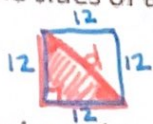


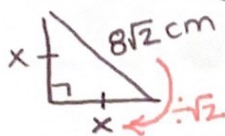
Special Right Triangle Word Examples:

1. The sides of a square are 12 inches long. What is the length of the diagonal?



$$d = 12\sqrt{2} \text{ in}$$

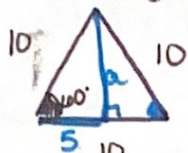
2. An isosceles right triangle has a hypotenuse of  $8\sqrt{2}$  cm. What is the length of the legs of the triangle?



$$\frac{8\sqrt{2}}{\sqrt{2}}$$

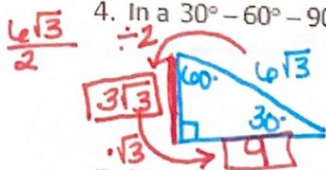
$$\text{legs are both: } 8 \text{ cm}$$

3. An equilateral triangle sides are 10 inches. What is the length of the altitude?



$$\text{altitude is } 5\sqrt{3} \text{ in}$$

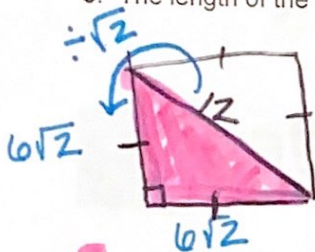
4. In a  $30^\circ-60^\circ-90^\circ$  triangle, the hypotenuse is  $6\sqrt{3}$ , what is the length of the legs of the triangle?



$$\begin{aligned} \text{Short} &= \sqrt{3} \\ 3\sqrt{3} &= \sqrt{3} \cdot 3 \\ 3 \cdot \sqrt{9} &= 3 \cdot 3 = 9 \end{aligned}$$

legs are  
 $3\sqrt{3}$  (short)  
 9 (long)

5. The length of the diagonal of a square is 12 inches. Find the length of one side of the square.



$$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

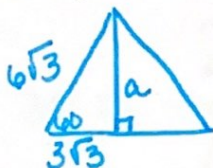
$$6x + 6x + 6x + 6x$$

Perimeter?

$$6\sqrt{2} + 6\sqrt{2} + 6\sqrt{2} + 6\sqrt{2}$$

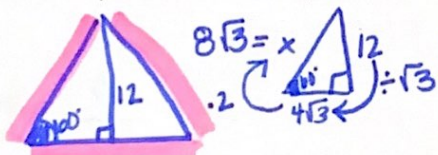
$$P = 24\sqrt{2} \text{ in}$$

6. The length of one side of an equilateral triangle is  $6\sqrt{3}$  meters. Find the length of the altitude of the triangle.



$$a = 9 \text{ m}$$

7. The length of the altitude of an equilateral triangle is 12 feet. Find the length of one side of the equilateral triangle. What is the perimeter of the equilateral triangle?

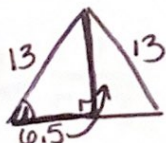


$$\frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$$

$$\text{side: } 8\sqrt{3} \text{ ft}$$

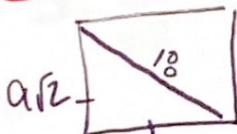
$$\text{Perimeter: } 24\sqrt{3} \text{ ft}$$

8. The perimeter of an equilateral triangle is 39 cm. Find the length of the altitude of the triangle.



$$a = 6.5\sqrt{3} \text{ cm}$$

9. The length of the diagonal of a square is 18 mm. Find the perimeter of the square.



$$\frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2} = 9\sqrt{2}$$

$$P = 4(9\sqrt{2})$$

$$P = 36\sqrt{2} \text{ mm}$$