

7.3 & 7.4 Similar Polygons & Triangles

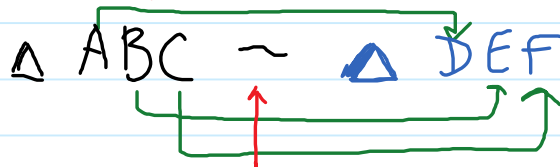
June 3, 2015 9:14 AM

Similar Polygons

- have the same shape, but not necessarily the same size
- enlargement or reduction
- matching angles are equal!
- matching sides are proportional!

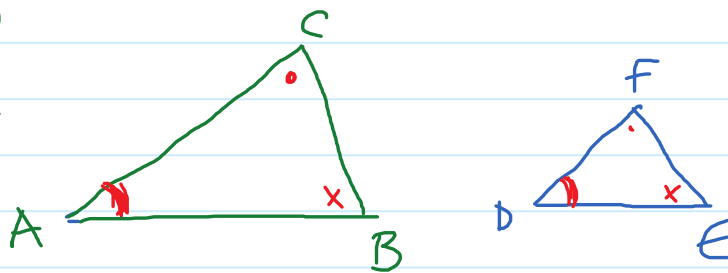
Similar Triangles

- a triangle is a special polygon
- when 2 triangles are similar
 - ↳ matching angles are equal
 - ↳ matching sides are proportional



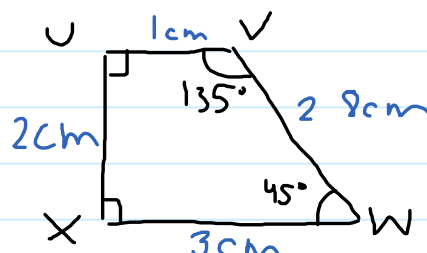
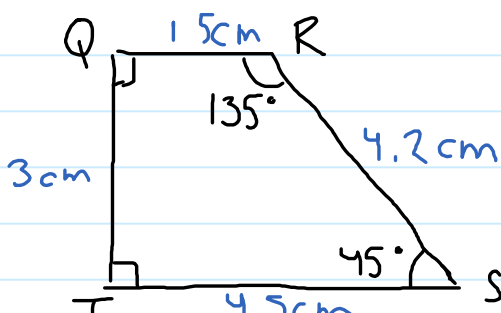
symbol means "is similar to"

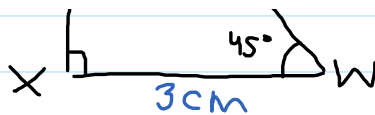
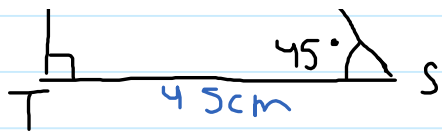
$$\begin{aligned} \angle A &= \angle D \\ \angle B &= \angle E \\ \angle C &= \angle F \end{aligned}$$



Ex #1

Are these quadrilaterals similar?





Check matching angles

$$\angle Q = \angle U = 90^\circ$$

$$\angle S = \angle W = 45^\circ$$

$$\angle R = \angle V = 135^\circ$$

$$\angle T = \angle X = 90^\circ$$

$$\frac{QR}{UV} = \frac{15}{1} = 15$$

$$\frac{ST}{WX} = \frac{45}{3} = 15$$

$$\frac{RS}{VW} = \frac{42}{2.8} = 15$$

$$\frac{TQ}{XU} = \frac{3}{2} = 1.5$$

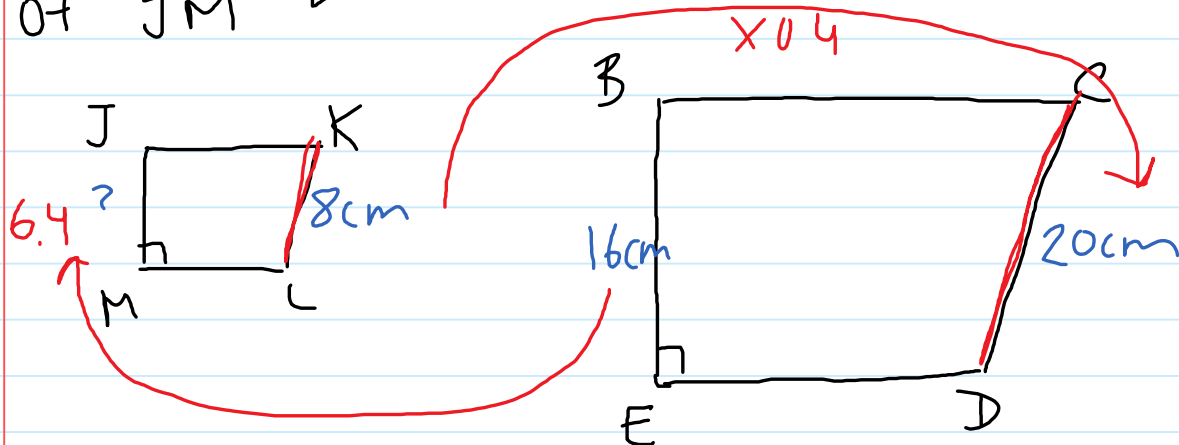
* All scale factors are equal, so matching sides are proportional!

* Angles are also equal!

∴ Quads are similar! ✓

Ex. #2

These 2 quads are similar find the length of JM



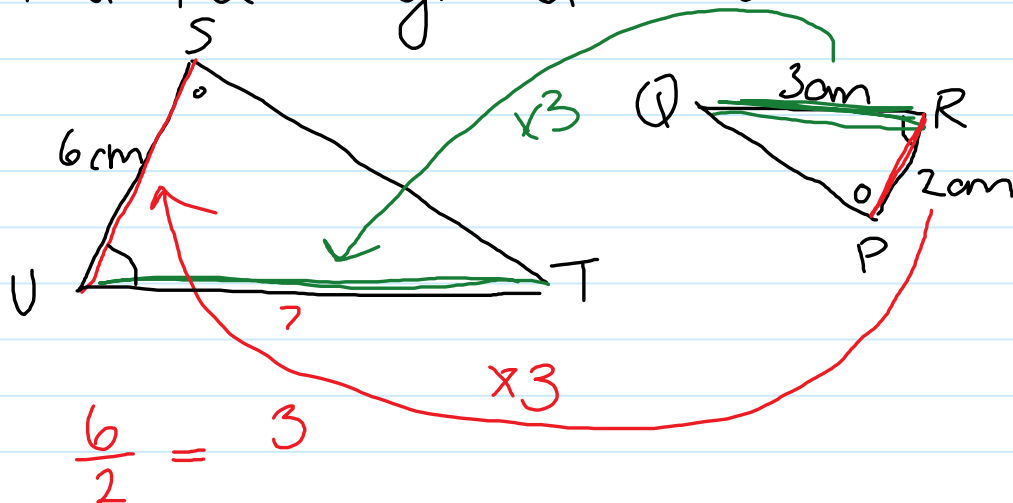
$$\frac{KL}{CD} = \frac{8}{20} = 0.4$$

Scale factor is 0.4
 length of JM $0.4 \times 16 = \boxed{6.4 \text{ cm}}$

length of JM = $0.4 \times 16 = \boxed{6.4 \text{ cm}}$

Ex #3

These 2 triangles are similar
find the length of TU



length of TU = $3 \times 3 = \boxed{9 \text{ cm}}$

pg 341 # 4-6, 9, 11

pg 349 # 4-7, 11