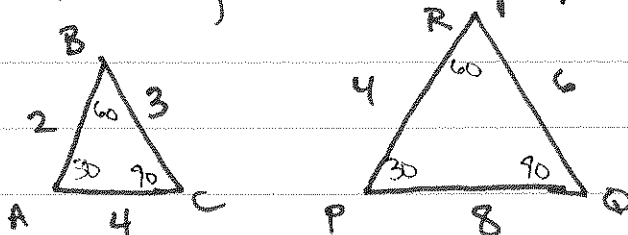


## 7.2 Similar Polygons

### Similar ( $\sim$ )

- \* same shape, but different size
- \* corresponding angles are  $\cong$
- \* corresponding sides are proportional



$$\frac{AB}{PR} = \frac{BC}{RQ} = \frac{AC}{PQ}$$

### Similarity ratio

- \* ratio of the lengths of the corresponding sides  
( $\frac{\text{old}}{\text{new}}$ )

Ex.  $\triangle ABC \sim \triangle DEF$

Angles

$$\angle A \cong \angle D$$

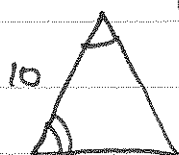
$$\angle B \cong \angle E$$

$$\angle C \cong \angle F$$

SIDES

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

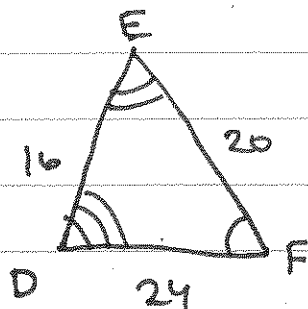
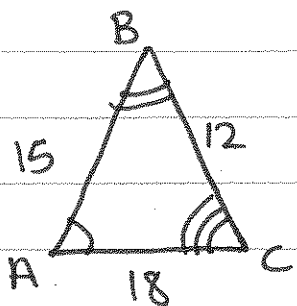
$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$



What is the similarity ratio?

$$\frac{4}{10} = \frac{2}{5} \text{ OR } 2:5$$

Ex. Determine if the two  $\Delta$ 's are  $\sim$

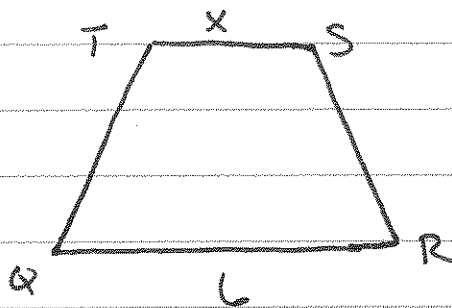
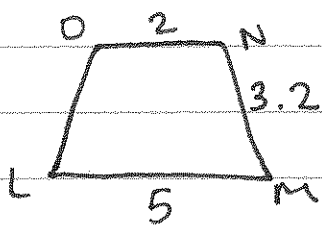


$$\frac{12}{16} = \frac{15}{20} = \frac{18}{24} \rightarrow \frac{3}{4}$$

$$\frac{BC}{ED} = \frac{AB}{EF} = \frac{AC}{DF} \rightarrow \Delta BAC \sim \Delta FED$$

Ex. Missing side lengths?

LMNO  $\sim$  QRST



$$\frac{LM}{QR} = \frac{ON}{TS} \rightarrow \frac{5}{6} = \frac{2}{x} \rightarrow x = 2.4$$

Golden Ratio

$$1.618 : 1$$

Properties of Proportions:  $\frac{a}{b} = \frac{c}{d}$  is equivalent to

$$(1) ad = bc \quad (2) \frac{b}{a} = \frac{d}{c} \quad (3) \frac{a}{c} = \frac{b}{d} \quad (4) \frac{a+b}{b} = \frac{c+d}{d}$$