

Triangle Area: $A = \frac{1}{2}bh$ where b = base of Δ (any side) and h = height of Δ (altitude)

Tools for finding missing bases and heights:

1. **Pythagorean thm:** need to know 2 of 3 sides of a RIGHT triangle. $a^2 + b^2 = c^2$

2. **Special Right triangles:**

Examples:

1. $m\sqrt{3} = 6\sqrt{3}$
 $m = 6$
 $12 = 2m$

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

$$A = \frac{1}{2}(6)(6\sqrt{3})$$

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

2. $m\sqrt{2} = 6\sqrt{2}$
 $m = 6$

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

$$A = \frac{1}{2}(6)(6)$$

$$= 18 \text{ units}^2$$

3. $8\sqrt{2} = m\sqrt{2}$
 $m = 8$
 $m = 8$

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

$$A = \frac{1}{2}(8)(8)$$

$$= 32 \text{ units}^2$$

4. $m = 3\sqrt{3}$
 $9 = m\sqrt{3}$
 $6\sqrt{3} = 2m$

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

$$A = \frac{1}{2}(9)(3\sqrt{3})$$

$$= \frac{27}{2}\sqrt{3} \text{ units}^2$$

$$\sqrt{3} * 9 = m\sqrt{3} * \sqrt{3}$$

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

$$3\sqrt{3} = m$$

5. Solve for the area three different ways. (This probably goes without saying, but you should get the same answer each time.)

- 1
- 2
- 3

1. $A = \frac{1}{2}bh = \frac{1}{2}(y)(z) = \frac{1}{2}(18)(6\sqrt{3}) = \frac{1}{2}(9)(3\sqrt{3}) = 54\sqrt{3} \text{ units}^2$

2. $A = \frac{1}{2}bh = \frac{1}{2}(12\sqrt{3})(9) = 54\sqrt{3} \text{ units}^2$

3. $A = \frac{1}{2}(3\sqrt{3})(9) + \frac{1}{2}(9\sqrt{3})(9) = 54\sqrt{3} \text{ units}^2$

$$12\sqrt{3}$$

$$\sqrt{3} * 9 = m\sqrt{3} * \sqrt{3}$$

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

$$3\sqrt{3} = m$$