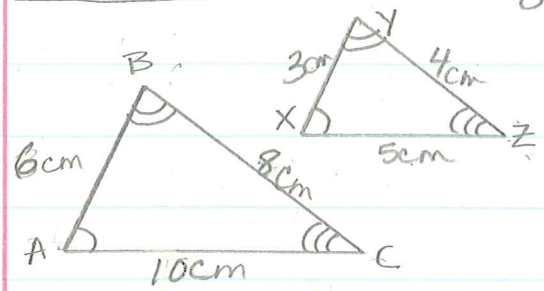
7-2 Similar Polygons



Similar polygons –
- Corr. $\angle$s are $\cong$
- corr. sides are proportional

$\triangle ABC \sim \triangle XYZ$

$\angle A \cong \angle X$
$\angle B \cong \angle Y$
$\angle C \cong \angle Z$

$$\frac{\overline{AB}}{\overline{XY}} = \frac{\overline{BC}}{\overline{YZ}} = \frac{\overline{CA}}{\overline{ZX}}$$

$$\frac{6}{3} = \frac{8}{4} = \frac{10}{5}$$

$$\frac{2}{1} = \frac{2}{1} = \frac{2}{1}$$ ← this means they are proportional

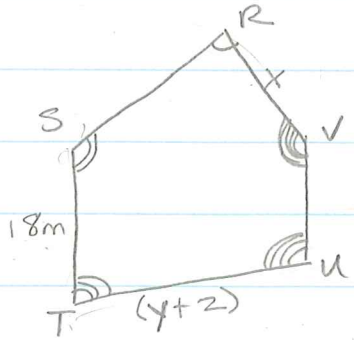
↳ scale factor – the ratio for two similar figures

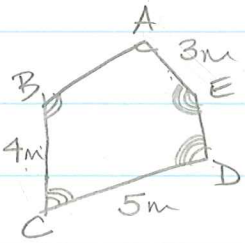
ex1: 1923 Checker Cab w/ length of 13ft.
model w/ length 6.5 inches.
What is the scale factor of the model compared to the car?

$13(12) = 156$ inches (car's length)

$$\frac{\text{model length}}{\text{car length}} = \frac{6.5}{156} = \boxed{\frac{1}{24}}$$

ex2: These two polygons are similar. Write a similarity statement. Find x, y and UT.





polygon RSTUV ~ polygon ABCDE

$\frac{18}{4} = \frac{x}{3}$

$4x = 18(3)$

$\frac{4x}{4} = \frac{54}{4}$

$x = 13.5$

$\frac{18}{4} = \frac{(y+2)}{5}$

$4(y+2) = 90$

$4y + 8 = 90$

$-8 \quad -8$

$\frac{4y}{4} = \frac{82}{4}$

$y = 20.5$

$UT = y+2$

$UT = 20.5+2$

$UT = 22.5m$

ex3: $\triangle ABC \sim \triangle XYZ$ w/ scale factor of $\frac{2}{3}$ if AB = 6 inches, find XY.

$\triangle ABC \rightarrow \frac{6}{x} = \frac{2}{3}$

$\triangle XYZ \rightarrow$

$18 = 2x$

$x = 9$ inches

$XY = 9$ inches