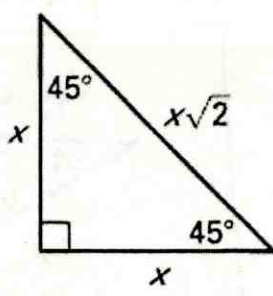
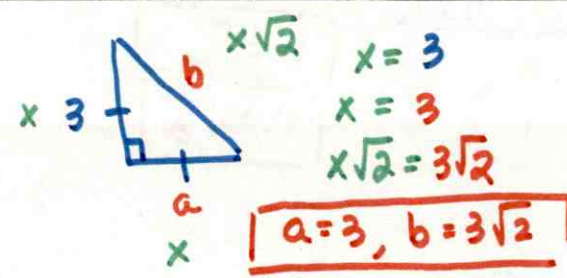
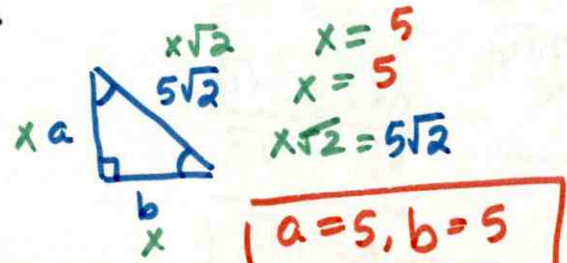
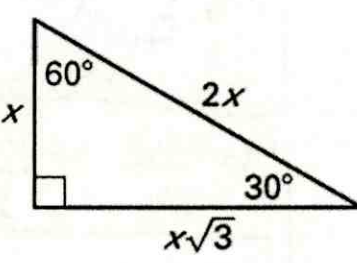
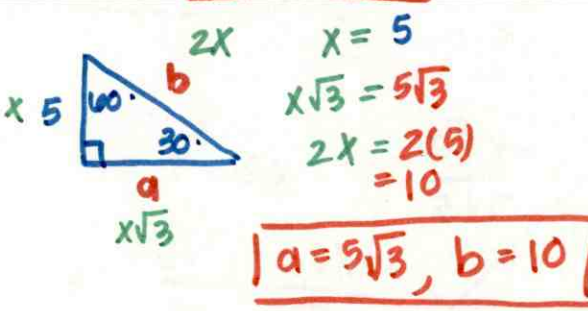
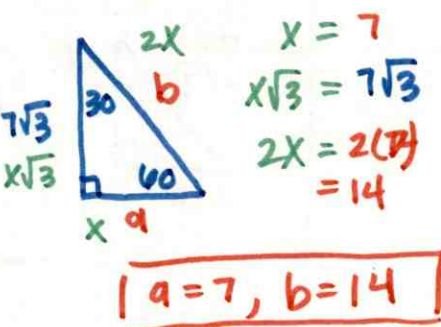
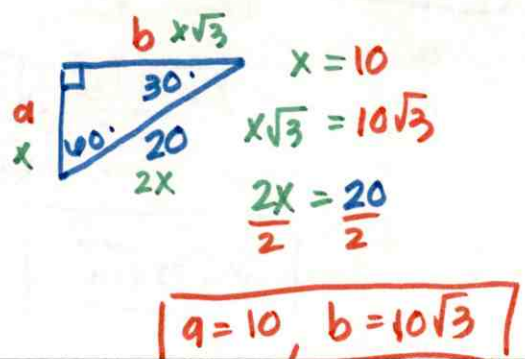
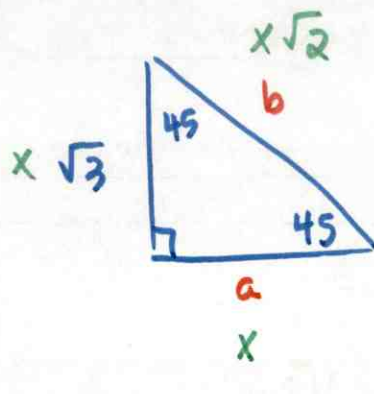


Special Right Triangles

Vocabulary	Definition	Example
<p>THEOREM 7.8 45° - 45° - 90° TRIANGLE THEOREM</p> <p>Isosceles Right Δ</p>	<p>In a 45° - 45° - 90° triangle, the hypotenuse is <u><math>\sqrt{2}</math></u> times as long as each leg.</p> <p>Ratio of sides <u>1:1:<math>\sqrt{2}</math></u></p> <p><math>c^2 = 1^2 + 1^2</math> <math>c^2 = 1 + 1</math> <math>\sqrt{c^2} = \sqrt{2}</math> <math>c = \sqrt{2}</math></p> <p>hypotenuse = leg <math>\cdot</math> <u><math>\sqrt{2}</math></u></p>	   <p><math>x = 3</math> <math>x = 3</math> <math>x\sqrt{2} = 3\sqrt{2}</math> <b><math>a = 3, b = 3\sqrt{2}</math></b></p> <p><math>x = 5</math> <math>x = 5</math> <math>x\sqrt{2} = 5\sqrt{2}</math> <b><math>a = 5, b = 5</math></b></p> <p>back →</p>
<p>THEOREM 7.9 30° - 60° - 90° TRIANGLE THEOREM</p> <p>Short Leg Long Leg Hypotenuse</p>	<p>In a 30° - 60° - 90° triangle, the hypotenuse is <u>twice</u> as long as the shorter leg, and the longer leg is <u><math>\sqrt{3}</math> times</u> as long as the shorter leg.</p> <p>Ratio of sides <u>1: <math>\sqrt{3}</math>: 2</u> <u>30: 60: 90</u></p> <p>hypotenuse = <u>2</u> <math>\cdot</math> shorter leg</p> <p>longer leg = shorter leg <math>\cdot</math> <u><math>\sqrt{3}</math></u></p>	    <p><math>x = 5</math> <math>x\sqrt{3} = 5\sqrt{3}</math> <math>2x = 2(5) = 10</math> <b><math>a = 5\sqrt{3}, b = 10</math></b></p> <p><math>x = 7</math> <math>x\sqrt{3} = 7\sqrt{3}</math> <math>2x = 2(7) = 14</math> <b><math>a = 7, b = 14</math></b></p> <p><math>x = 10</math> <math>x\sqrt{3} = 10\sqrt{3}</math> <math>\frac{2x}{2} = \frac{20}{2}</math> <b><math>a = 10, b = 10\sqrt{3}</math></b></p>



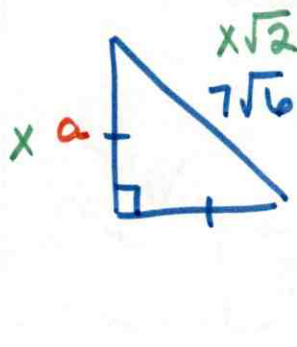
$$x = \sqrt{3}$$

$$x = \sqrt{3}$$

$$x\sqrt{2} = (\sqrt{3})(\sqrt{2})$$

$$\boxed{b = \sqrt{6}}$$

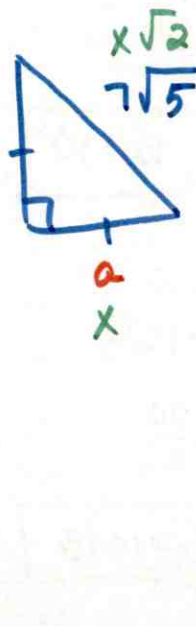
$$\boxed{a = \sqrt{3}}$$



$$x = 7\sqrt{3}$$

$$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{6}}{\sqrt{2}}$$

$$\boxed{x = 7\sqrt{3}}$$

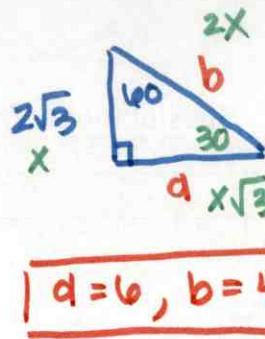


$$x =$$

$$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{5}}{\sqrt{2}}$$

$$x = \frac{7\sqrt{5}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$\boxed{x = \frac{7\sqrt{10}}{2}}$$

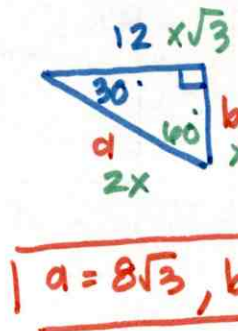


$$x = 2\sqrt{3}$$

$$x\sqrt{3} = 2\sqrt{3}(\sqrt{3}) \rightarrow 2(3) = 6$$

$$2x = 2(2\sqrt{3}) = 4\sqrt{3}$$

$$\boxed{d = 6, b = 4\sqrt{3}}$$



$$x = 4\sqrt{3}$$

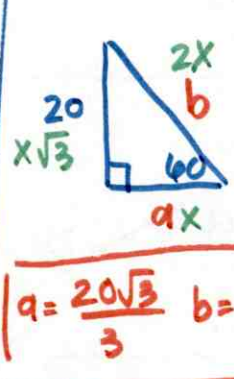
$$x\sqrt{3} = 12$$

$$2x = 2(4\sqrt{3}) = 8\sqrt{3}$$

$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{12}{\sqrt{3}}$$

$$x = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3}$$

$$\boxed{a = 8\sqrt{3}, b = 4\sqrt{3}}$$



$$x = \frac{20\sqrt{3}}{3}$$

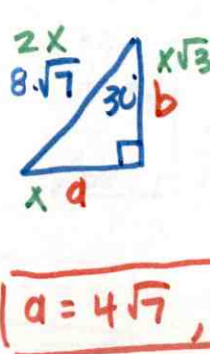
$$x\sqrt{3} = 20$$

$$2x = \frac{2}{1} \left( \frac{20\sqrt{3}}{3} \right) = \frac{40\sqrt{3}}{3}$$

$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{20}{\sqrt{3}}$$

$$x = \frac{20}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{20\sqrt{3}}{3}$$

$$\boxed{a = \frac{20\sqrt{3}}{3}, b = \frac{40\sqrt{3}}{3}}$$

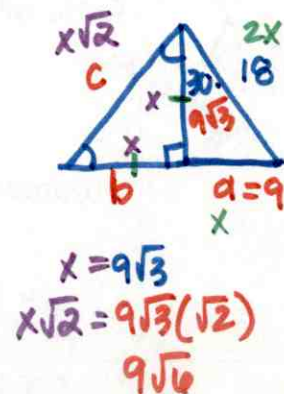


$$x = 4\sqrt{7}$$

$$x\sqrt{3} = 4\sqrt{7}(\sqrt{3}) = 4\sqrt{21}$$

$$\frac{2x}{2} = \frac{8\sqrt{7}}{2}$$

$$\boxed{a = 4\sqrt{7}, b = 4\sqrt{21}}$$



$$x = 9$$

$$x\sqrt{3} = 9\sqrt{3}$$

$$2x = 18$$

$$x = 9\sqrt{3}$$

$$x\sqrt{2} = 9\sqrt{3}(\sqrt{2}) = 9\sqrt{6}$$