7.1

Ratio and Proportions

Ratio and Proportion

- _____

_____

- _____

Word form:

Colon form:

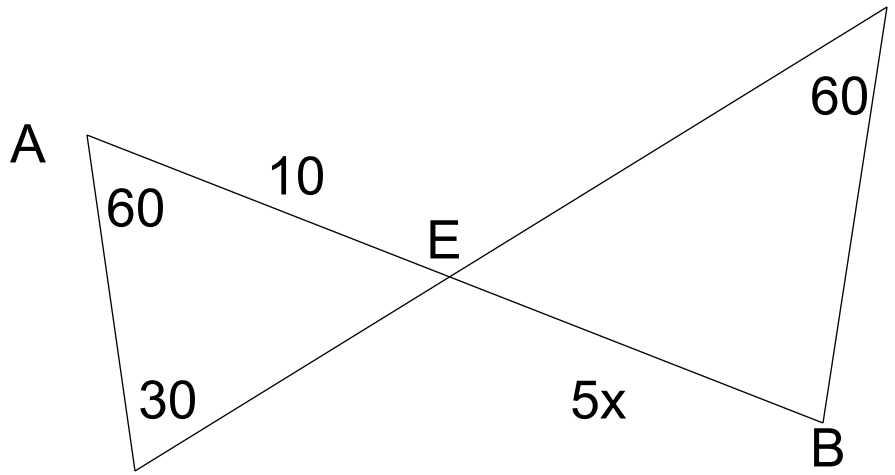
Fraction form:

_____

1. A poster is 3 feet long and 20 inches wide. Find the ratio of length to width.

a) Comparing feet:

b) Comparing inches:

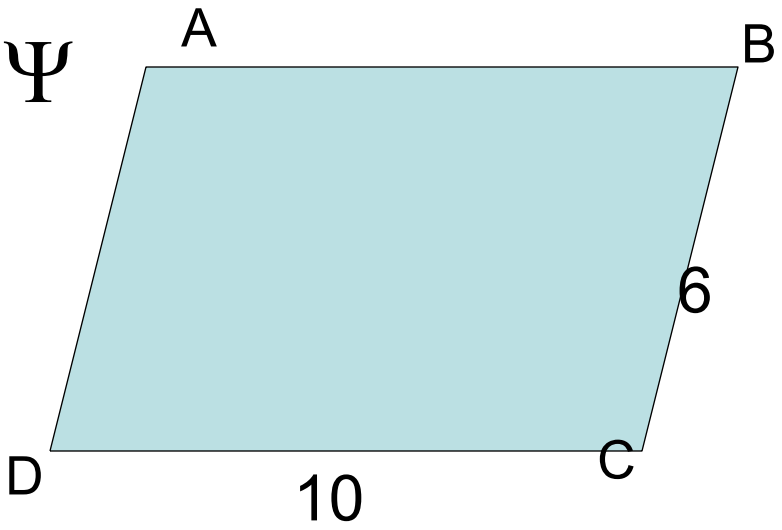


a) Find the ratio of AE to BE.

b) Find the ratio of the largest angle of Triangle A to smallest angle of triangle B.

3. A telephone pole 7 meters tall snaps into two parts. The ratio of the two parts is 3:2. Find the length of each part.

$ABCD$ is a Ψ



$AB : BC$

$BC : AD$

$\mathrm{P}\, A : \mathrm{P}\, C$

AB : *Perimeter* of ABCD

The measures of the angles of a triangle are in the ratio of 3:4:5. Find the measures of each angle.

7.2

Properties of Proportions

A proportion is a set of two equal ratios:

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

The Means and Extremes Property:

- _____

_____

_____

Properties of Proportions:

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

Using the Proportion $\frac{a}{b} = \frac{3}{5}$

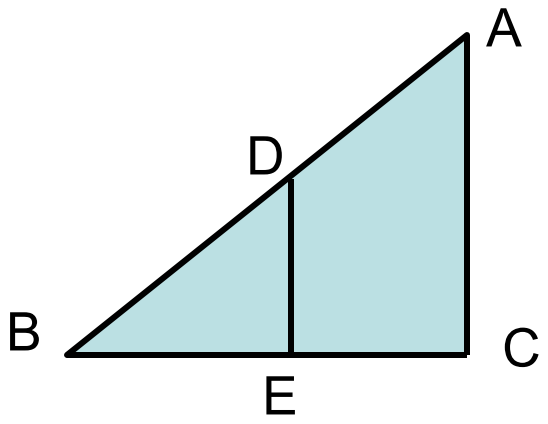
a) $5a =$

b) $\frac{5}{b} =$

c) $\frac{a+b}{b} =$

d) $\frac{5}{3} =$

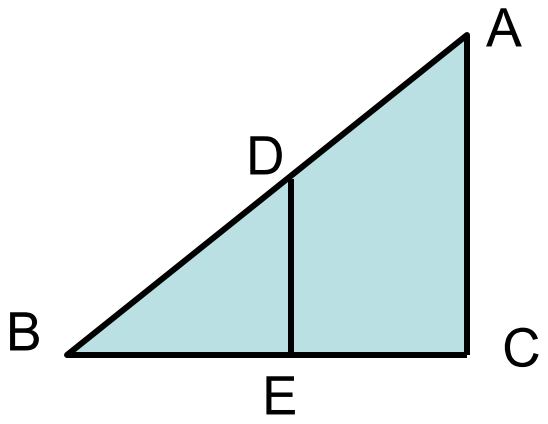
In the figure $\frac{\text{AD}}{\text{DB}} = \frac{CE}{EB}$



1. If CE=2, AB=6 and AD=3 then EB=_____

2. If AB=10, DB=8 and CB=7.5 then EB=_____

In the figure $\frac{\mathrm{AD}}{\mathrm{DB}} = \frac{CE}{EB}$



1. BA=12, BE=10, EC=5

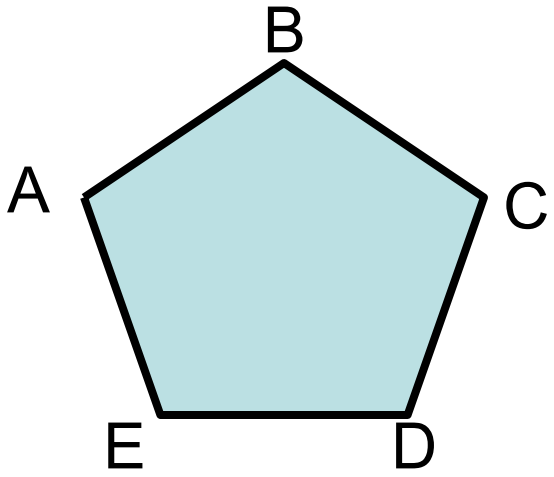
Find BD=_____ DA=_____

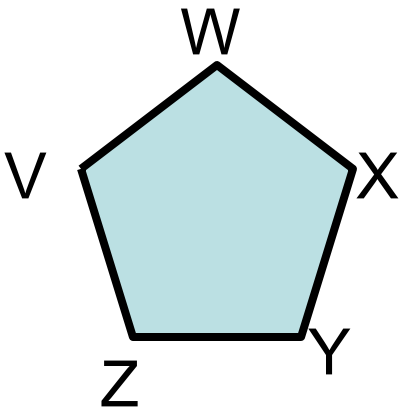
7.3

Similar Polygons

Two polygons are similar if their vertices can be paired so that:

- _____
- _____



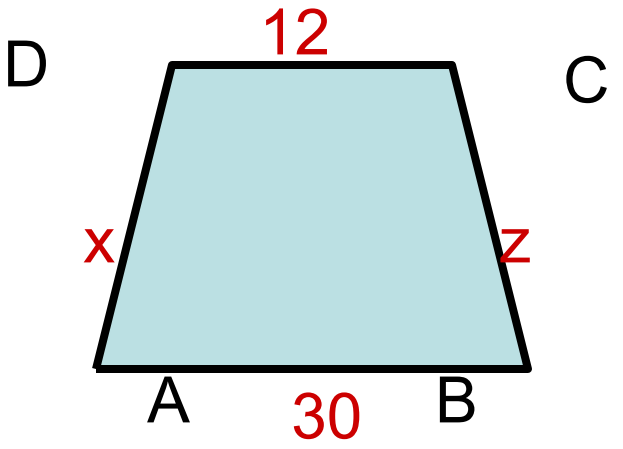


Given: ABCDE : VWXYZ

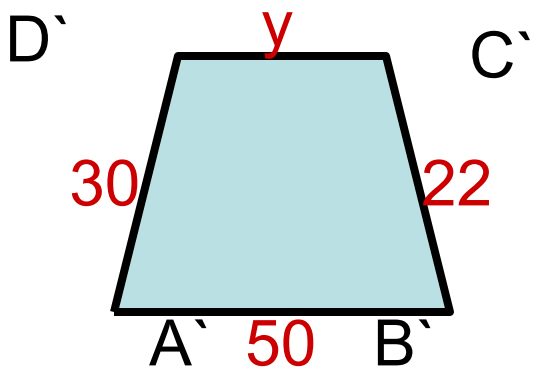
List congruent Angles:

List Proportions of sides:

If polygons are similar then the ratio of the lengths of two corresponding sides is called the **Scale Factor**

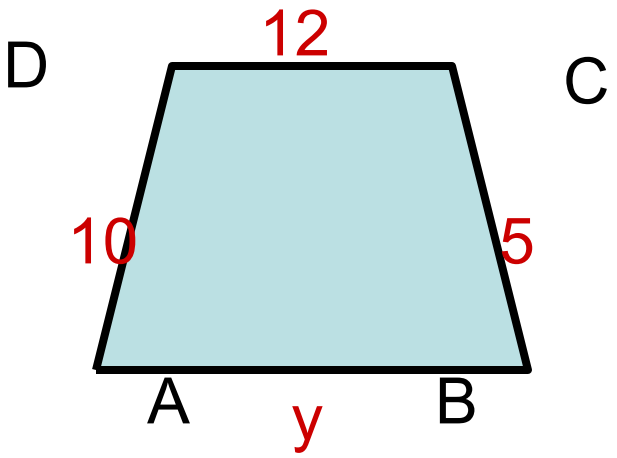


a) Scale Factor:

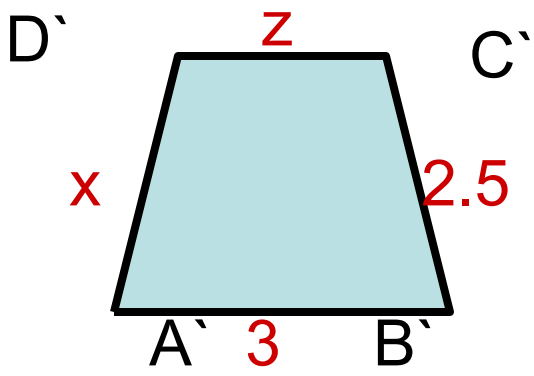


a) Find x, y, z:

The ratio of the perimeters of two similar figures is equal to the **Scale Factor.**



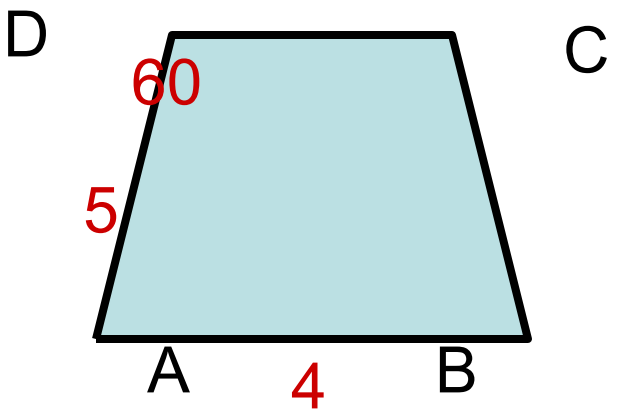
a) Scale Factor:

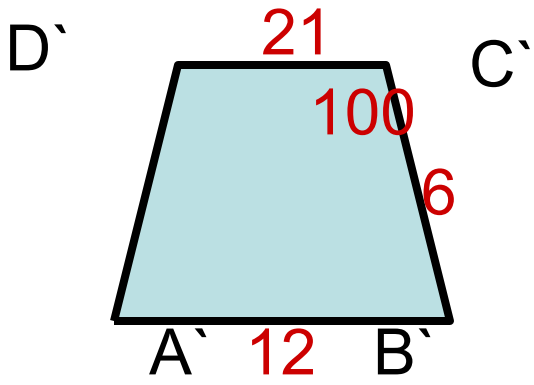


a) Find x, y, z:

a) Scale Factor:

b) Angle D`=____





c) Find CB, A`D`, DC:

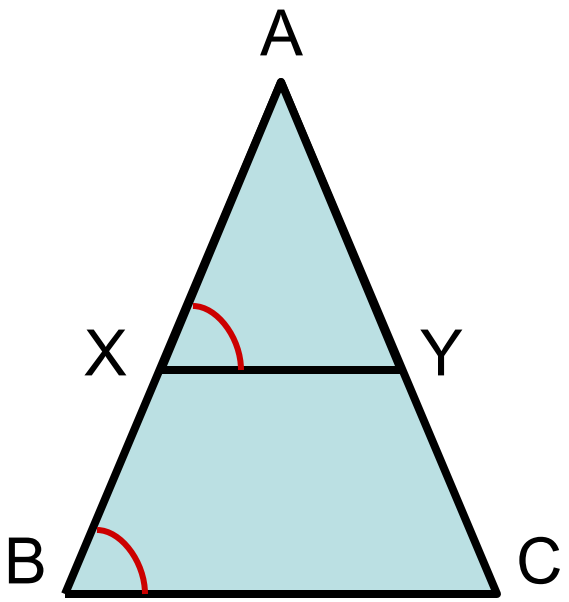
7.4

Proving Triangles are Similar

Postulate 15: _____

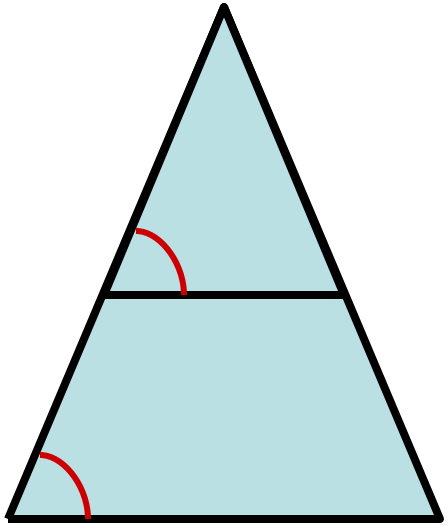
_____

_____



When there are triangles within Trianlges:

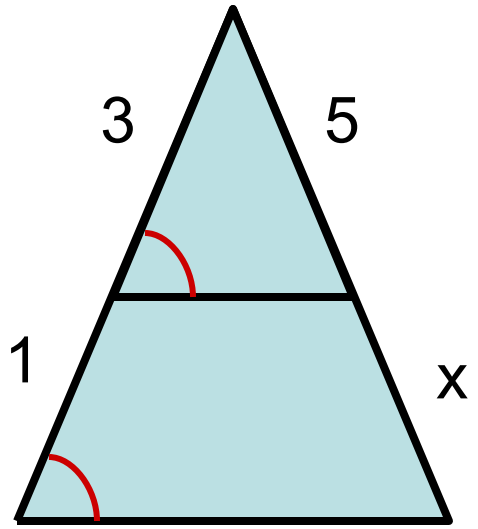
- _____
- _____



Are the triangles similar?

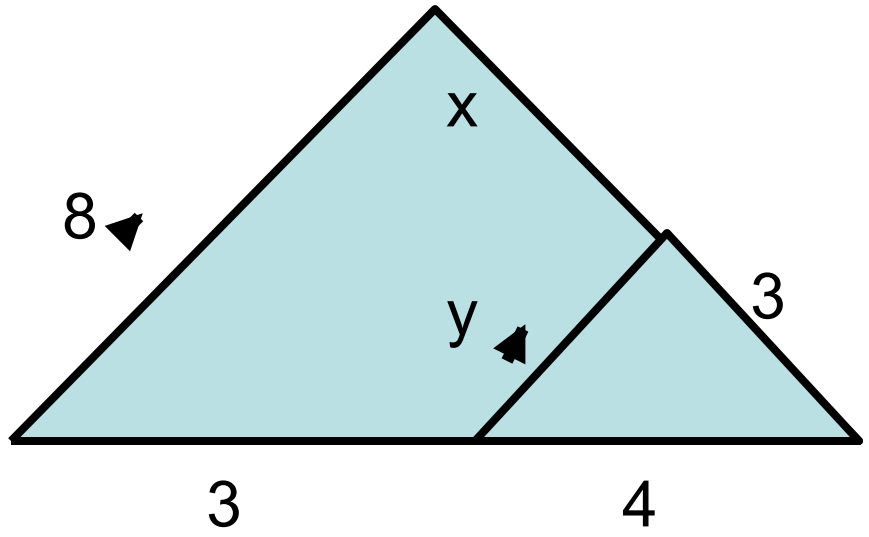
Find the scale factor._____

Solve for x=_____



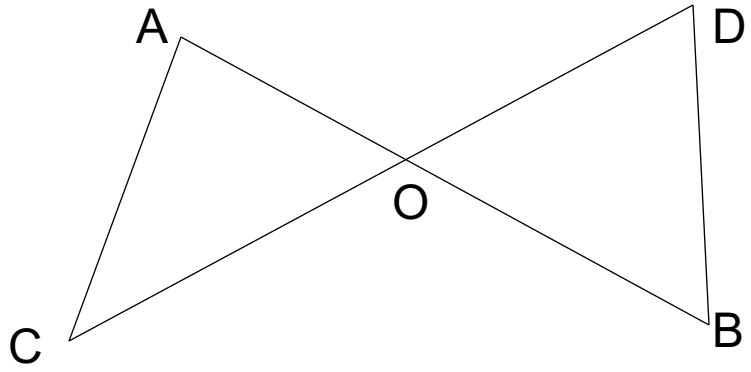
Find x=_____ and y=_____:

Scale Factor=____



$Given : \overline{AC} \cap \overline{BD}$

Prove : $\varsigma COA \cong \varsigma DOB$



1.	1. *Given*

7.5

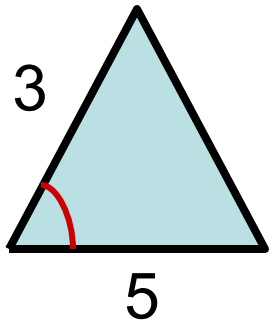
More Similar Triangles

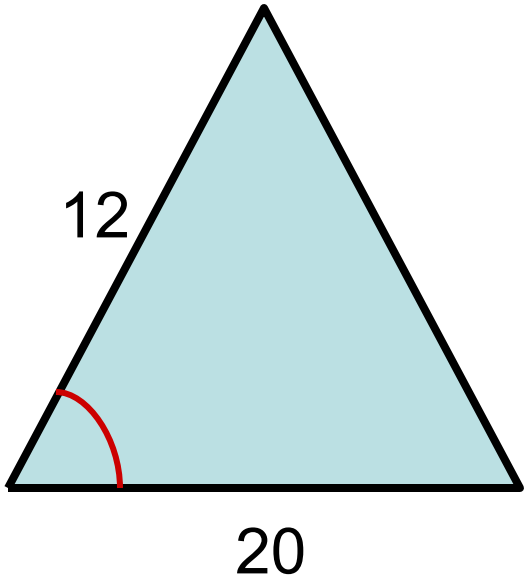
Theorem 7.1: _____

_____

_____

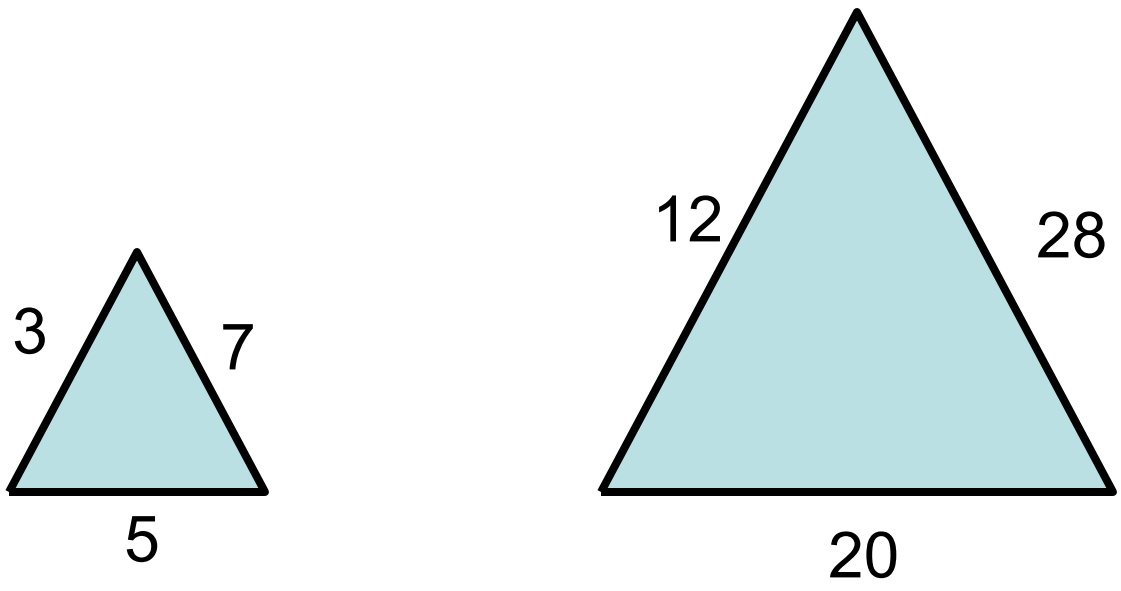
_____





Theorem 7.2: _____

_____



How do we know what sides of the triangles to compare?

- _____

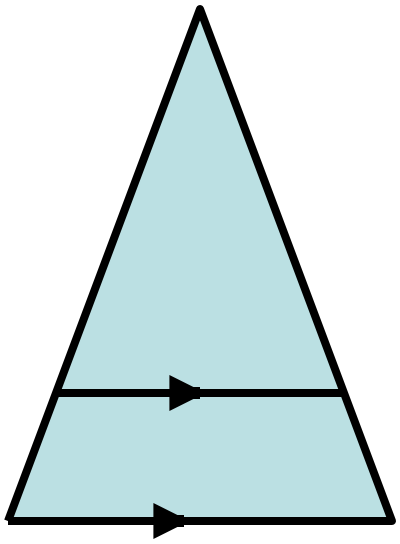
_____

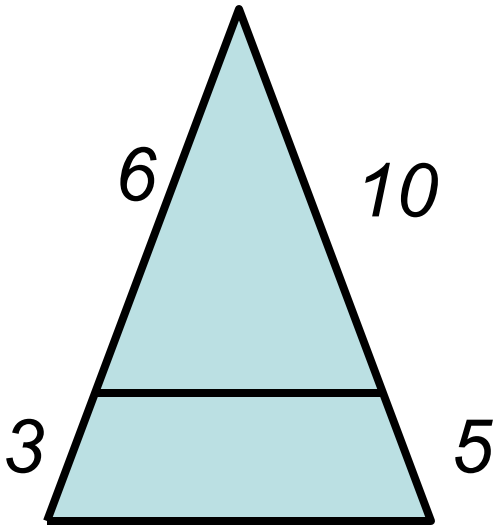
- _____

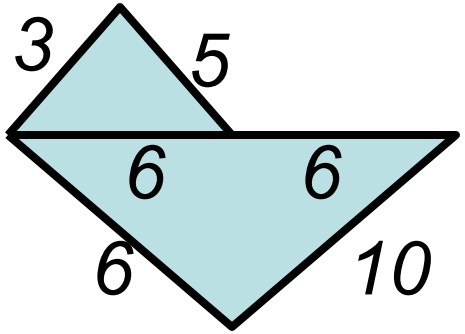
  - ABC has sides of 4,5,7 and
  - XYZ has sides of 16,20,28

  Are they similar?

What reason are the Triangles ~?







Def of ~ _____

_____

_____

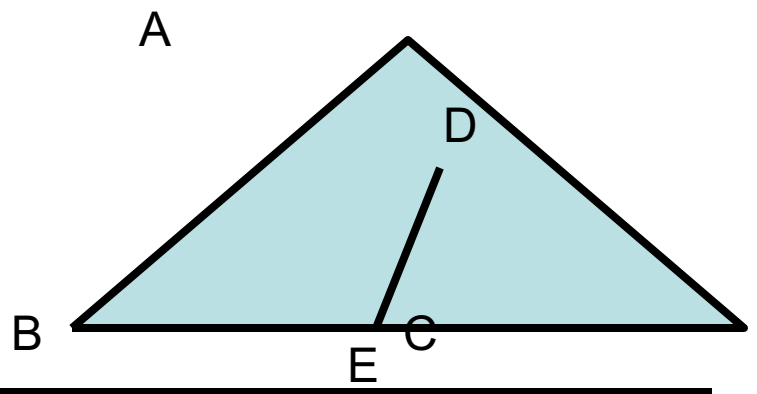
Means and Extremes Property: _____

_____

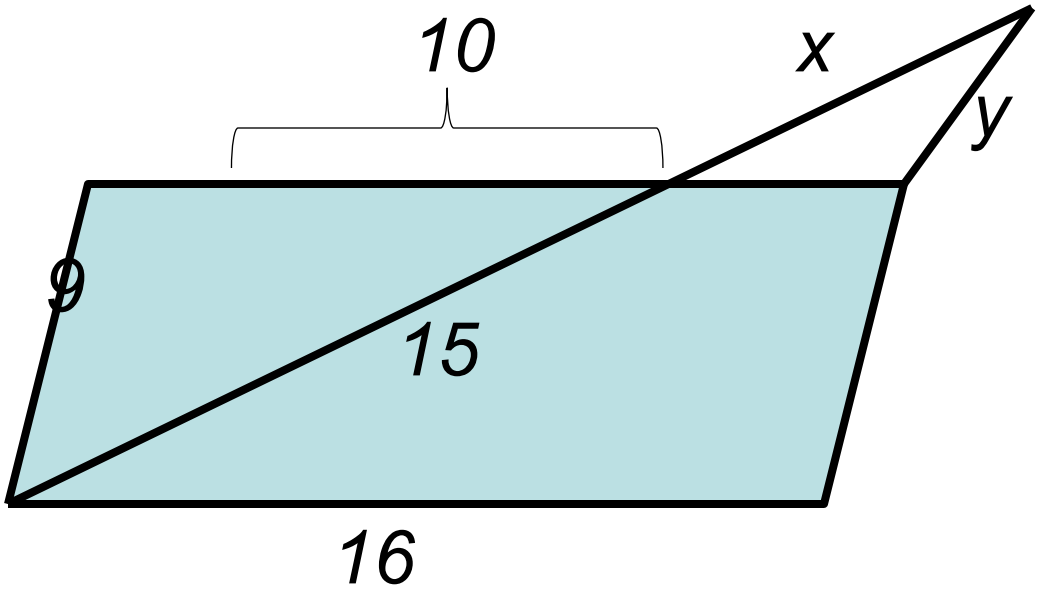
_____

Given : P $B \cong$ P *DEC*

Prove : ς *ABC* : ς *DEC*



1.	1. *Given*



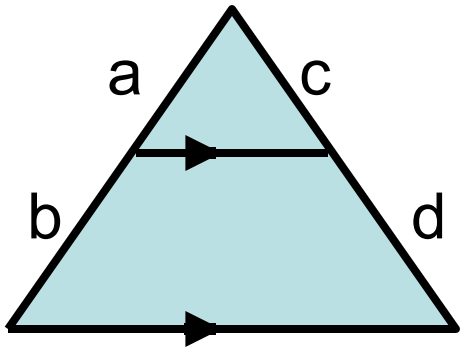
Solve for x and y: Scale Factor?____

7.6

Proportional Lengths

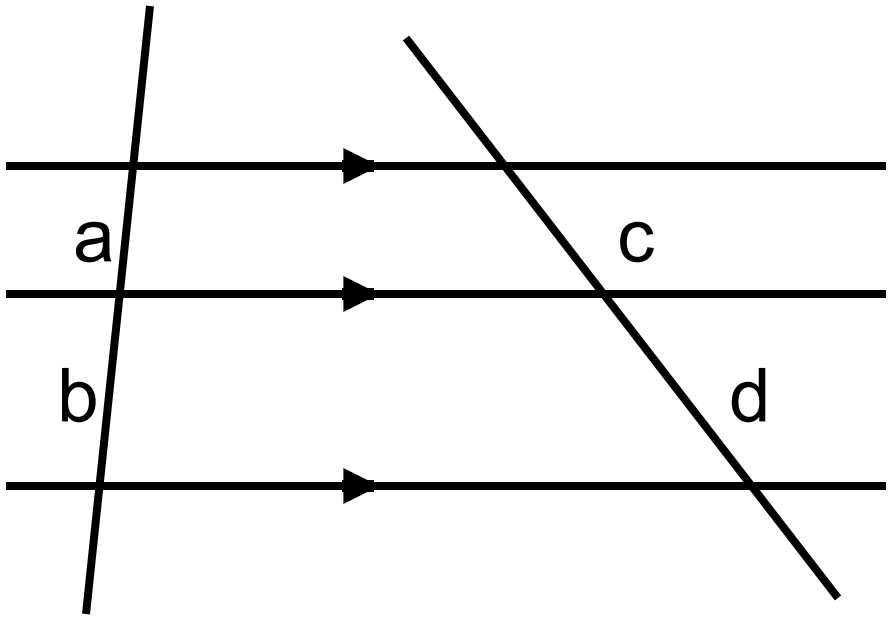
Divide Proportionally means:

Triangle Proportionality Theorem:

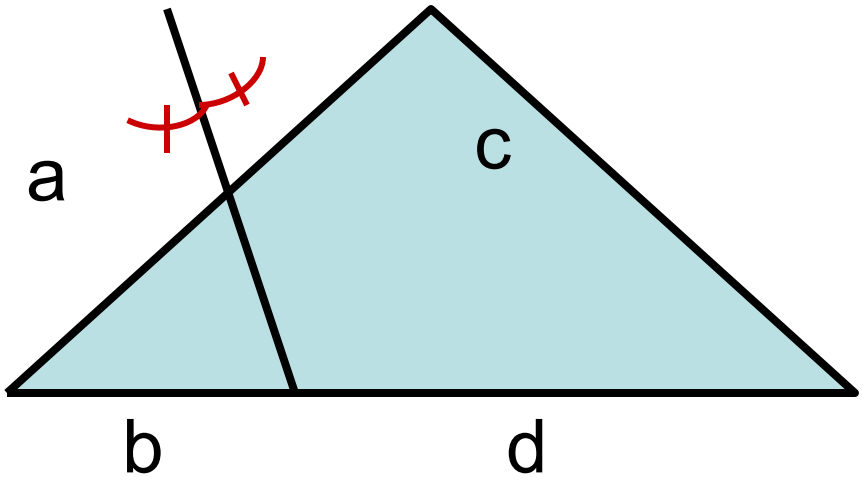


Corollary: _____

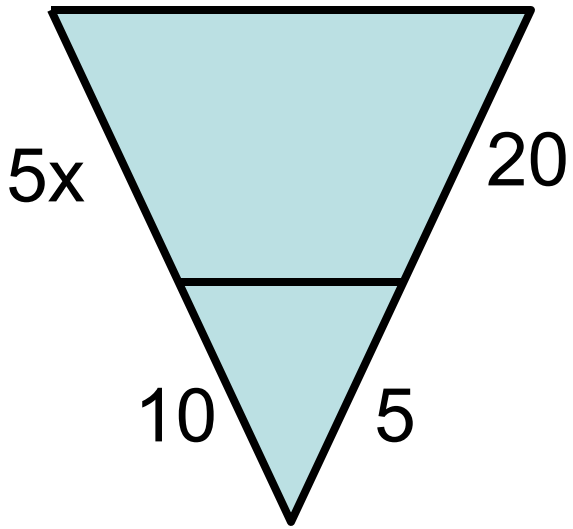
_____

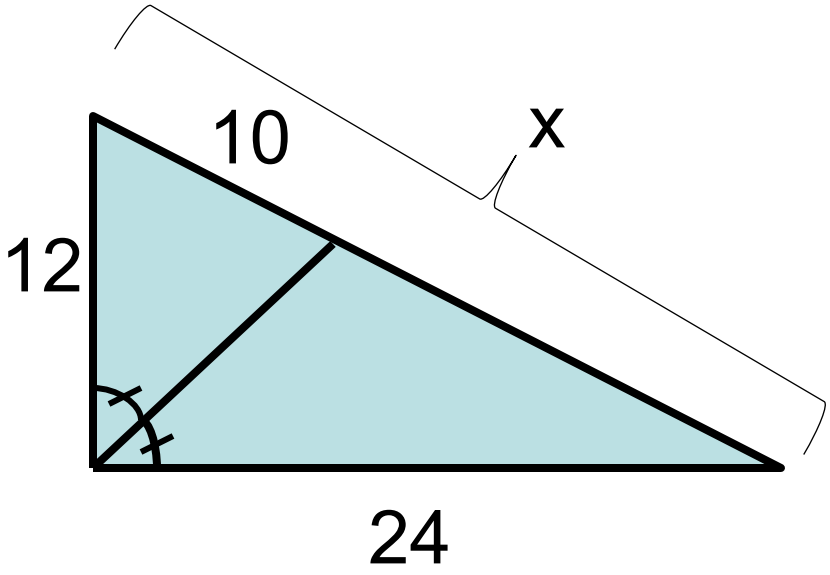


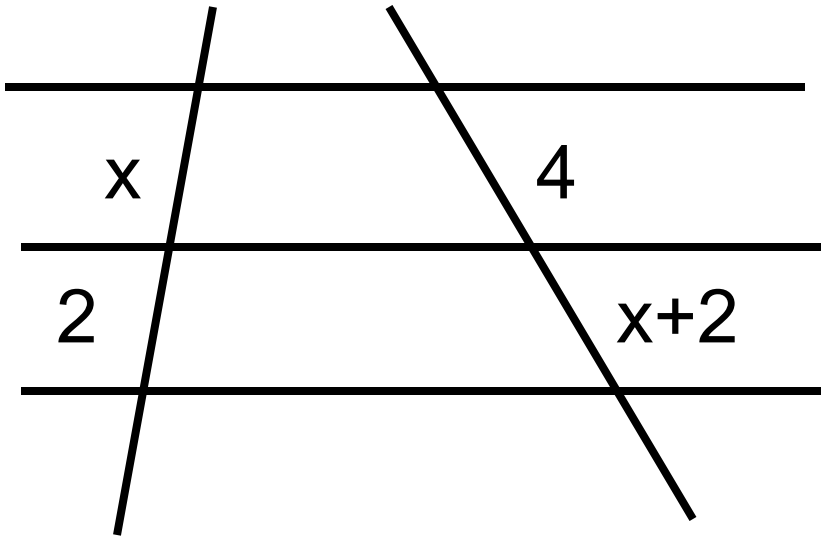
Triangle Angle Bisector:



Examples:




10
x
12
24


x
4
2
x+2