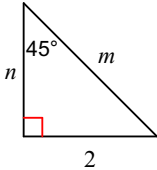
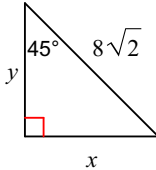
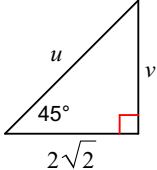


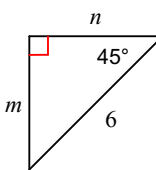
# Special Right Triangles Practice

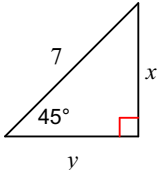
Find the missing side lengths. Leave your answers as radicals in simplest form.

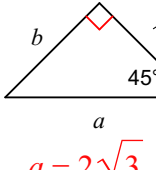
1)   
 $m = 2\sqrt{2}, n = 2$

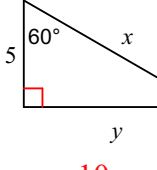
2)   
 $x = 8, y = 8$

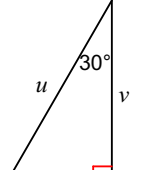
3)   
 $u = 4, v = 2\sqrt{2}, x = \frac{7\sqrt{2}}{2}, y = \frac{7\sqrt{2}}{2}$

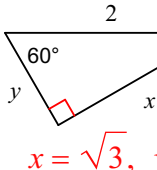
4)   
 $m = 3\sqrt{2}, n = 3\sqrt{2}$

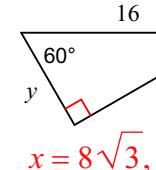
5)   
 $a = 2\sqrt{3}, b = \sqrt{6}$

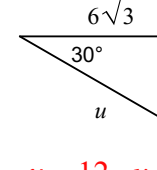
6)   
 $a = 2\sqrt{3}, b = \sqrt{6}$

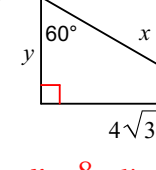
7)   
 $x = 10, y = 5\sqrt{3}$

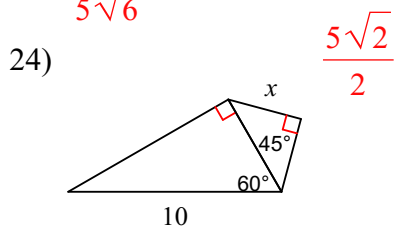
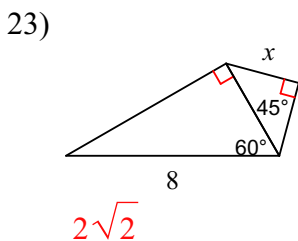
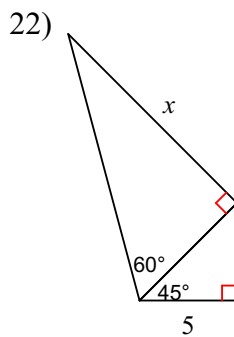
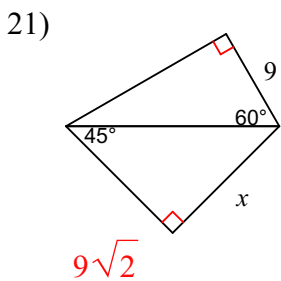
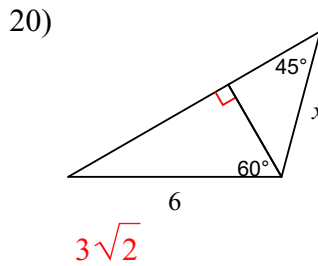
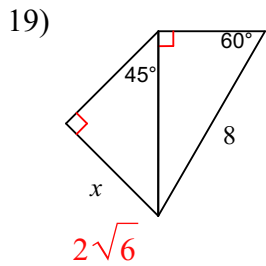
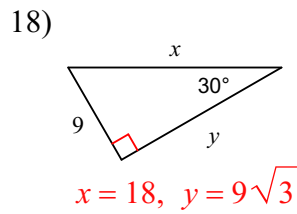
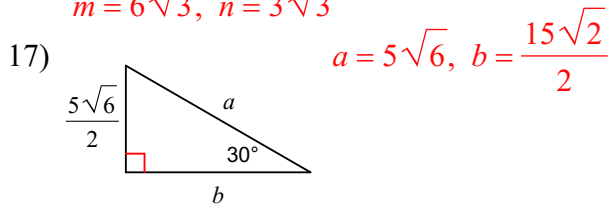
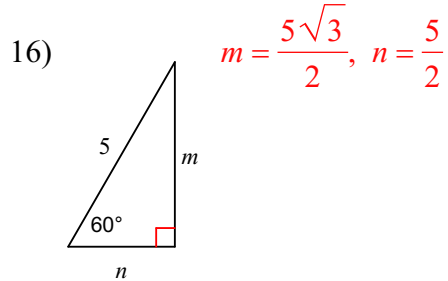
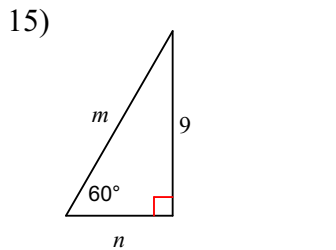
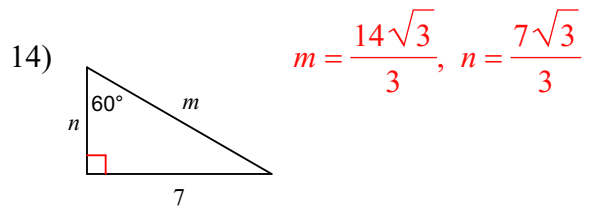
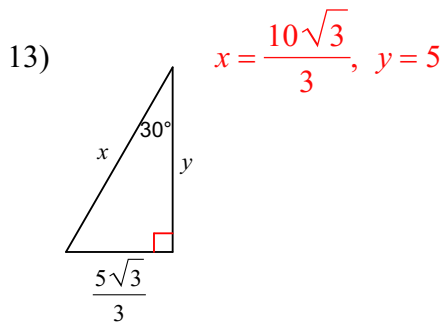
8)   
 $u = 4, v = 2\sqrt{3}$

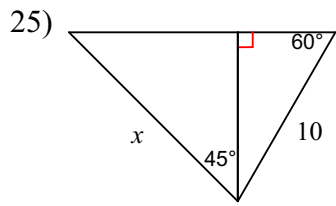
9)   
 $x = \sqrt{3}, y = 1$

10)   
 $x = 8\sqrt{3}, y = 8$

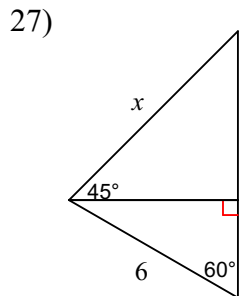
11)   
 $u = 12, v = 6$

12)   
 $x = 8, y = 4$



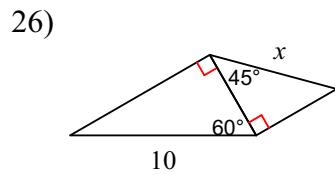
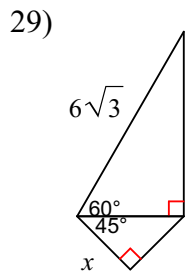


$5\sqrt{6}$

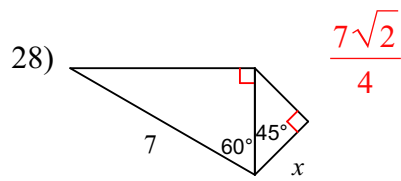


$3\sqrt{6}$

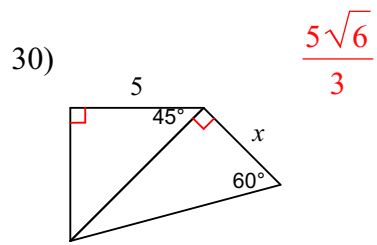
$\frac{3\sqrt{6}}{2}$



$5\sqrt{2}$



$\frac{7\sqrt{2}}{4}$

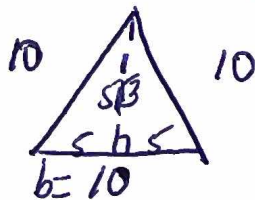


$\frac{5\sqrt{6}}{3}$

key

Answer each question in simple radical form (unless otherwise specified).

1. Determine the area of an equilateral triangle if a side length is 10 cm.



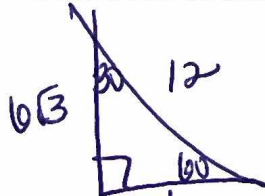
Need height

$$A = \frac{1}{2}bh$$

$$= \frac{1}{2} \cdot 10 \cdot 5\sqrt{3}$$

$$= 25\sqrt{3} \text{ cm}^2$$

2. Find the area of a 30-60-90 triangle if the hypotenuse length is 12 in.

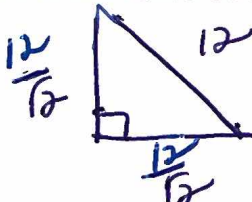


$$A = \frac{1}{2}bh$$

$$= \frac{1}{2} \cdot 6 \cdot 6\sqrt{3}$$

$$= 18\sqrt{3} \text{ in}^2$$

3. Find the area of a 45-45-90 triangle if the hypotenuse length is 12 in.



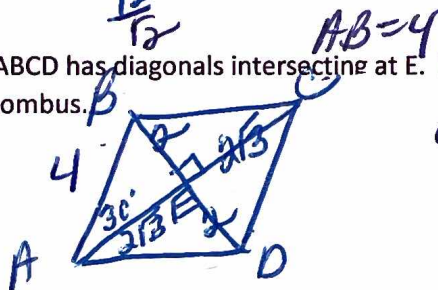
don't rationalize yet

$$A = \frac{1}{2}bh$$

$$= \frac{1}{2} \cdot \frac{12}{\sqrt{2}} \cdot \frac{12}{\sqrt{2}} = \frac{144}{2\sqrt{4}} = \frac{144}{2 \cdot 2}$$

$$= \frac{144}{4} = 36 \text{ in}^2$$

4. Rhombus ABCD has diagonals intersecting at E. If the measure of angle BAC is 30 degrees, find the area of the rhombus.



$$\text{diagonal}_1 = 2 + 2 = 4$$

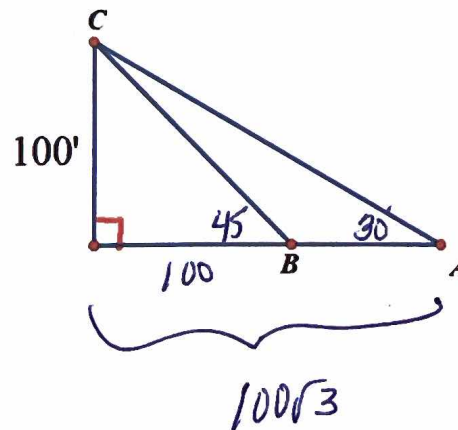
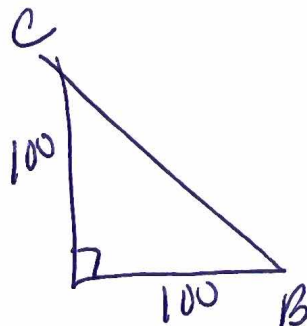
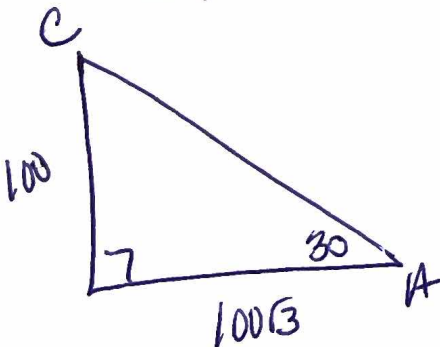
$$\text{diagonal}_2 = 2\sqrt{3} + 2\sqrt{3} = 4\sqrt{3}$$

$$A = \frac{1}{2}d_1d_2$$

$$= \frac{1}{2} \cdot 4 \cdot 4\sqrt{3}$$

$$= 8\sqrt{3} \text{ in}^2$$

5. Albert is standing at point A. He takes a sighting to the top of a cliff (point C). The angle of elevation is 30 degrees. Becky is standing at point B and takes a sighting to the top of the same cliff (point C). The angle of elevation is 45 degrees. If the cliff is 100 feet high find the exact distance between Albert and Becky.



$$AB = 100\sqrt{3} - 100 \text{ feet (exact)}$$

$$\approx 73.2 \text{ feet (approximate)}$$