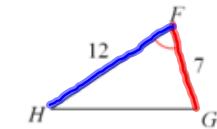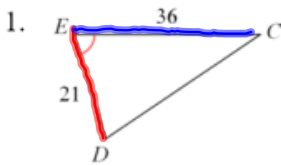# SM2 10.4 HW - Triangle Similarity Theorems

Determine whether the triangles are similar – mark any congruent angles and show whether the ratios of corresponding sides are the same. If the triangles are similar, state how you know they are similar (AA, SAS, or SSS), and complete the similarity statement.
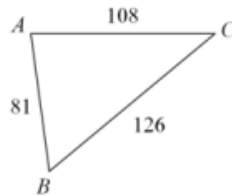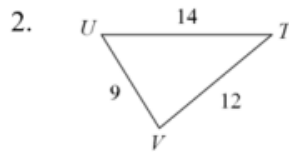
1.

$\triangle EDC \sim$ _____

2.

$\triangle ABC \sim$ _____

3.

$\triangle PQR \sim \triangle\_V\_$

1 angle, no sides
So if similar

must be
angle angle.
$82° = 82°$ so
$\angle Q \cong \angle V$

Notice $\angle QPR$
and $\angle VPW$
are vertical angles.

Vertical angles
are equal.

1 angle and two sides
so if similar must be
Side-angle side

Look at proportions
of sides. Are ratios =.

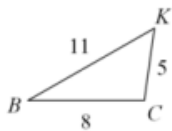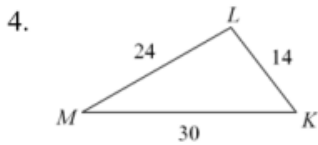$\dfrac{1^{st} \triangle \text{ small side}}{2^{nd} \triangle \text{ small side}}$? $\dfrac{1^{st} \text{ triangle large side}}{2^{nd} \text{ triangle large side}}$

$$\frac{21}{7} = \frac{36}{12}$$

Are ratios =. If so
the triangles are similar

4.

24　　L　　14

M　　30　　K

K

11　　5

B　　8　　C

△KLM ~ _____

5.

V　　24

U　　W　16　　R

39

26

Q

△WVU ~ _____
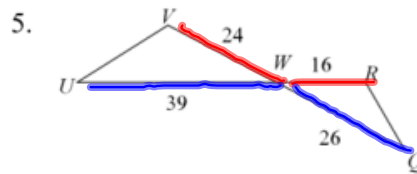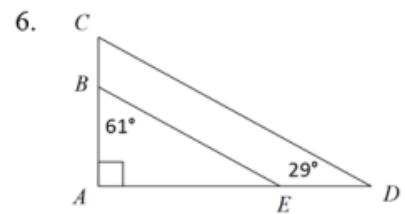
2 sides so if
similar must be
SAS.

$$\frac{24}{16} \overset{?}{=} \frac{39}{26}$$

∠VWU = ∠RWQ
by vertical angles

6.

C

B

61°

A　　E　　29°　　D

△ABE ~ _____

7.
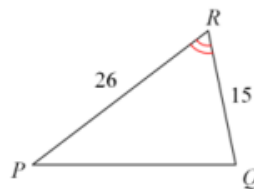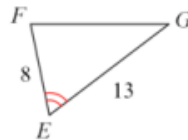
$\triangle DEF \sim$ _____
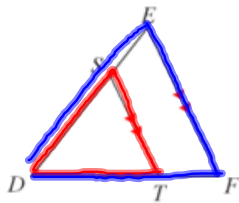
no sides,
must be AA~

if similar.

$\angle D \cong \angle D$

by alternate interior
angles $\angle S \cong \angle E$.

(from unit 9 notes)
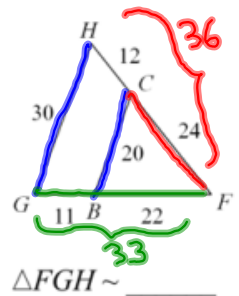
8.

8

13

26

15

$\triangle RQP \sim$ _____

9.

12   36

30   24

20

G   11 B   22   F

33

$\triangle FGH \sim$ _____

3 sides so
must be
SSS ~
Prove ratios are =.

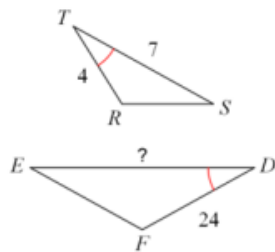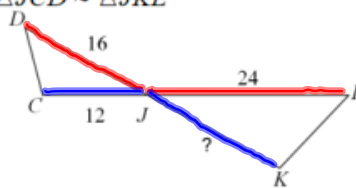$\frac{20}{30} \overset{?}{=} \frac{22}{33} \overset{?}{=} \frac{24}{36}$

What are the ratios?
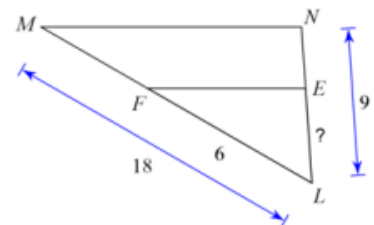Now write similarity statement.

Find each missing length.

10. △RST ~ △FED

T

7

4

R   S

E   ?   D

24

F

11. △JCD ~ △JKL

D

16

C   12   J   24   L

?

K

set up the proportion
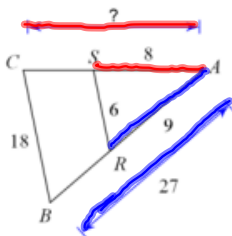
we know JC corresponds to JK
we know JD corresponds to JL

$$\frac{JC}{JK} = \frac{JD}{JL}$$

$$\frac{12}{?} = \frac{16}{24}$$

Solve for ?

12. △LEF ~ △LNM

M   N

F   E   9

18   6   ?

L

13. $\triangle RAS \sim \triangle BAC$

14. $\triangle PQR \sim \triangle ABC$

15. $\triangle SBC \sim \triangle STU$
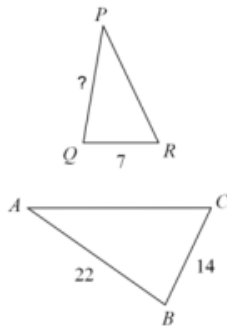
We know AC corresponds to AS

We know AR corresponds to AB

Set up the proportion.

$$\frac{\text{big }\triangle}{\text{little }\triangle} \quad \frac{AC}{AS} = \frac{AB}{AR} \quad \frac{\text{big triangle}}{\text{little triangle}}$$
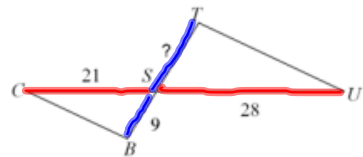
$$\frac{?}{8} = \frac{27}{9}$$

Solve for ?

SC corresponds to SU.
SB corresponds to ST

$$\frac{SC}{SU} = \frac{SB}{ST}$$

$$\frac{21}{28} = \frac{9}{?}$$

SOLVE for ?

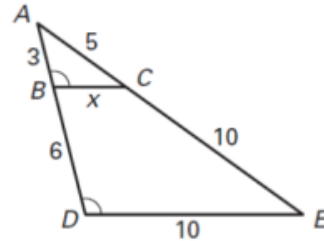**Use the diagram at the right to complete each statement.**

16. $\triangle CAB \sim$ _____

17. $\dfrac{AE}{AC} = \dfrac{?}{AB}$

18. $\dfrac{3}{9} = \dfrac{x}{?}$

19. $x =$ _____

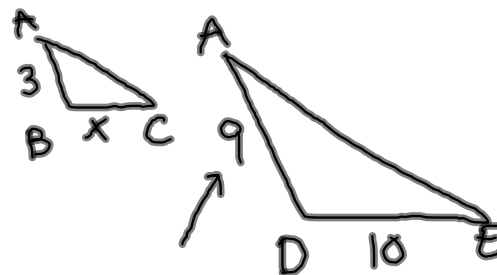20. The scale factor of $\triangle ABC$ to $\triangle ADE$ is _____

$\angle A \cong \angle A$

$\angle B \cong \angle D$
similar triangles by AA~

BC corresponds to DE
AB corresponds to AD

you have 2 overlapping triangles.

$3 + 6 = 9$
So by AA~

$\triangle ABC \sim \triangle ADE$

now use this similarity statement to complete problems 17 and 19.