Warm Up

Solve each proportion.

1. $\dfrac{4}{3} = \dfrac{x}{5}$

$4 \cdot 5 = 3x$
$20 = 3x$
$6.\overline{6} = x$

2. $\dfrac{6}{10} = \dfrac{9}{x+1}$

$6x + 6 = 90$
$6x = 84$
$x = 14$

3. The area of a rectangle is 750 m². The ratio of the width to the length is 5:6. Find the width and the length.

$25m \qquad 30m$

6-2   Using Proportions

Properties of proportions:

If $\dfrac{a}{b} = \dfrac{c}{d}$

Then: $\dfrac{b}{a} = \dfrac{d}{c}$

$\dfrac{a}{c} = \dfrac{b}{d}$

$\dfrac{a+b}{b} = \dfrac{c+d}{d}$

$\dfrac{2}{3} = \dfrac{4}{6}$

$\dfrac{3}{4} = \dfrac{3}{6}$

$\dfrac{3}{2} = \dfrac{6}{4}$

$\dfrac{5}{3} = \dfrac{10}{6}$

Ex 1   In the diagram, $\dfrac{AB}{DE} = \dfrac{AC}{DF}$

Write four true proportions.

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

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

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

$\dfrac{21}{9} = \dfrac{8+x}{x}$

B

E

12

9

D

x

A

8

C

F
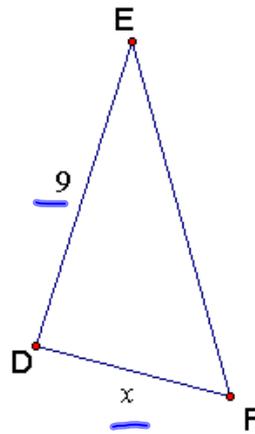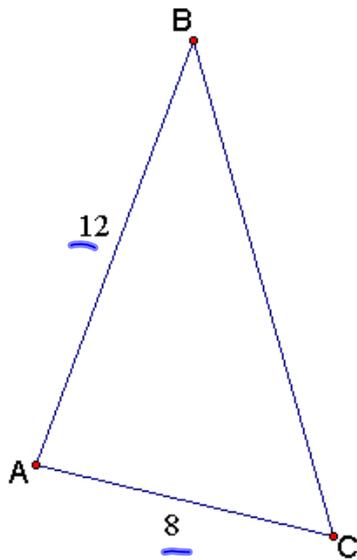
Ex 2   In the diagram, $\dfrac{SV}{VT} = \dfrac{SU}{UR}$

Find ST and VT.

$\dfrac{8}{x} = \dfrac{12}{28}$

$x = 18.\overline{6}$

$VT = 18.\overline{6}$

$ST = 26.\overline{6}$

S

12   8

U   V

6

28   18.$\overline{6}$

R   T
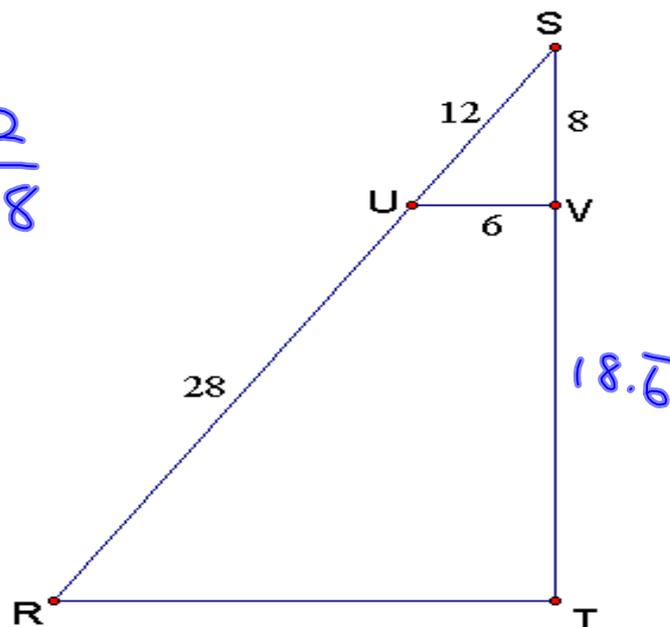
Ex. 3   In the diagram, $\dfrac{CB}{BA} = \dfrac{DE}{EF}$

Find BA.

C   D

6   4

B   E

10.5   7

A   F
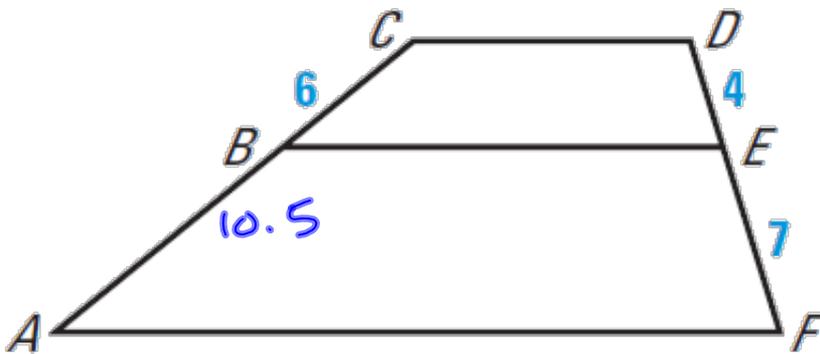
$$\frac{6}{x} = \frac{4}{7}$$

$$4x = 42$$

$$x = 10.5$$

Ex. 4   In the diagram, $\dfrac{XW}{XV} = \dfrac{YW}{ZV}$

Find ZV.

X

12

Y   24   W

5

Z   34   V
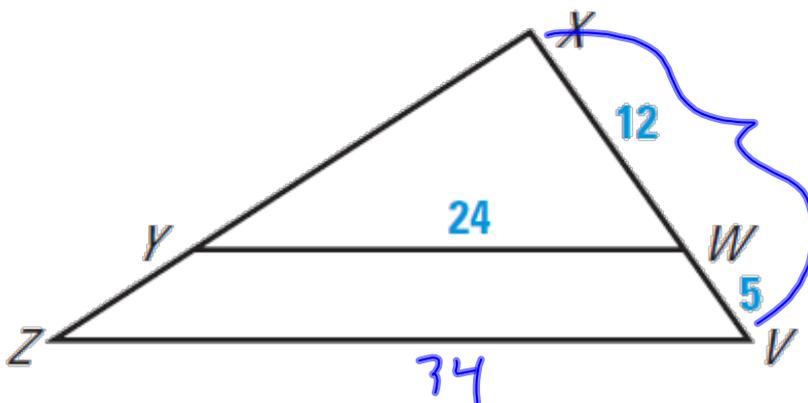
$$\frac{13}{17} = \frac{24}{x}$$

$$x = 34$$

Ex. 5   In the diagram, $\dfrac{CA}{CB} = \dfrac{AE}{BD}$

Find *BD*.
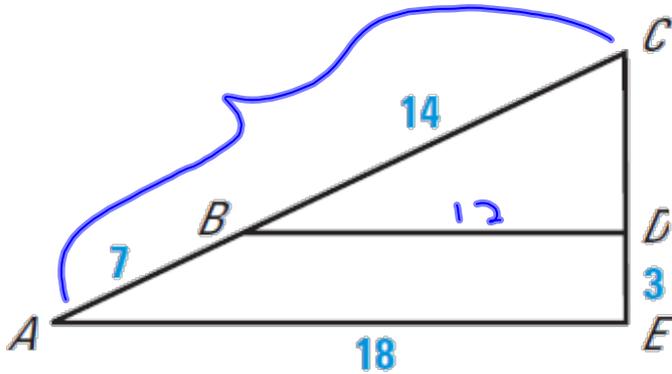
$$\frac{21}{14} = \frac{18}{x}$$

$$x = 12$$

Ex. 6   In the diagram, $\dfrac{SQ}{SR} = \dfrac{TV}{TU}$

Find *RQ*.
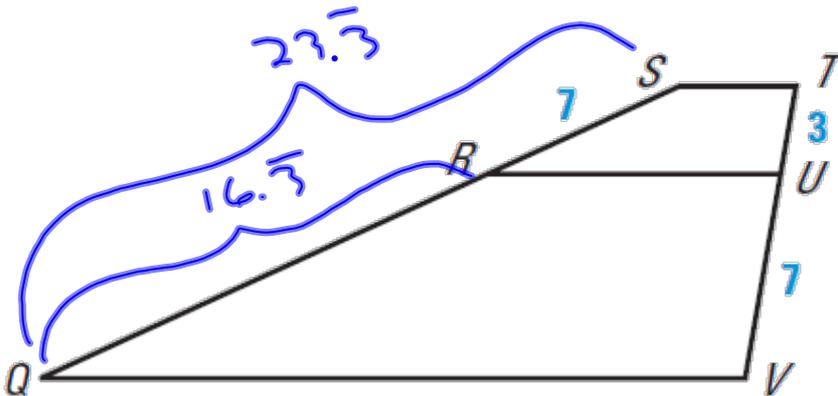
$$\frac{x}{7} = \frac{10}{3}$$

$$x = \frac{70}{3}$$

$$= 23.\overline{3}$$

$$\frac{y+7}{7} = \frac{10}{3}$$

Ex 7   The scale of a map is 1 in :1440 ft. Find the actual
length of a street if the distance on the map is 3 inches.

$$\frac{1 \text{ in}}{1440 \text{ ft.}} = \frac{3 \text{ in.}}{x}$$

$$4320 \text{ ft.}$$