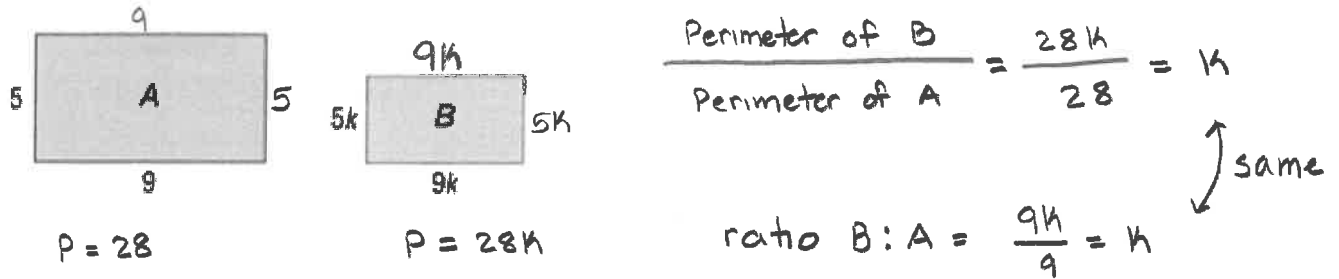
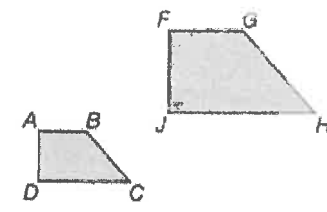


11.5 Areas of Similar Figures
Geometry CC

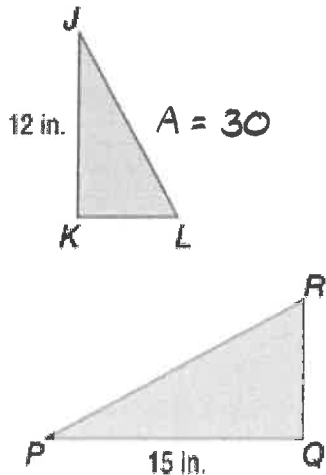
Recall:

If two polygons are similar then their perimeters are proportional to the scale factor between them.



<p>Areas of Similar Polygons</p>	<p>If two polygons are similar, then their areas are proportional to the square of the scale factor between them.</p>	 <p>If $ABCD \sim FGHI$, then</p> $\frac{\text{area of } FGHI}{\text{area of } ABCD} = \left(\frac{FG}{AB}\right)^2$
----------------------------------	---	---

1. If $\triangle JKL \sim \triangle PQR$ and the area of $\triangle JKL = 30 \text{ in}^2$. Find the area of $\triangle PQR$.



scale factor between $\triangle JKL$ and $\triangle PQR$
is $12/15 = 4/5$

so the ratio of the areas is $(4/5)^2 = 16/25$

$$\frac{\text{area } \triangle JKL}{\text{area } \triangle PQR} = \left(\frac{JK}{PQ}\right)^2$$

$$\frac{30}{\text{area } \triangle PQR} = \frac{16}{25}$$

$$750 = 16 (\text{area } \triangle PQR)$$

$$46.875 \text{ in}^2 = \text{area } \triangle PQR$$

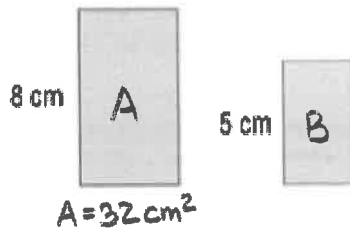
* after test

SAT prep rather than no HWK

11.5 Areas of Similar Figures Geometry CC

2. For each pair of similar figures, find the area of the figure on the right:

a.



$$\frac{\text{area A}}{\text{area B}} = \left(\frac{8}{5}\right)^2$$

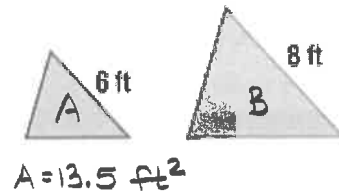
$$\frac{32}{\text{area B}} = \frac{64}{25}$$

$$800 = 64 (\text{area B})$$

$$12.5 = \text{area B}$$

$$\boxed{12.5 \text{ cm}^2 = \text{area B}}$$

b.



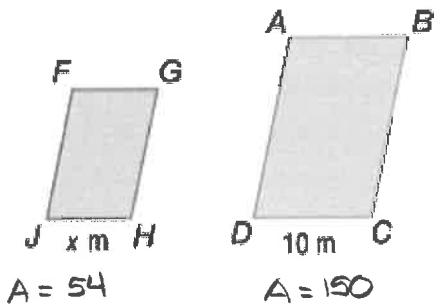
$$\frac{\text{area A}}{\text{area B}} = \left(\frac{6}{8}\right)^2$$

$$\frac{13.5}{\text{area B}} = \frac{36}{64}$$

$$864 = 36 (\text{area B})$$

$$\boxed{24 \text{ ft}^2 = \text{area B}}$$

3. The area of parallelogram $ABCD = 150 \text{ m}^2$. The area of parallelogram $FGHJ = 54 \text{ m}^2$. If the two parallelograms are similar, find the scale factor of parallelogram $FGHJ$ to parallelogram $ABCD$ and find x .



$$\frac{\text{area FGHJ}}{\text{area ABCD}} = \left(\frac{x}{10}\right)^2$$

$$\frac{54}{150} = \left(\frac{x}{10}\right)^2$$

$$\frac{54}{150} = \frac{x^2}{100}$$

$$5400 = 150x^2$$

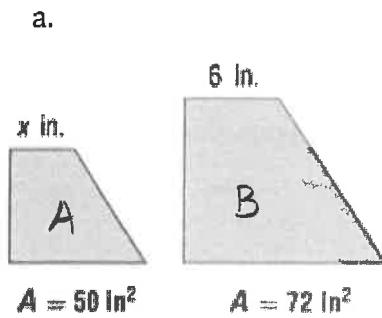
$$36 = x^2$$

$$\boxed{6 = x}$$

$$\boxed{\text{scale factor} = \frac{6}{10} = \frac{3}{5}}$$

11.5 Areas of Similar Figures
Geometry CC

4. For each pair of similar figures, use the given areas to find the scale factor of the left figure to the right figure. Then find x .



$$\frac{50}{72} = \left(\frac{x}{6}\right)^2$$

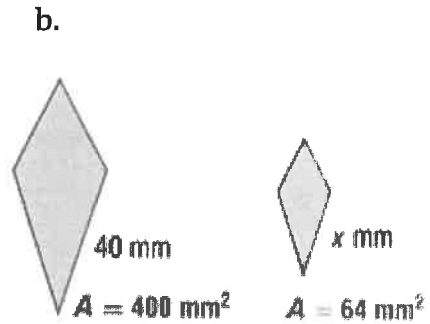
$$\frac{50}{72} = \frac{x^2}{36}$$

$$1800 = 72x^2$$

$$25 = x^2$$

$$5 = x$$

$$\text{scale factor} = \frac{5}{6}$$



$$\frac{400}{64} = \left(\frac{40}{x}\right)^2$$

$$\frac{400}{64} = \frac{1600}{x^2}$$

$$102,400 = 400x^2$$

$$256 = x^2$$

$$16 = x$$

$$\text{scale factor} = \frac{40}{16} = \frac{5}{2}$$

