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

\[ \triangle ABC \sim \triangle DEF \]

symbol means "is similar to"

\[ \angle A = \angle D \]
\[ \angle B = \angle E \]
\[ \angle C = \angle F \]

Ex #1
Are these quadrilaterals similar?
Check matching angles:

\[ \angle Q = \angle U = 90^\circ \quad \angle R = \angle V = 135^\circ \]
\[ \angle S = \angle W = 45^\circ \quad \angle T = \angle X = 90^\circ \]

\[ \frac{QR}{UV} = \frac{15}{1} = 15 \]
\[ \frac{ST}{WX} = \frac{4.5}{3} = 1.5 \]
\[ \frac{RS}{W} = \frac{4.2}{2.8} = 1.5 \]
\[ \frac{TQ}{XU} = \frac{3}{2} = 1.5 \]

* All scale factors are equal, so matching sides are proportional.
* Angles are also equal.

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 = \( \sqrt{6.4} \) cm
Ex #3
These 2 triangles are similar

Find the length of TU

\[
\frac{6}{2} = 3
\]

length of TU = 3 \times 3 = 9 cm

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