Unit 6

L3 Isometric vs. Similar Figures

- **ISOMETRY** is a transformation that preserves side lengths and angle measurements. Examples:
  Rotation, Reflection or a composite of them
- The result (image) and the original are called **ISOMETRIC FIGURES** or **CONGRUENT FIGURES** (notation: ≅)
- **SIMILITUDE** is a transformation that results in a similar figure, but bigger/smaller in size. Example: Dilatation
- The result (image) is **SIMILAR** (notation: ~) to the original: angles are congruent (to preserve the shape), but sides are proportional.

~~Translation,~~

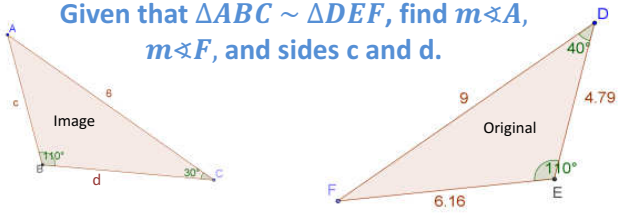
Ratio of similarity (scale factor): k

The ratio of similarity (scale factor) is

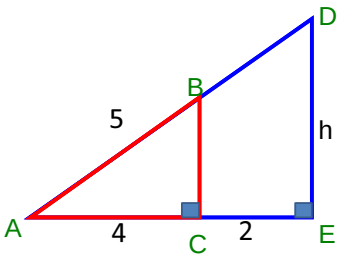
$$k = \frac{side\ length\ from\ the\ image}{side\ length\ from\ the\ original\ figure}$$

$$k = \frac{l_{new}}{l_{old}} = \frac{s\prime}{s}$$

Given that $\Delta ABC \sim \Delta DEF$, find $m\measuredangle A$, $m\measuredangle F$, and sides c and d.

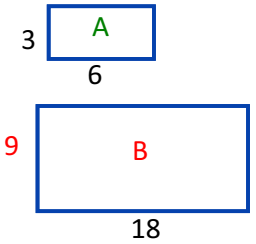


Ex I: Finding an unknown side given 2 similar triangles



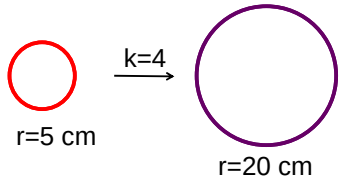
Understanding the ratio of perimeters of two similar rectangles

Ex 1: Figures A and B are similar



Understanding the ratio of areas of two similar circles

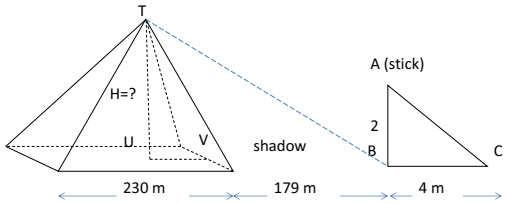
Ex 2:



Application of Similar Triangles

The 3 great pyramids of Egypt are Khufo, Khafre, Menkaure

Their heights were unknown for over 2000 years, until about 600 BC, when Thales of Miletus, a Greek Mathematician calculated it.



Since the sun creates equal angles on the ground, we have similar triangles: $\Delta ABC \sim \Delta TUB$;

UV = 230/2 = 115; so UB = 115 + 179 = 294m

Practice:
6.3 # 1-3, 7-9