7.5

Proportionality Relationships

EXAMPLE 1

KA || BL

EXAMPLE 2
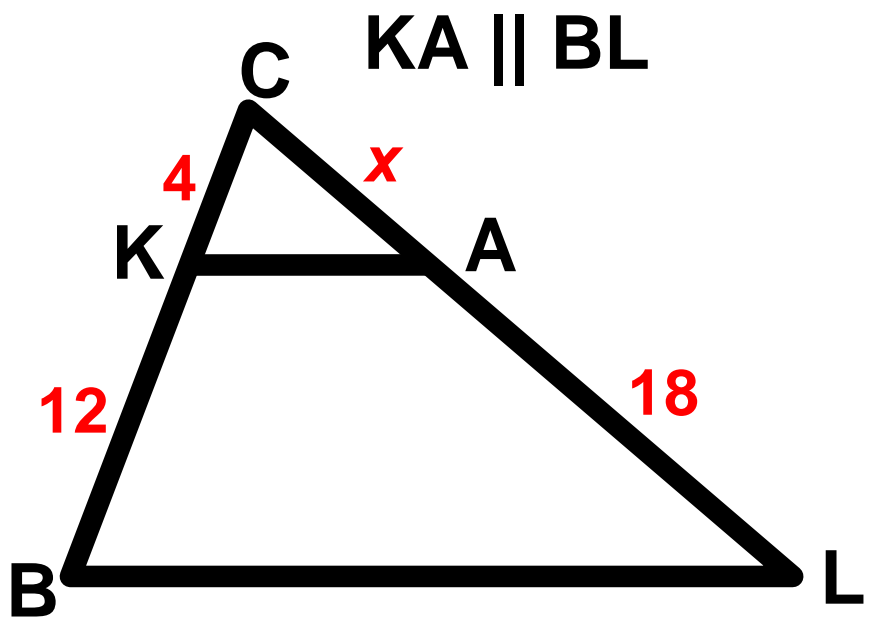
YT || WE

E

36

T

48

W   *y*   Y   **60**   I
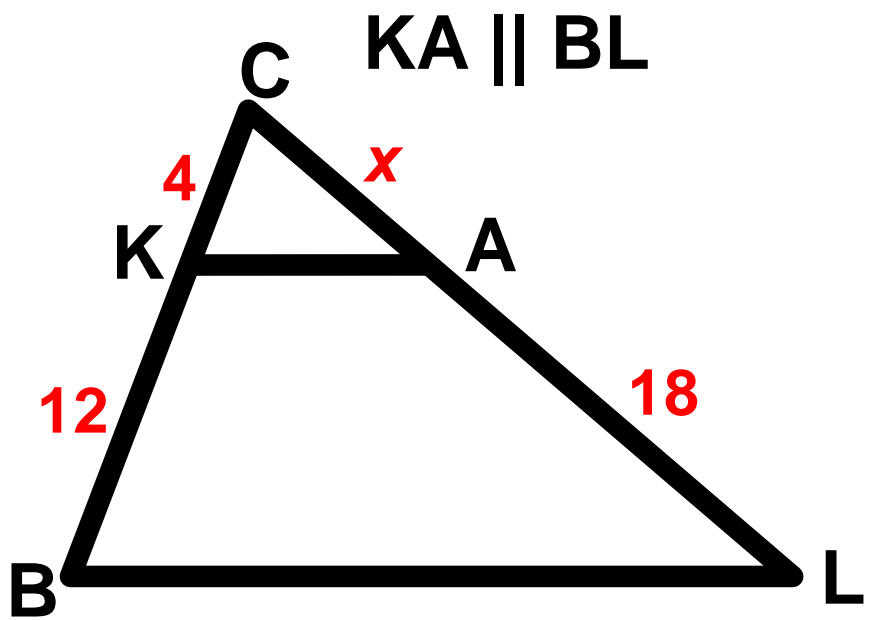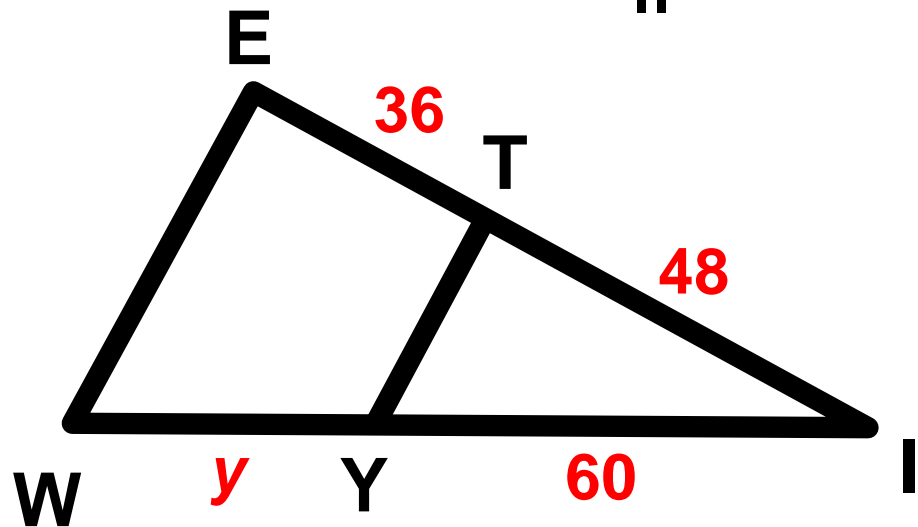
IS THERE AN EASIER WAY?

EXAMPLE 1

KA || BL

C

4 *x*

K A

12 18

B L

EXAMPLE 2

YT || WE

E

36

T

48

60

W

y

Y
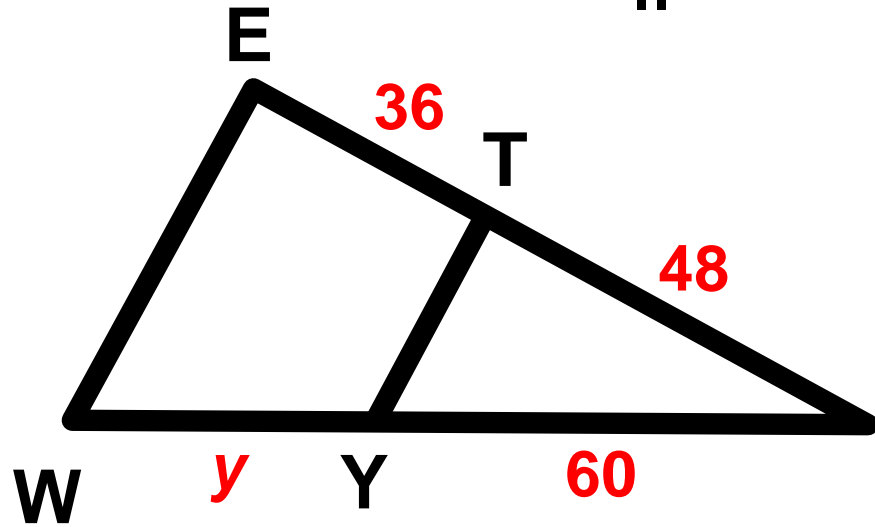
WARNING!!

THIS ONLY WORKS ON THE SIDES CUT BY THE PARALLEL LINE.

EXAMPLE 3

KA || BL

C

5

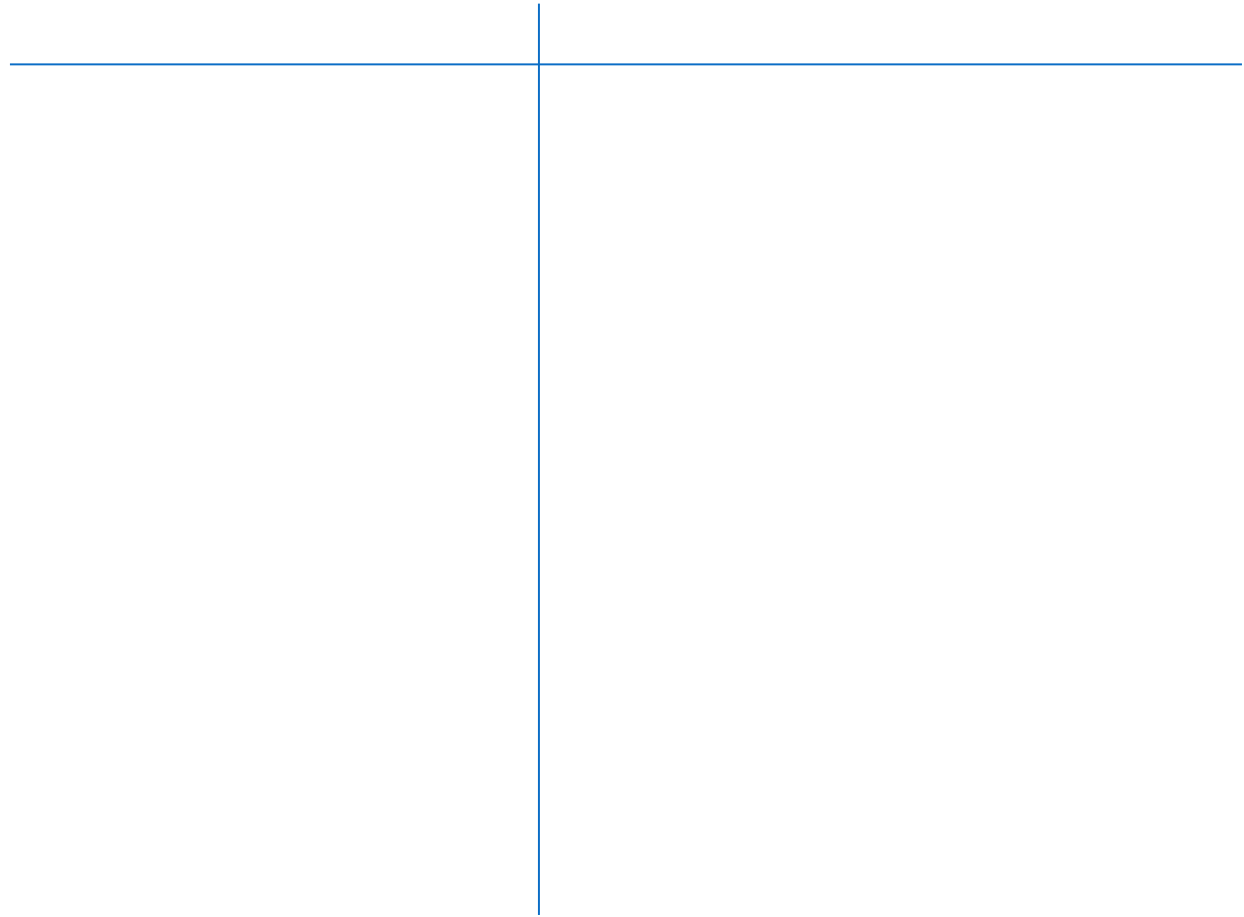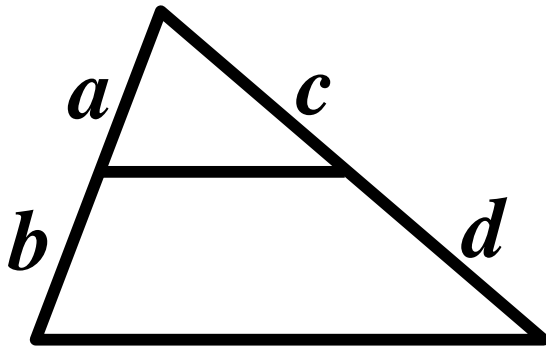K   A

a

15

B   L

36

Parallel Proportionality Theorem

POK
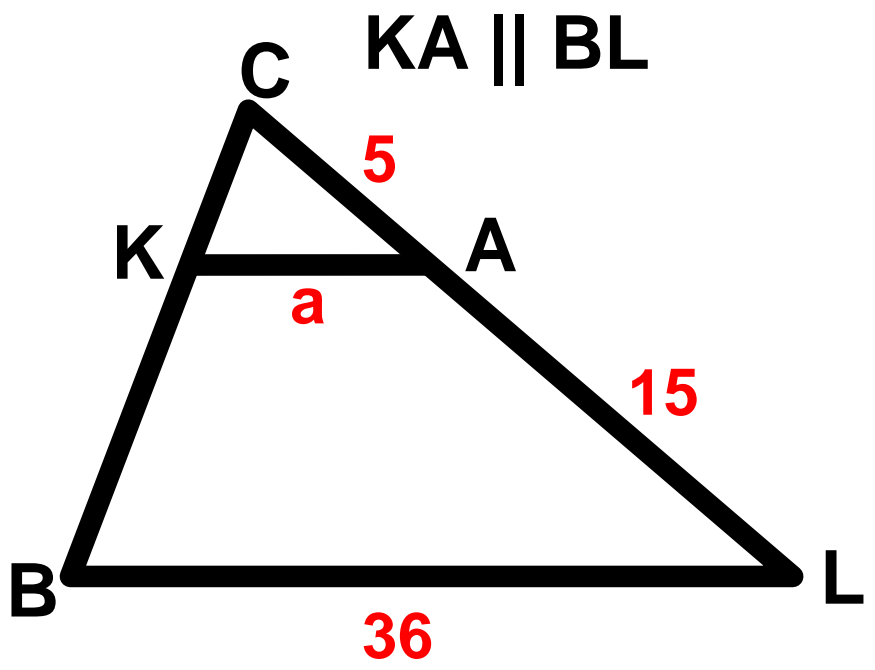
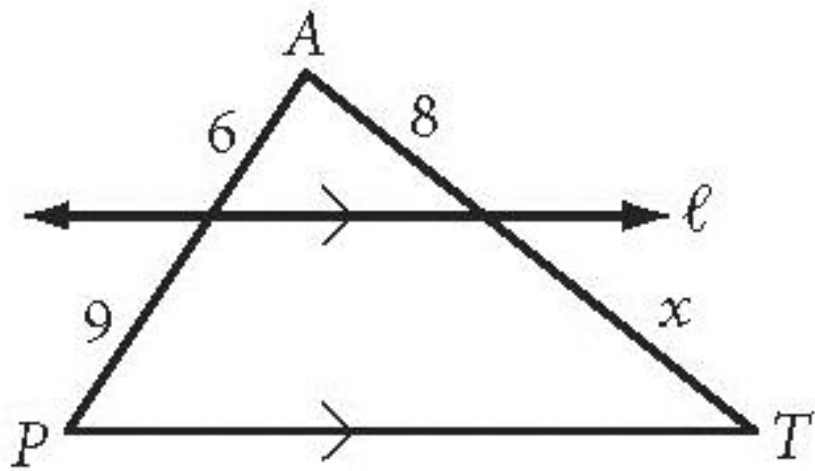If a line parallel to one side of a _____ passes through the other two sides, then it divides them _____ .

Conversely, if a line cuts two sides of a triangle proportionally, then it is _____ to the third side.

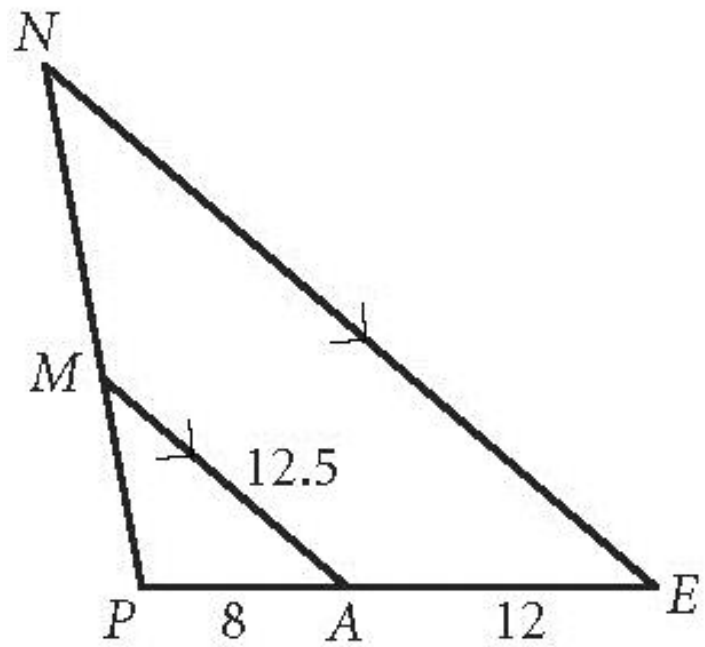# Proof of the Parallel Proportionality Theorem

Practice

1) $x = $ _____

2) $NE = $ _____

N

M

12.5

P   8   A   12   E

DOES THIS WORK FOR MORE THAN ONE PARALLEL LINE IN A TRIANGLE?

3)

$\overline{FT} \parallel \overline{LA} \parallel \overline{GR}$

$x = \underline{\ ?\ } \qquad y = \underline{\ ?\ }$

Is $\dfrac{FL}{LG} = \dfrac{TA}{AR}$?

E

21   42

F   T

35   x

L   A

28   y

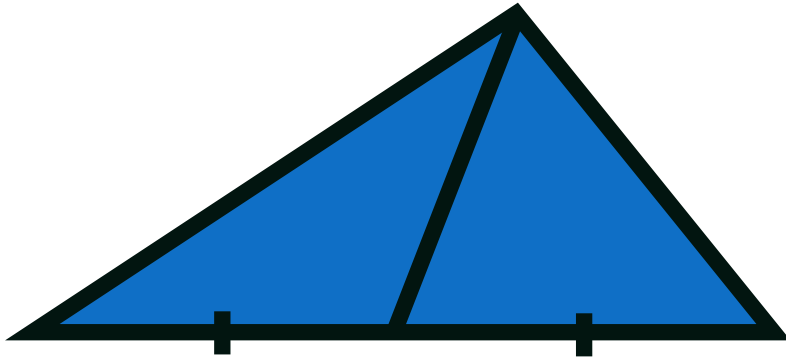G   R
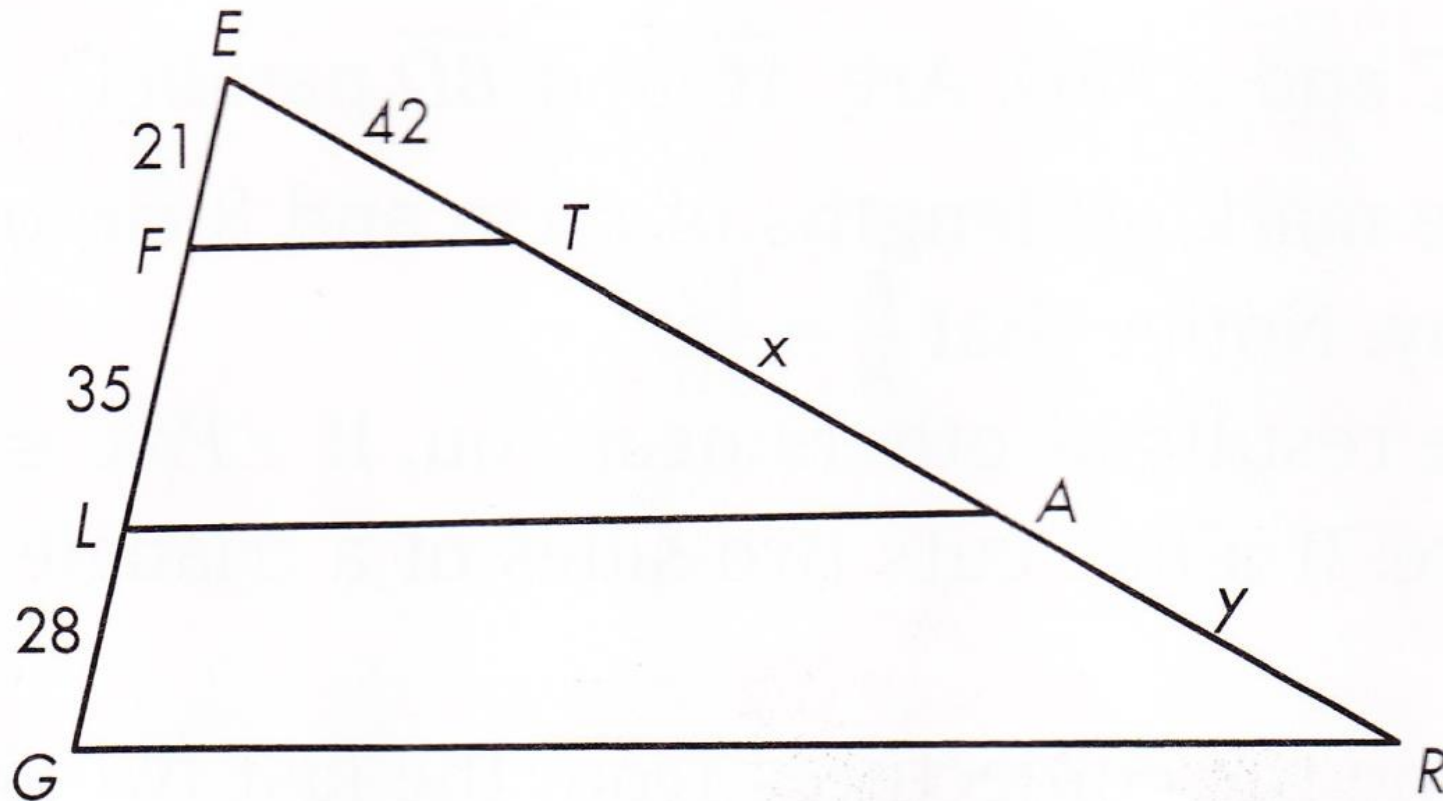
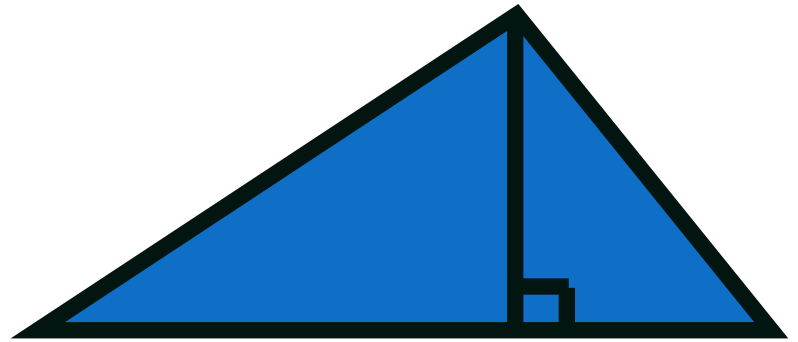# Extended Parallel Proportionality Theorem

POK

If two or more lines are _____ to the third side of a triangle, then they divide the two other sides proportionally.
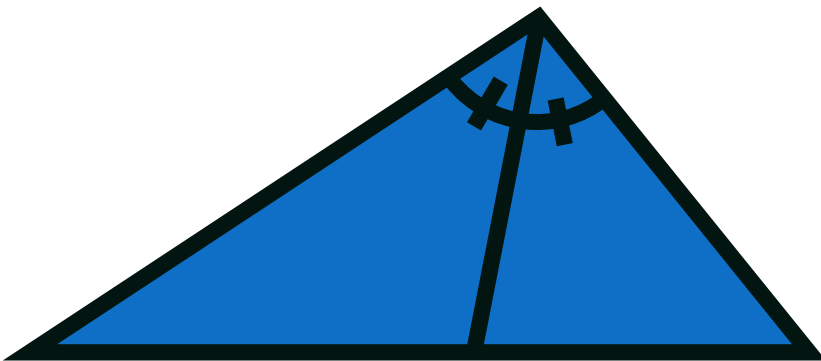
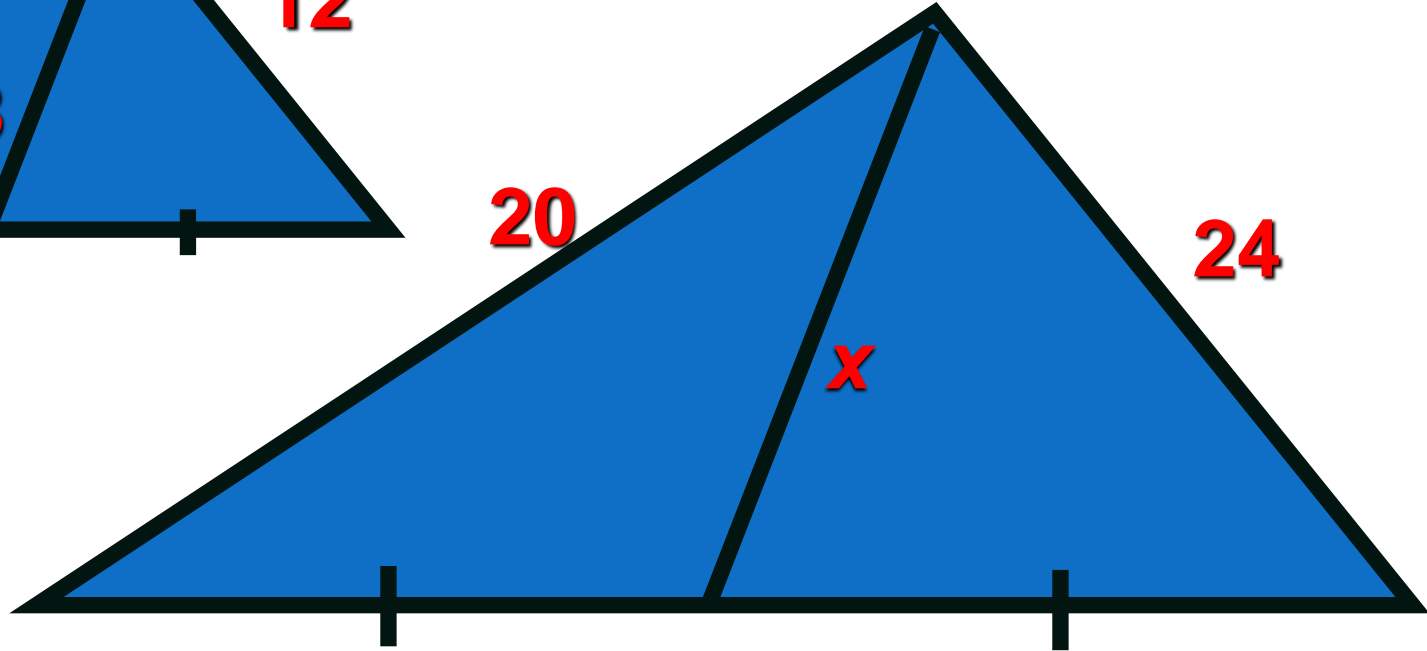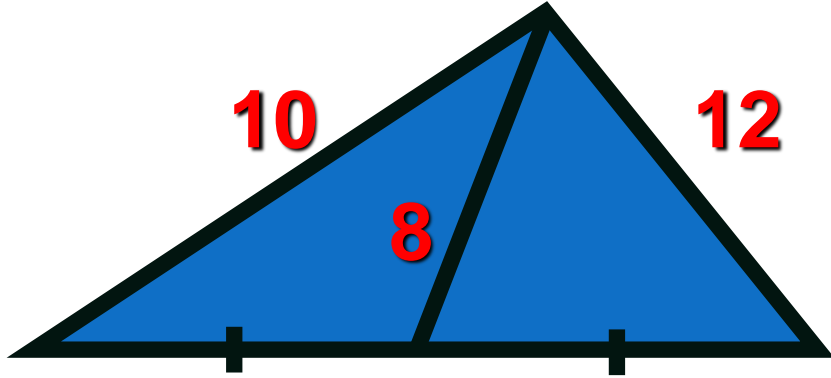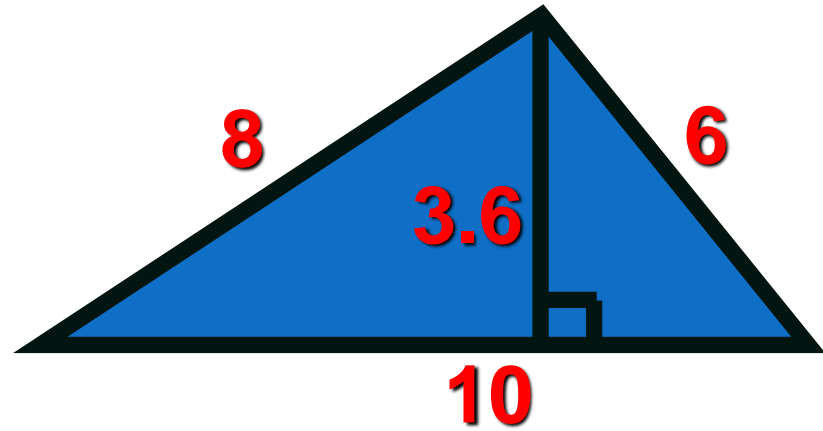# Review

Median
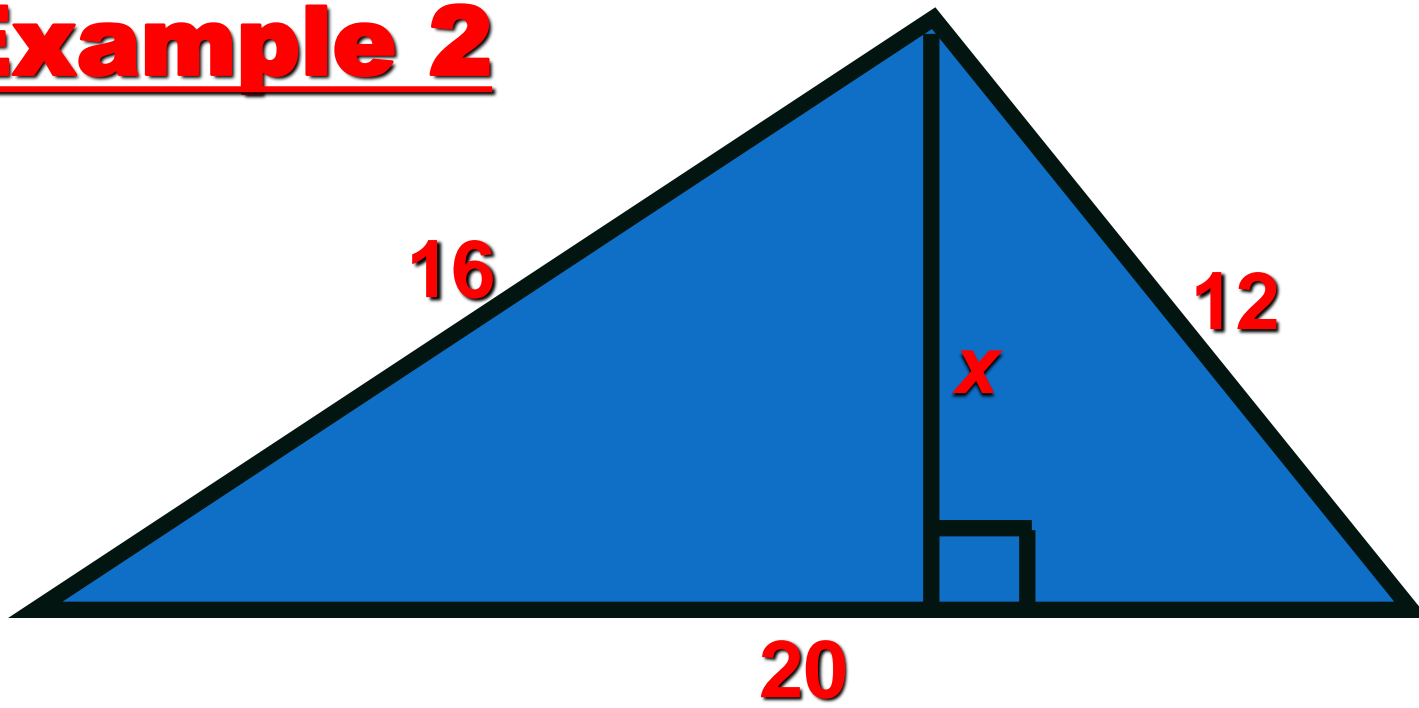

Altitudes

Angle Bisectors

Proportional Parts Theorem

If two triangles are similar, besides their sides, their corresponding _____, angle bisectors, and _____ are also proportional
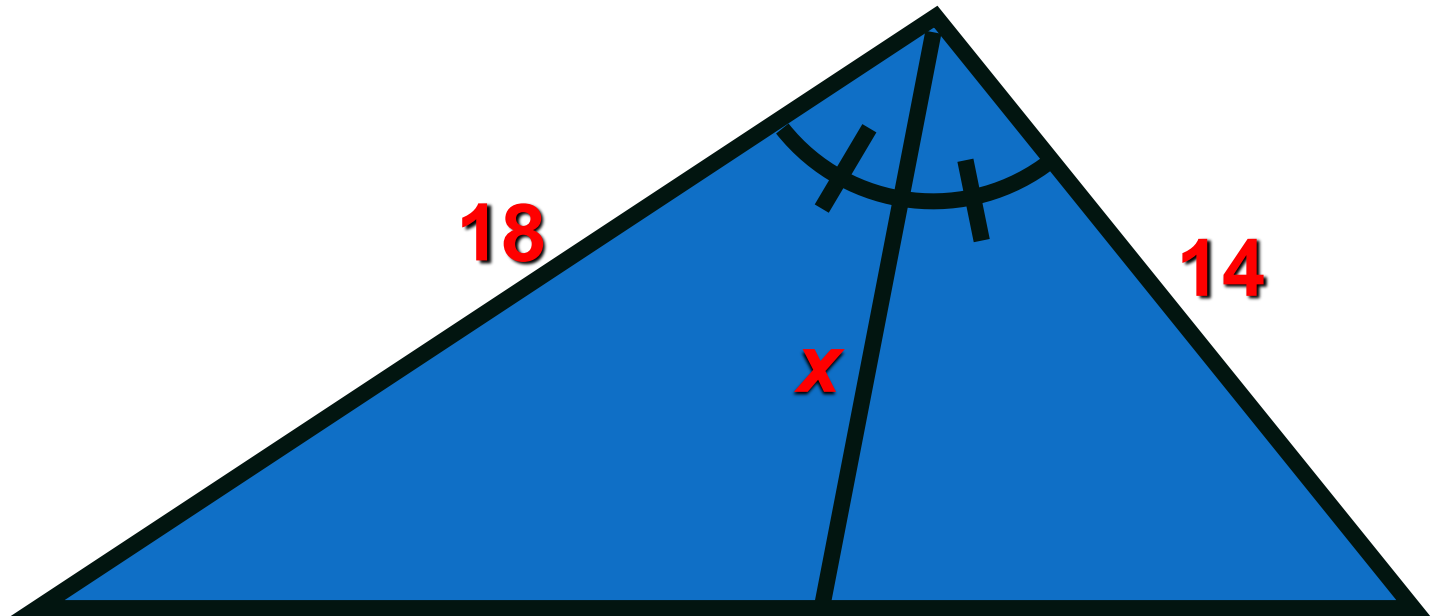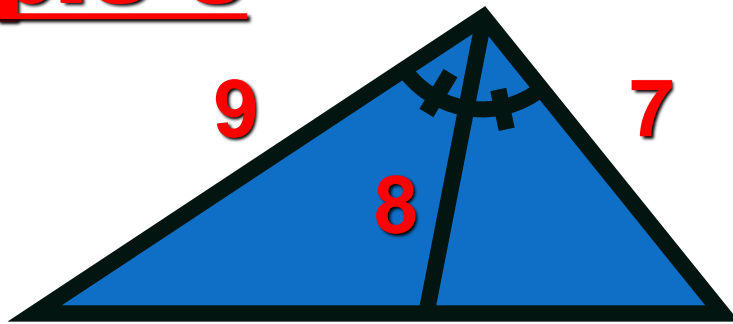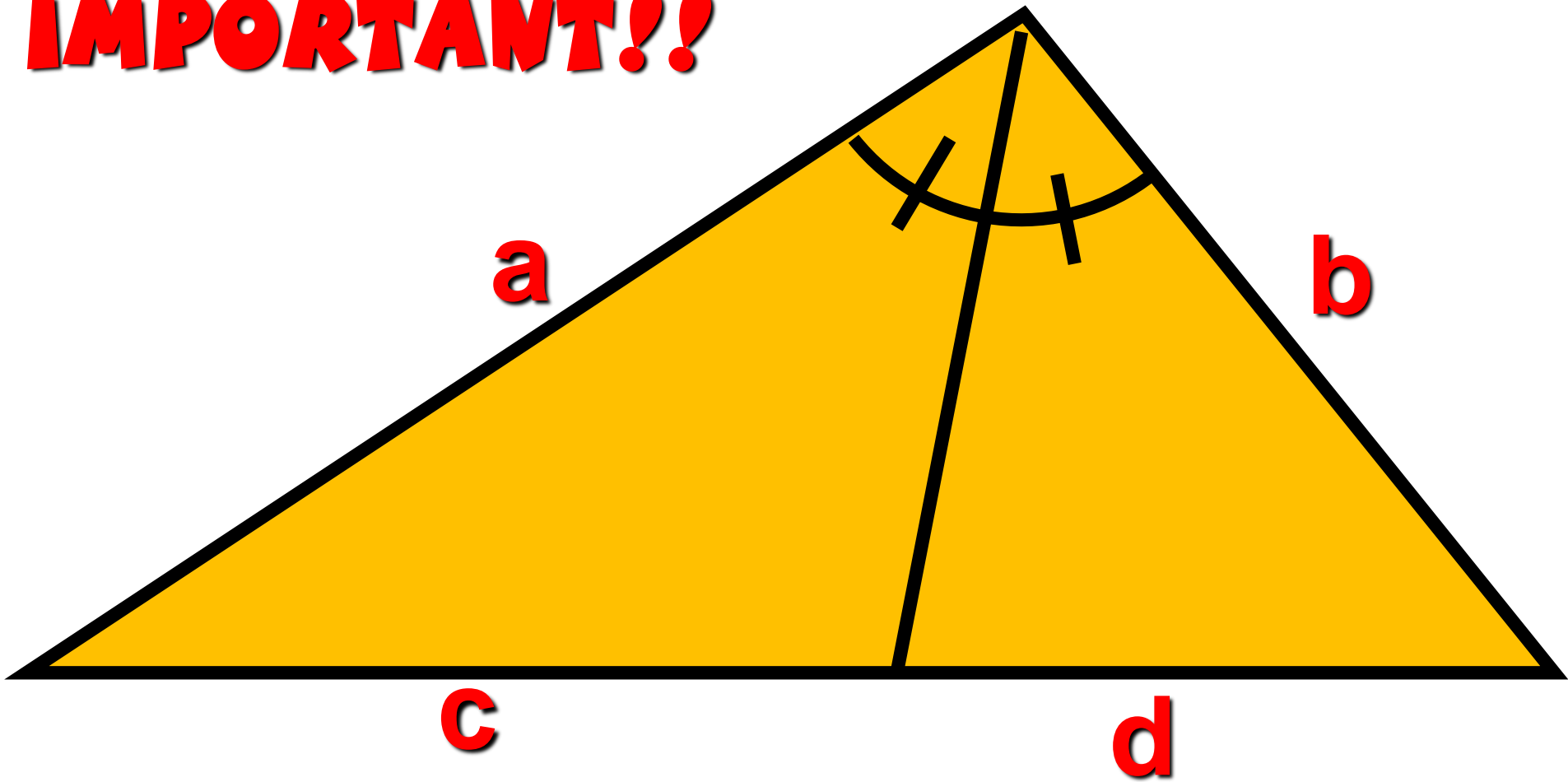
Example 1

Example 2

16

12

x

20

8

6

3.6
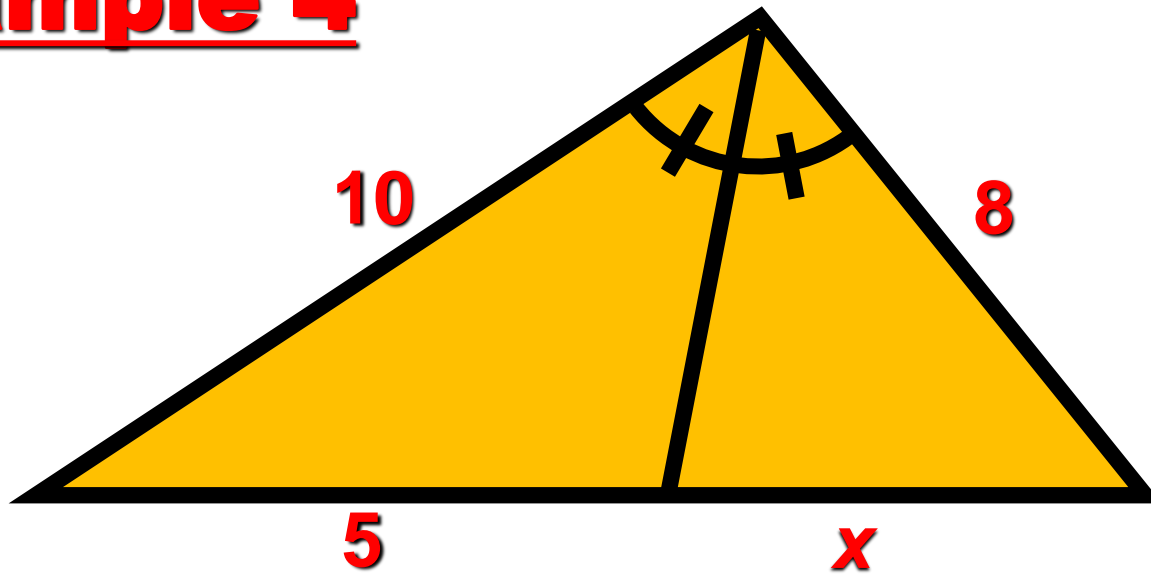
10

Example 3

IMPORTANT!!
a
b
c
d

Part Divided by an Angle Bisector Theorem

The angle _____ in a triangle divides the opposite side into two segments whose lengths are in the same ratio as the lengths of the two sides forming the angle

Example 4

10   8

5   *x*

Example 5