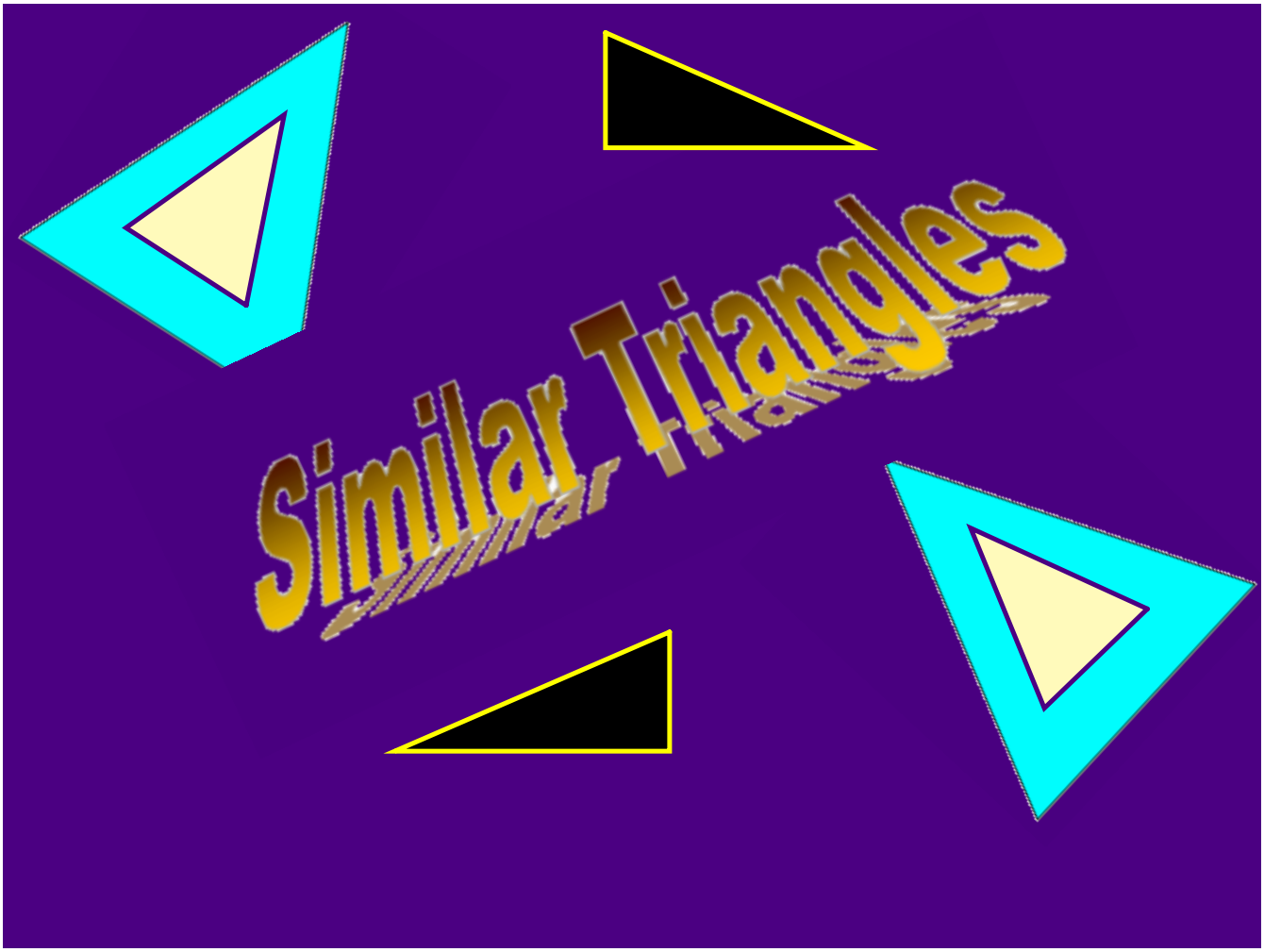
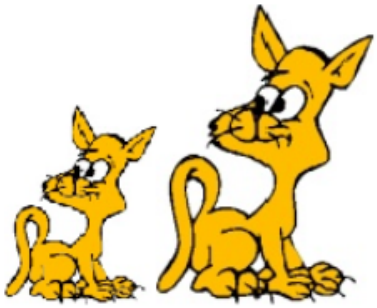

Similar Triangles



The cat on the right is an enlargement of the cat on the left. They are exactly the same shape, but they are NOT the same size.

These cats are similar figures.

Objects, such as these two cats, that have the same shape, but do not have the same size, are said to be "similar".

The mathematical symbol used to denote similar is ~ .

Do you remember this symbol as "part" of the symbol for congruent??

Similar Symbol

~

FOR YOUR INFORMATION...

How to tell if triangles are similar

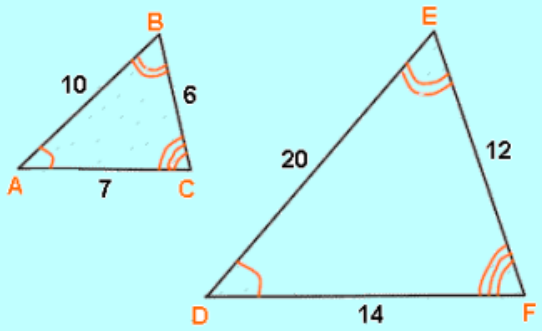
Any triangle is defined by six measures (three sides, three angles).
But you don't need to know all of them to show that two triangles are similar.

Triangles are similar if:

AAA (angle angle angle)
All three pairs of corresponding angles are the same.

SSS in same proportion (side side side)
All three pairs of corresponding sides are in the same proportion

SAS (side angle side)
Two pairs of sides in the same proportion and the included angle equal.



$\Delta ABC \sim \Delta DEF$

Facts about similar triangles:

ANGLES:

$\angle A = \angle D$

$\angle B = \angle E$

$\angle C = \angle F$

SIDES: (The sides are proportional.)

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

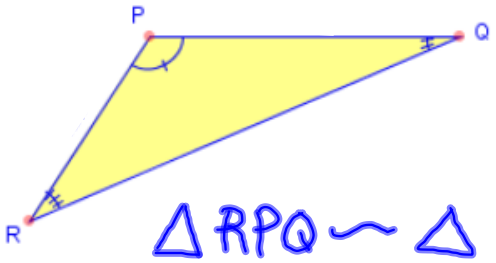
$\frac{10}{20} = \frac{6}{12} = \frac{7}{14}$

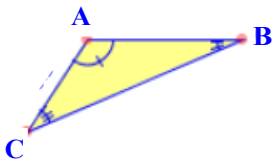
$0.5 = 0.5 = 0.5$

Try This !!

Write the similarity statement for each set of

a)

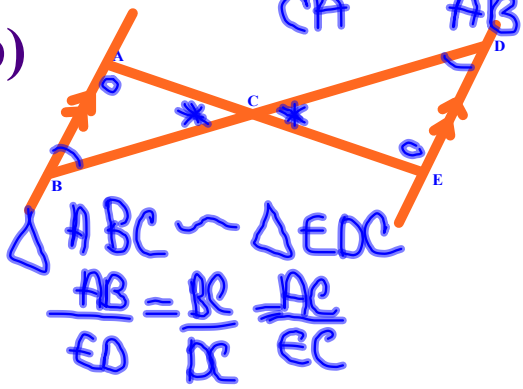




$\triangle RPQ \sim \triangle CAB$

$\frac{RP}{CA} = \frac{PQ}{AB} = \frac{RQ}{CB}$

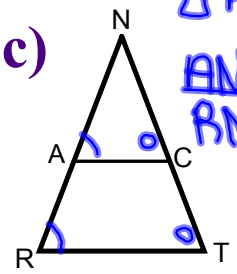
b)



$\triangle ABC \sim \triangle EDC$

$\frac{AB}{ED} = \frac{BC}{DC} \frac{AC}{EC}$

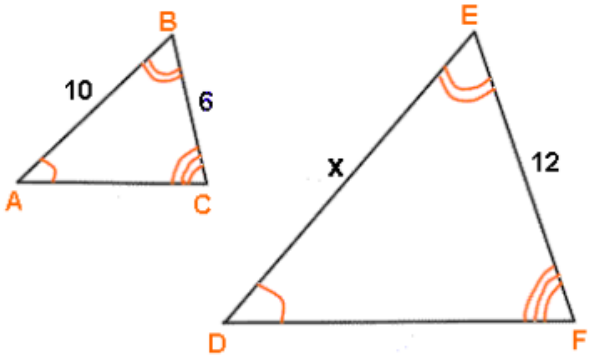
c)



$\triangle ANC \sim \triangle RNT$

$\frac{AN}{RN} = \frac{NC}{NT} = \frac{AC}{RT}$

Find x:



Identify the corresponding ANGLES first!!

1. Make the similarity statement.
2. Write the ratios.
3. Fill in the ratios:
4. Solve for the unknown.

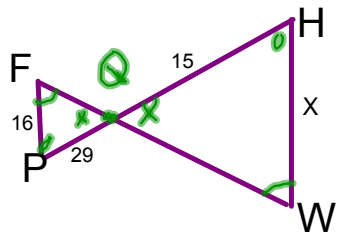
$\triangle ABC \sim \triangle DEF$

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

$\frac{10}{x} = \frac{6}{12} = \frac{AC}{DF}$

$\frac{6x}{6} = \frac{120}{6}$

$x = 20$



Write the similarity statement.
Write the ratios.
Fill in the ratios.
Solve.

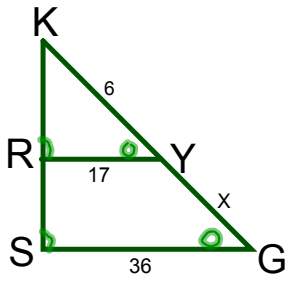
$\triangle FPQ \sim \triangle WHQ$

$$\frac{FP}{WH} = \frac{PQ}{HQ} = \frac{FQ}{WQ}$$

$$\frac{16}{x} = \frac{29}{15} = \frac{FQ}{WQ}$$

$$\frac{29x}{29} = \frac{240}{29}$$

$$x = 8.3$$



Write the similarity statement.
Write the ratios.
Fill in the ratios.
Solve.

$\triangle KRY \sim \triangle KSG$

$$\frac{KR}{KS} = \frac{RY}{SG} = \frac{KY}{KG}$$

$$\frac{KR}{KS} = \frac{17}{36} = \frac{6}{6+x}$$

$$17(6+x) = 216$$

$$102 + 17x = 216 - 102$$

$$\frac{17x}{17} = \frac{114}{17}$$

$$x = 6.7$$