Warm Up
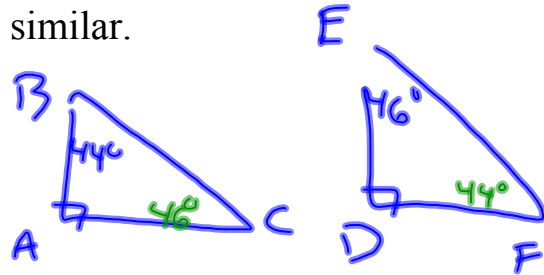
Determine whether the two triangles are similar.

1. $\triangle ABC$: $m\angle A = 90º$, $m\angle B = 44º$
       $\triangle DEF$: $m\angle D = 90º$, $m\angle E = 46º$

Yes

2. $\triangle ABC$: $m\angle A = 132º$, $m\angle B = 24º$
       $\triangle DEF$: $m\angle D = 90º$, $m\angle F = 24º$

$24º$
$66º$

No

3.   Solve: $\dfrac{6}{15} = \dfrac{x-1}{8}$
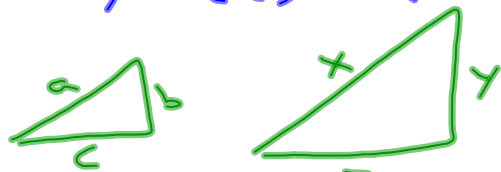
$15(x-1) = 48$

$15x - 15 = 48$

$15x = 63$

$x \approx 4.2$

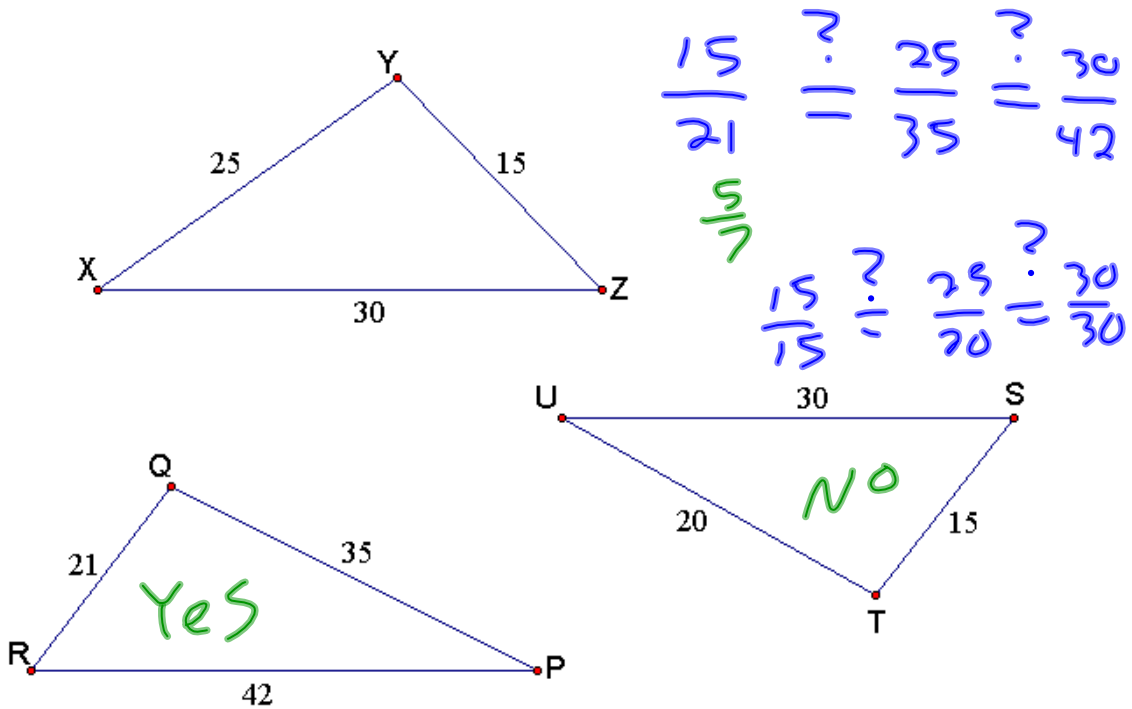$\dfrac{21}{5}$

$\dfrac{63}{15}$

6-5   SSS and SAS Similarity Theorems

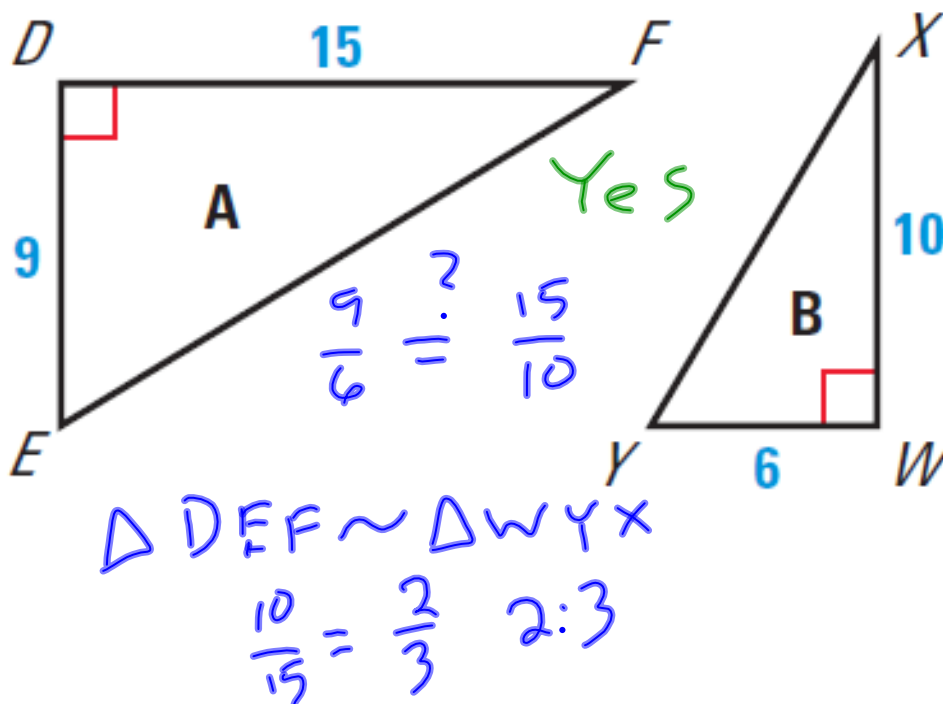SSS Similarity Theorem - 2 $\triangle$'s are similar if their corresponding sides are proportional

SAS Similarity Theorem - 2 $\triangle$'s are similar if two corresponding sides are proportional and the included angles are congruent
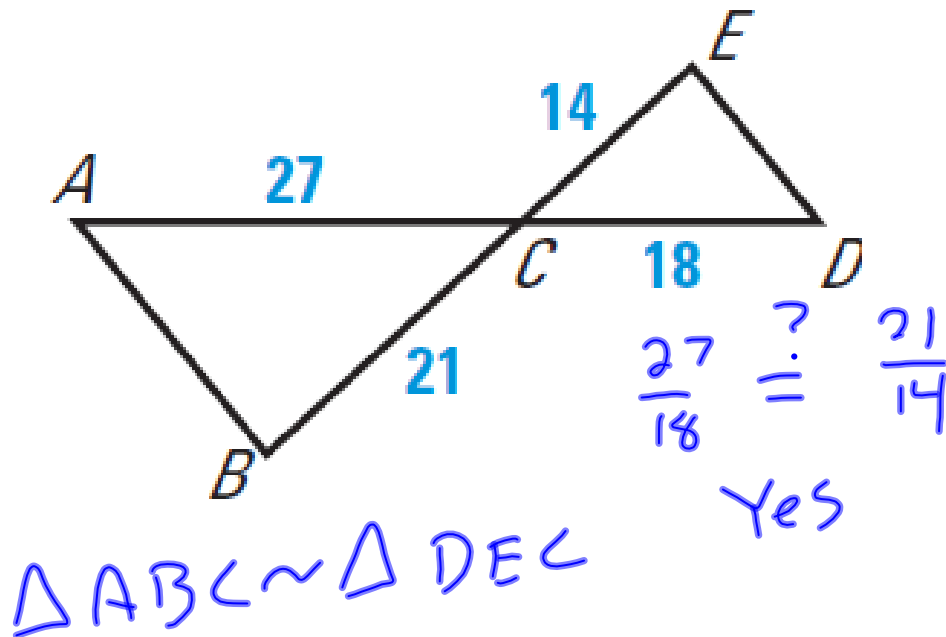
Ex 1   Is either triangle similar to triangle*XYZ*?

$$\frac{15}{21} \stackrel{?}{=} \frac{25}{35} \stackrel{?}{=} \frac{30}{42}$$

$$\frac{5}{7}$$

$$\frac{15}{15} \stackrel{?}{=} \frac{25}{20} \stackrel{?}{=} \frac{30}{30}$$

No

Y
25   15
X
30
Z

Q
21   35
Yes
R
42   P

U   30   S
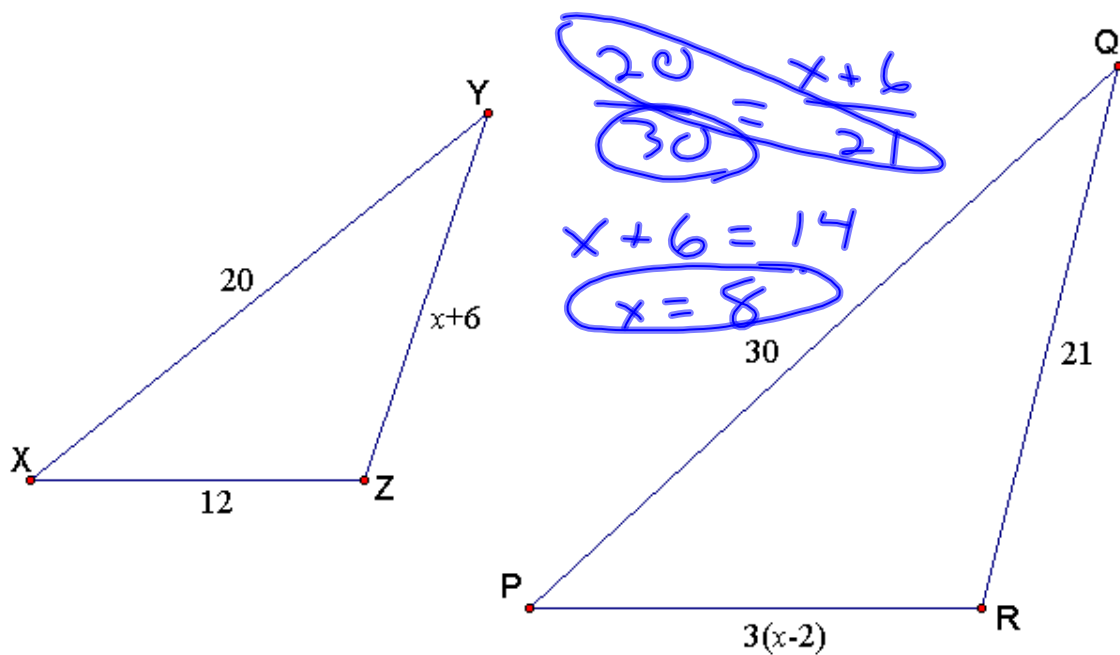20   15
T

Ex. 2   Determine whether the two triangles are similar. If they
         are, write a similarity statement and find the scale factor of
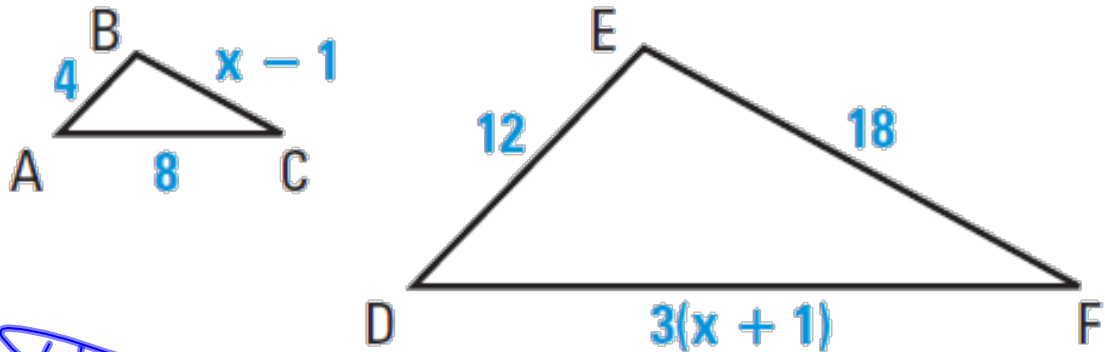   Triangle B to Triangle A.

D   **15**   F   X

A   *Yes*   **10**

9    $$\frac{9}{6} \stackrel{?}{=} \frac{15}{10}$$ **B**

E   Y   **6**   W

$$\triangle DEF \sim \triangle WYX$$

$$\frac{10}{15} = \frac{2}{3} \quad 2:3$$

Ex. 3   Show that the triangles are similar and write a similarity
statement. Explain your reasoning.

E

14

A 27

C 18 D

21 $\dfrac{27}{18} \overset{?}{=} \dfrac{21}{14}$

B

$\triangle ABC \sim \triangle DEC$ Yes

Ex 4   Find the value of x that makes $\triangle XYZ \sim \triangle PQR$

$\dfrac{20}{30} = \dfrac{x+6}{21}$

$x + 6 = 14$

$x = 8$

Q

Y

20

$x+6$

X

12 Z 30 21

P

$3(x-2)$ R

Ex. 5   Find the value of *x* that makes △*ABC* ~ △*DEF*.

B
4   $x - 1$
A   8   C

E
12   18
D $3(x + 1)$ F

$$\frac{4}{12} = \frac{x-1}{18}$$

$x - 1 = 6$
$x = 7$

Ex 6   Tell what method you would use to show that the triangles are similar.

SSS

32
16
20

24
12
15