



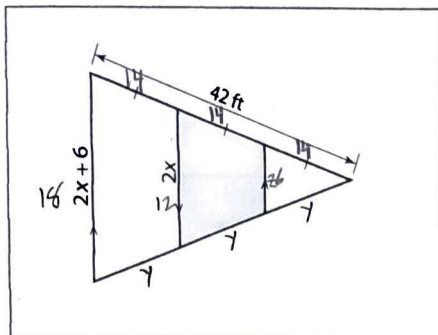
# SOLVING SIMILAR TRIANGLES 2

The Weight Room

	<ol style="list-style-type: none"> <li>Write a similarity statement.</li> <li>Find <math>x</math>.  <math>\triangle SNR \sim \triangle KOR</math> AA  <math>\frac{25}{10} = \frac{x}{16} = \frac{x+16}{16}</math>  <math>80 = 2x + 32</math>  <math>24 \text{ ft} = x</math> </li> </ol>
	<p>The perimeters of the large and small triangle are 630 cm and 490 cm.</p> <ol style="list-style-type: none"> <li>Find <math>c</math>.  <math>\frac{490}{630} = \frac{c}{56} \Rightarrow c = 196 \text{ cm}</math> </li> <li>Find <math>d</math>.  <math>\frac{490}{630} = \frac{d}{d+30} \Rightarrow d = 105 \text{ cm}</math> </li> <li>What percentage of the larger triangle is covered by the smaller triangle?  <math>A_B = \frac{1}{2}(252)(96) = 11346</math>    <math>A_S = \frac{1}{2}(196)(74) = 6866</math>  <math>\frac{6866}{11346} = 60.5\%</math> </li> </ol>
<p>All measurements are in centimeters.</p>	<ol style="list-style-type: none"> <li>There are three similar triangles in this diagram. Write a similarity statement that includes all three. <math>\triangle FIR \sim \triangle SGE \sim \triangle GFE</math></li> <li>Find <math>a</math>.  <math>\frac{16}{4} = \frac{4}{a} = \frac{8+a}{a} \Rightarrow a = \frac{8}{3} \text{ cm}</math> </li> <li>Find <math>b</math>.  <math>\frac{4}{20} = \frac{1}{5} = \frac{8}{8+b} \Rightarrow b = \frac{32}{3} \text{ cm}</math> </li> </ol>
<p>All measurements are in inches.</p>	<ol style="list-style-type: none"> <li>Find <math>m</math>.  <math>\frac{11}{23} = \frac{9}{11+m} \Rightarrow m = \frac{82}{11} \approx 7.52</math> </li> <li>Find <math>n</math>.  <math>\frac{11}{2} = \frac{23}{n} \Rightarrow n = \frac{46}{11} \approx 4.18</math> </li> <li>There are three similar triangles. Find the perimeter of each.  <math>P_B = \frac{581}{11} \approx 52.82</math>    <math>P_m = \frac{581}{23} \approx 25.62</math>    <math>P_S = \frac{1162}{121} \approx 9.60</math> </li> </ol>

$$\frac{9}{11} = \frac{x}{11} \Rightarrow x = \frac{121}{23}$$

$$\frac{y}{9} = \frac{46/11}{11} \Rightarrow y = \frac{414}{121}$$

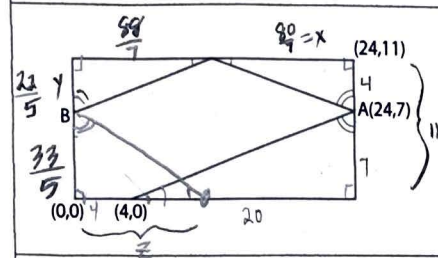


$$12. \text{ Find } x. \quad \frac{28}{42} = \frac{z}{3} = \frac{2x}{2+16} \Rightarrow x=6$$

13. Find the perimeter of the shaded trapezoid.

$$\frac{14}{28} = \frac{1}{2} = \frac{z}{12} \Rightarrow z=6$$

$$P = 46 \text{ ft assuming isos.}$$



14. Find the coordinates of point B.  $(0, \frac{33}{5})$

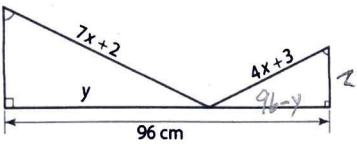
15. Suppose this diagram represents the path of a billiard ball on a table. Find the coordinates of the ball after one more bounce.

$$\frac{33}{5} = \frac{z}{20} \Rightarrow z = \frac{132}{5}$$

$$\frac{4}{7} = \frac{x}{20}$$

$$\frac{80}{7} = \frac{4}{y}$$

The larger triangle is similar to the smaller one by a scale factor of 5:3.



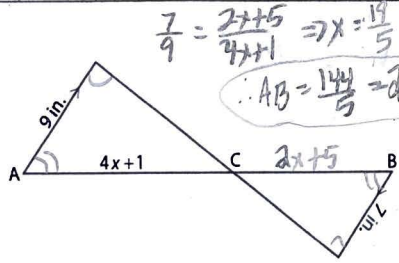
16. Find x.  $\frac{5}{3} = \frac{7x+2}{4x+3} \Rightarrow x=9$

17. Find y.  $\frac{5}{3} = \frac{y}{96-y} \Rightarrow y=60$

18. If you know the Pythagorean Theorem, find the perimeter of the smaller triangle.

$$39^2 = 36^2 + z^2$$

$$z = 15 \therefore P = 90$$



19. If  $AB = 6x + 6$ , what is the value of  $AB$ ?

20. The perimeter of the triangle on the left is 37 in.. Find the perimeter of the triangle on the right.

$$\frac{7}{9} = \frac{P}{37} \quad P = \frac{259}{9} \approx 28.78$$

21. Make up a similar-triangle problem that involves only integer values and that uses a scale factor of 8:3. For an additional challenge, try to include binomial expressions like  $2x + 3$ .