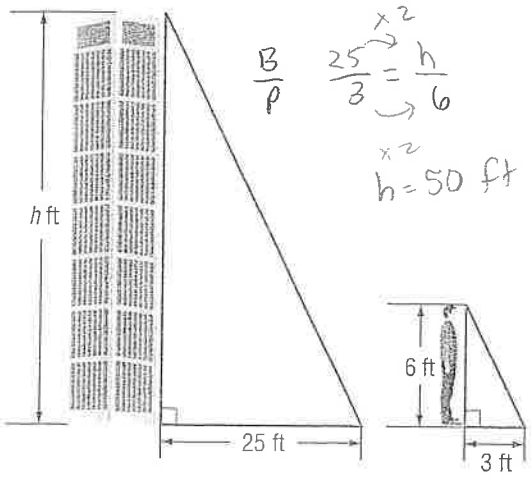
16 Horatio is 6 feet tall and casts a shadow 3 feet long. What is the height in feet of a nearby tower if it casts a shadow 25 feet long at the same time?
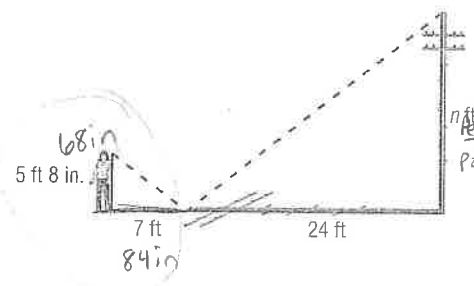
$\dfrac{B}{P}$ $\dfrac{25}{3} = \dfrac{h}{6}$

$h = 50\,ft$

h ft

6 ft

25 ft

3 ft

(A) 12.5 feet   (C) 125 feet
(B) 50 feet   (D) 500 feet

17 As shown below, Lenno used similiar triangles to find the height of a telephone pole. When he stood 7 feet from a mirror laying on the ground, he could see the top of the pole in the mirror.

68 in
5 ft 8 in.

7 ft   24 ft
84 in

$\dfrac{Person}{Pole}$ $\dfrac{84}{24} = \dfrac{68}{n}$

$\dfrac{7}{2} = \dfrac{68}{n}$

$n = 19\frac{3}{7}\,ft$

Which is closest to the height of the telephone pole?

(F) 50 ft   (H) 20 ft
(G) 40 ft   (I) 10 ft

LESSON 6.5 Practice

For use with pages 293–297

Find the specified side length.

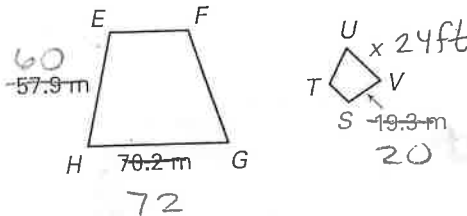**1.** Given $\triangle ABC \sim \triangle JKL$, find JK.

6ft
6.1 ft
L → J x 3.4ft
K
B
17 ft
A — 30.5 ft — C
30ft

$\dfrac{sm}{big}$ $\dfrac{6}{30} = \dfrac{x}{17}$

$\dfrac{3.4}{5\overline{)17.0}}$
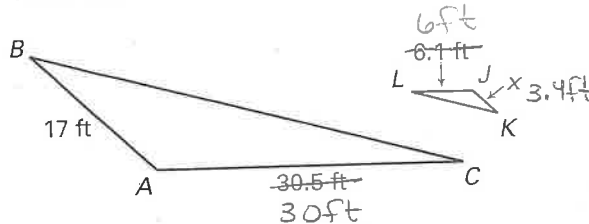
$\dfrac{\div 5}{\div 5} \dfrac{3.4}{3.3} = \dfrac{x}{17}$

$\boxed{x = 3.4}$

2. Given $EFGH \sim STUV$, find UV.

E   F
60
57.9 m
H 70.2 m G
72

U x 24ft
T   V
S 19.3 m
20

$\dfrac{sm}{big}$ $\dfrac{20}{60} = \dfrac{x}{72}$

$\dfrac{\div 3}{\div 3} \dfrac{24}{24} = \dfrac{x}{72}$

$\boxed{x = 24}$

3. Given $PQRS \sim WXYZ$, find YZ.

P   Q
A
S 5 mm R
3.75 mm

X   Y
B
W 6 mm Z
x 8 mm

$\dfrac{A}{B}$ $\dfrac{3.75}{6} \underset{\div .75}{\overset{\div .75}{=}} \dfrac{5}{x}$

$\dfrac{8}{.75\overline{)6.00}}$

$\boxed{45 = x}$

4. Given $JKLM \sim PQRS$, find QR.

80 M 18
7.3 cm   18.25 cm
L   J
5.7 cm
60 K

S   P
R x Q
13.5 cm
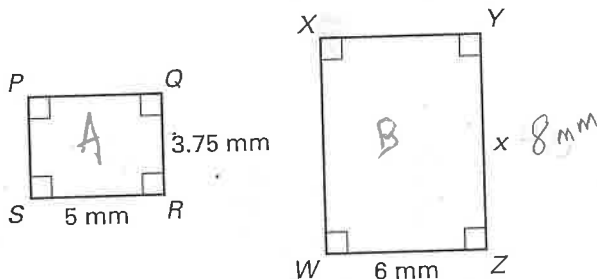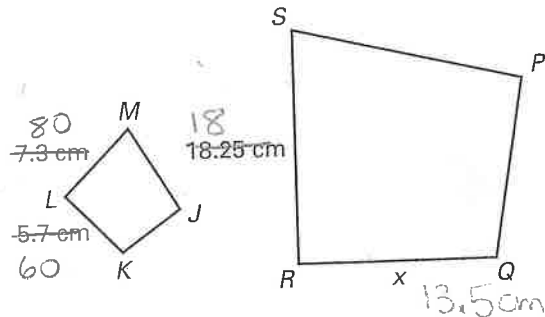
$\dfrac{S}{6}$ $\dfrac{18}{80} = \dfrac{x}{60}$

$\dfrac{\div 9}{40} \overset{\times 1.5}{=} \dfrac{x}{60}$

$\boxed{x = 13.5}$

5. Given $\triangle PQR \sim \triangle STR$, find QT.

P
S
38 ft   30 ft
Q x T — 36 ft — R
45

38 30 45
m
54
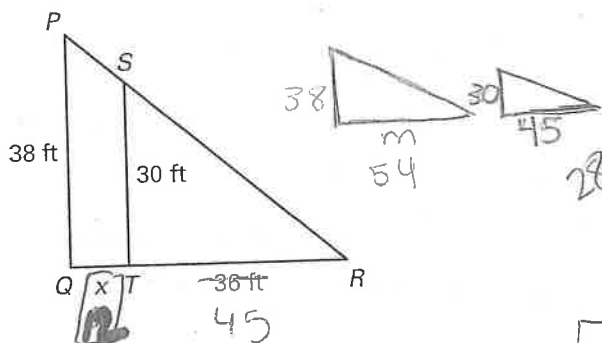
$\dfrac{b}{s}$ $\dfrac{38}{30} = \dfrac{m}{45}$

$\dfrac{19}{15} = \dfrac{57}{45}$

$m = 57$

6. Given $ABCD \sim AGFE$, find GB.

B   C
12x
G   F
28 16 m
A — 24 m — E — 9 m — D
18

16 | 24

M | 42

$g = 12m$
$m = 28m$

$\dfrac{24}{42} \div 1.5 = \dfrac{16}{m}$

$\dfrac{24}{42} = \dfrac{16}{m} 28$