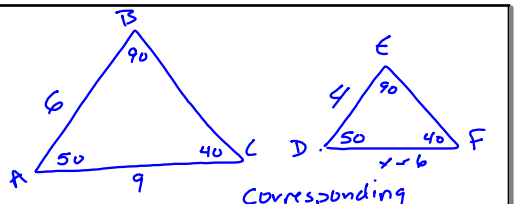
8.3 Similar Triangles

Comparing Triangles based on certain characteristics

Similar in polygons
- all corresponding ∠'s are ≅
- sides are proportional

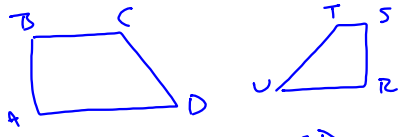


same shape different size

Corresponding - same spot

$m\angle A = m\angle D$
$m\angle B = m\angle E$
$m\angle C = m\angle F$
$\rightarrow \frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

$\frac{AB}{DE} = \frac{AC}{DF}$
$\frac{6}{4} = \frac{9}{x}$



$\frac{AB}{RS} = \frac{CD}{TU}$

Similar (~)

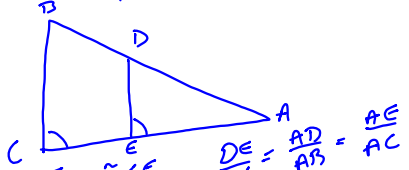
$\triangle ABC \sim \triangle DEF$

Third Angle Theorem
If two ∠'s of one Δ are ≅ to two ∠'s of another Δ, then the third ∠'s are also ≅

If all 3 ∠'s are ≅ to three corresponding ∠'s then the Δ's are similar

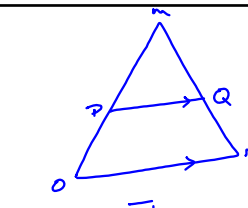
$\frac{36}{24} = \frac{3}{2} = 1.5$

Overlapping Triangles



$\frac{DE}{BC} = \frac{AD}{AB} = \frac{AE}{AC}$

$\angle C \cong \angle E$
$\angle A \cong \angle A$
$\angle B \cong \angle D$
$\triangle ABC \sim \triangle ADE$



If a segment is drawn parallel to the side that the segment is not connected to, then the new triangle is similar to the original

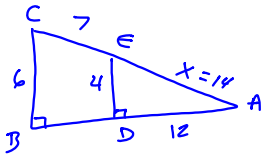
$\overline{PQ} \parallel \overline{ON}$

$\angle MPQ \cong \angle MON$ corresponds

$\angle MQP \cong \angle MNO$ corresponds

$\angle M \cong \angle M$ Reflexive triangle

$\triangle MPQ \sim \triangle MON$



How long is AE

$\frac{6}{4} = \frac{AC}{AE}$

$\frac{6}{4} = \frac{x+7}{x}$

$6x = 4x + 28$

$2x = 28$

How long is $\overline{AB}$

$\frac{CB}{ED} = \frac{AB}{AD}$

$\frac{6}{4} = \frac{x}{12}$

$\frac{72}{4} = \frac{4x}{4}$

$18 = x$