Geometry Unit 10

11-2: Areas of Parallelograms, Triangles, and Rhombuses

Warm-up

- We are going to finish up the examples from yesterday.

- Refer to the 11-1 Presentation for solutions to those problems.

More Areas

-   <u>Content Objective</u>: Students will be able to use postulates and theorems to find the area of parallelograms, triangles, and rhombuses.

-   <u>Language Objective</u>: Students will be able to identify polygons and their appropriate area formulas.

Estimate the are using square units. Explain how you found it quickly (i.e. not just "counting squares")
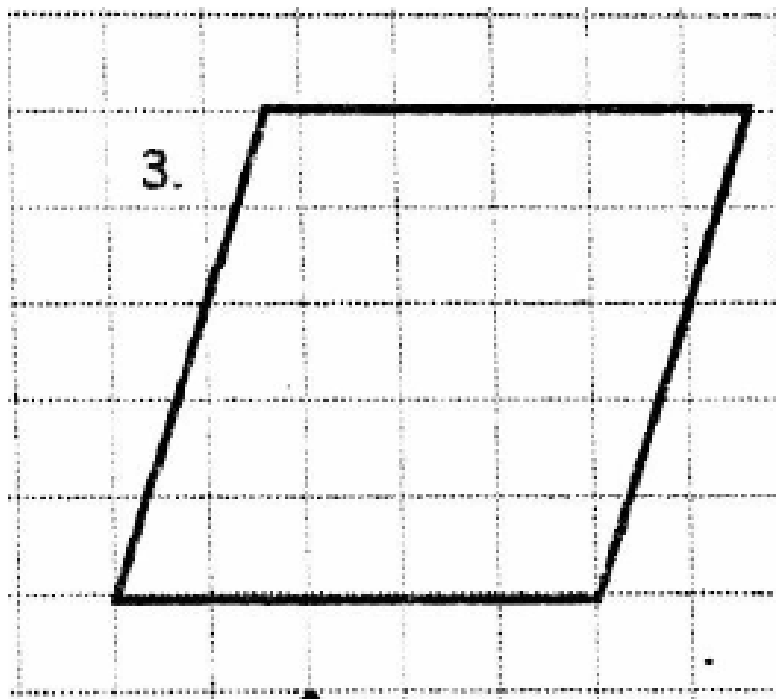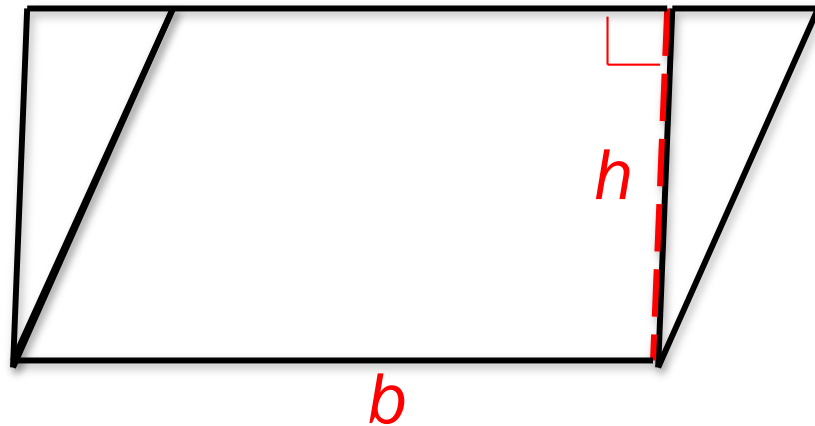

Just take a Guess.

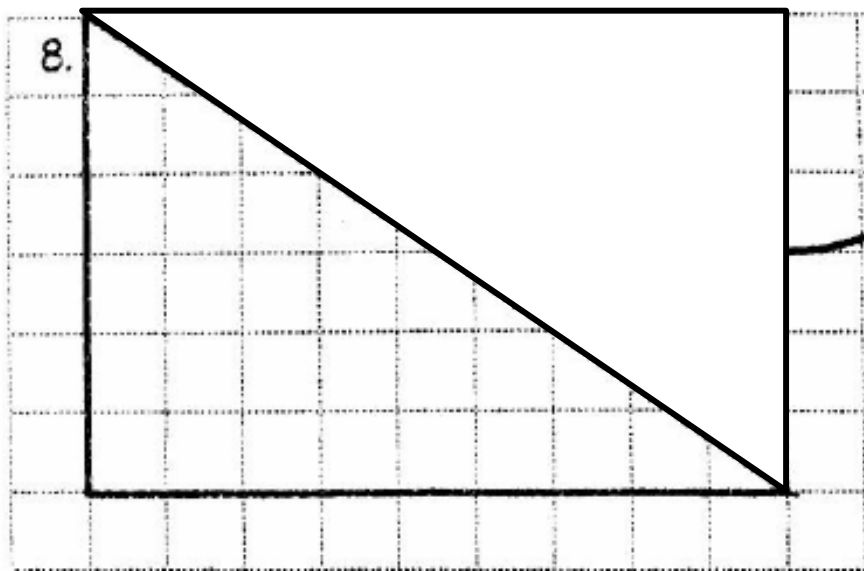No right or wrong with this one.

Area of a Parallelogram

- **<u>Theorem 11-2</u>**: The area of a parallelogram equals the product of a base and the height to that base.
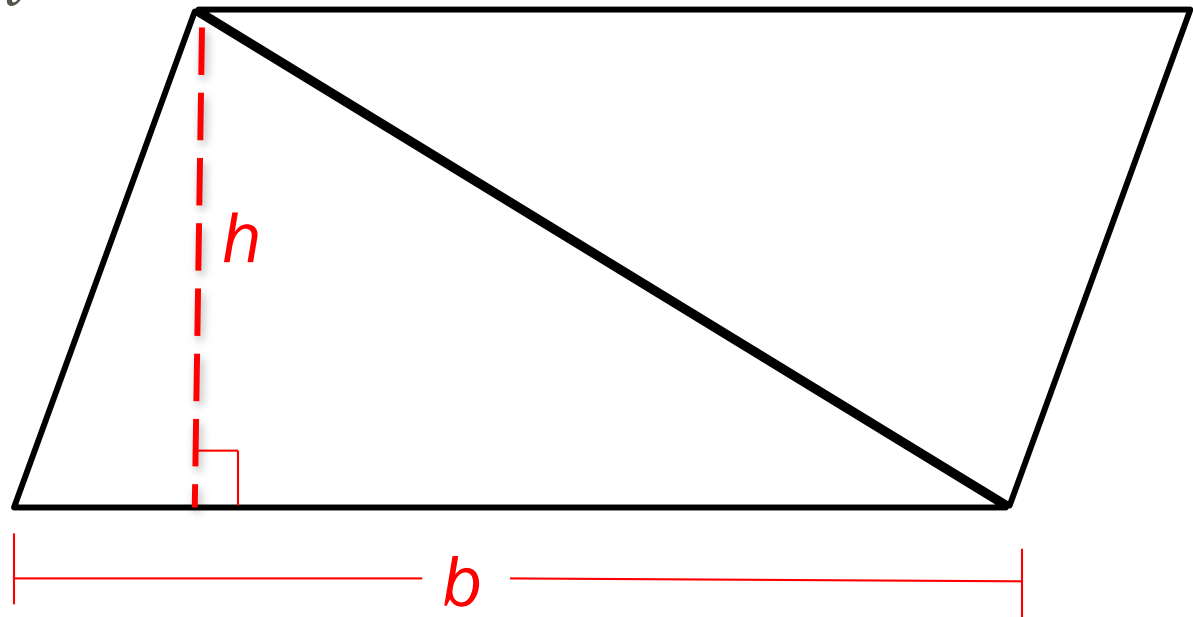
Equation: $A = bh$

Estimate the are using square units. Explain how you found it quickly (i.e. not just "counting squares")
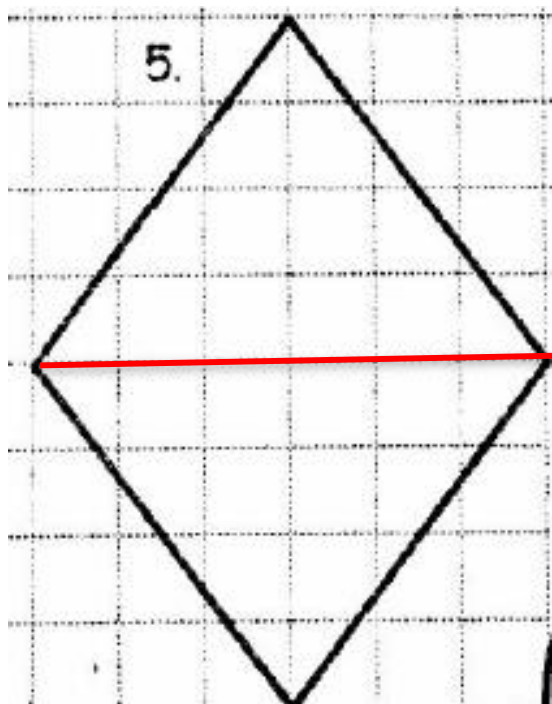
Area of a Triangle

❀ <u>**Theorem 11-3**</u>: The area of a triangle equals half the product of a base and the height to that base.

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

Estimate the are using square units. Explain how you found it quickly (i.e. not just "counting squares")
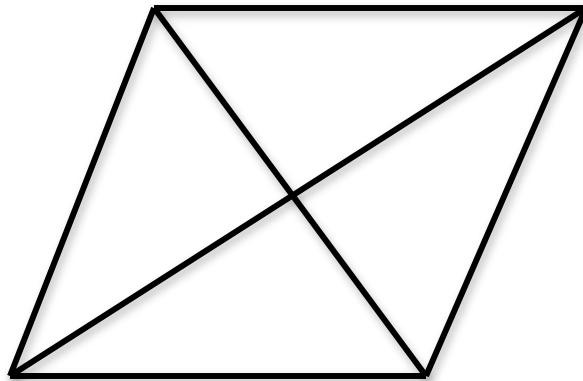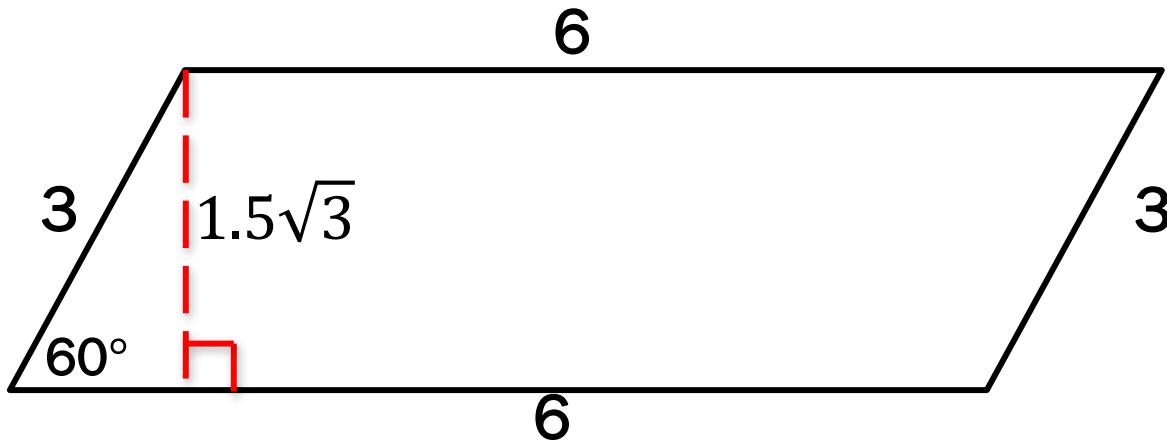
Area of a Rhombus

- **Theorem 11-4**: The area of a Rhombus equals half the product of its diagonals.

Equation: $\frac{1}{2} d_1 d_2$

Practice

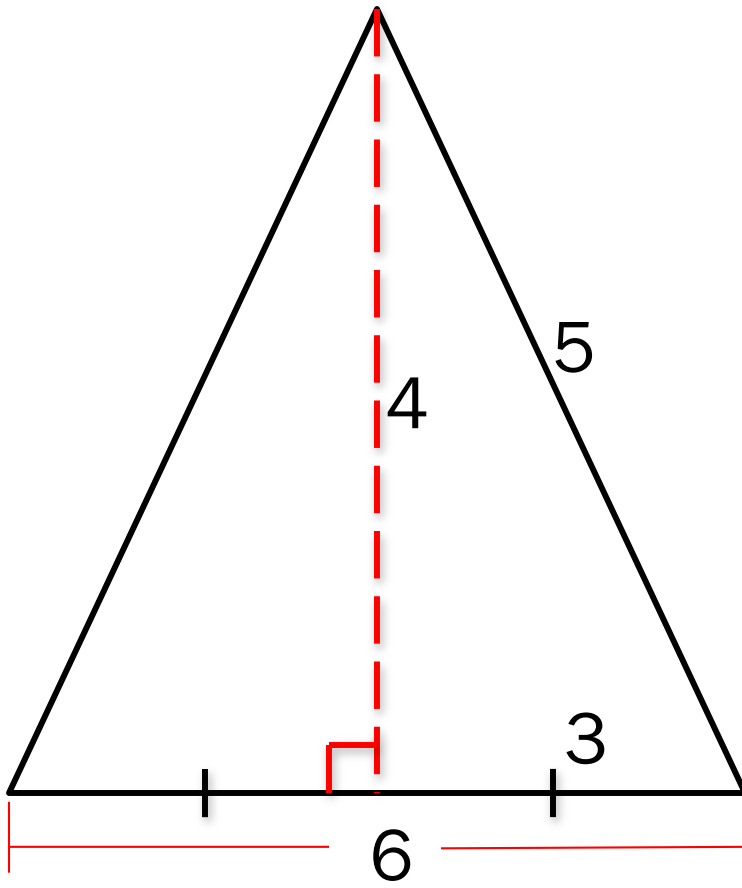 Find the area of each figure.

Solution:

Area of a Parallelogram

$$A = 6 \times 1.5\sqrt{3}$$

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

Practice

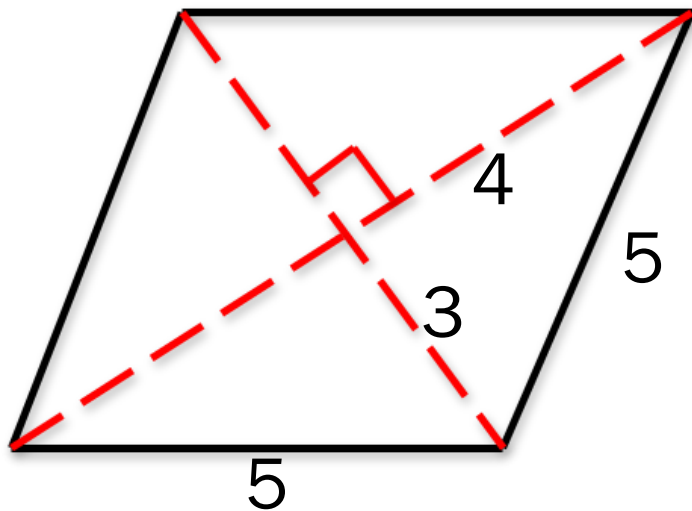 Find the area of each figure.

5

4

3

6

Solution:

Area of a Square

$$A = \frac{1}{2}(6 \times 4)$$

$$A = \frac{1}{2} \times 24$$

$$A = 12$$

Practice

⁊ Find the area of each figure.
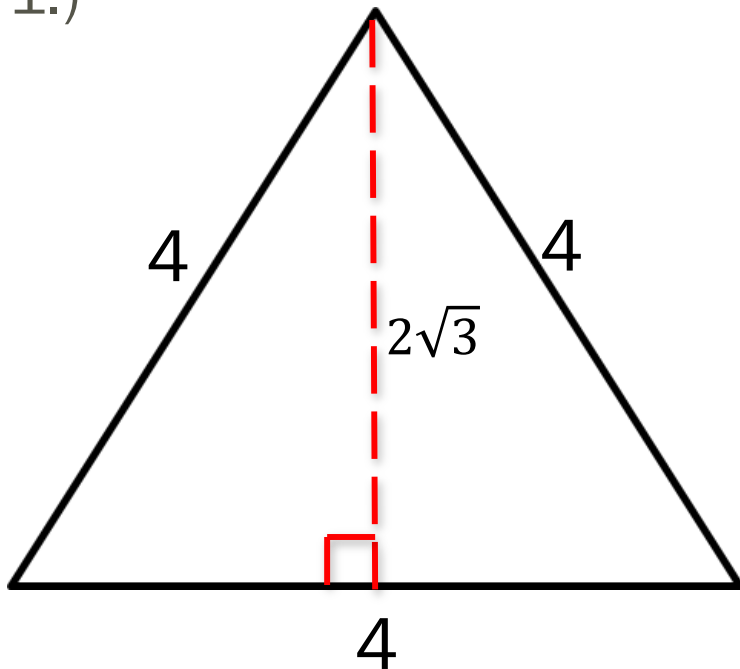

Solution:

Area of a Rhombus

$$A = \frac{1}{2}(8 \times 6)$$

$$A = \frac{1}{2} \times 48$$

$$\boldsymbol{A = 24}$$

Group Practice

৯ Find the area for the following diagrams in your groups.

1.)

Solution:
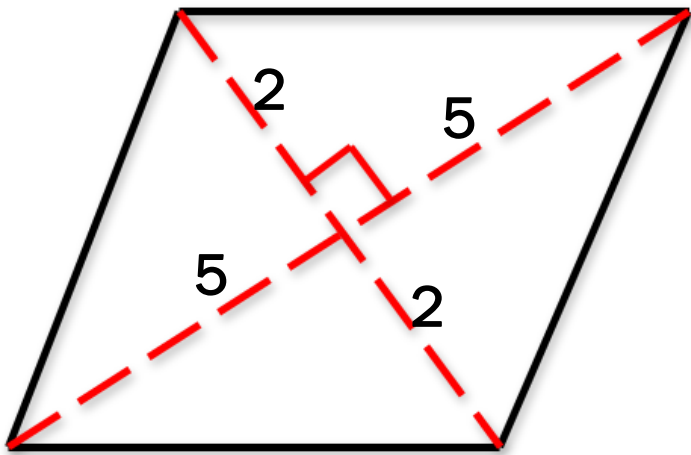
Area of a Square

$$A = \frac{1}{2}(4 \times 2\sqrt{3})$$

$$A = \frac{1}{2} \times 8\sqrt{3}$$

$$\boldsymbol{A = 4\sqrt{3}}$$

Group Practice

ᔓ Find the area for the following diagrams in your groups.

2.)

Solution:

Area of a Rhombus
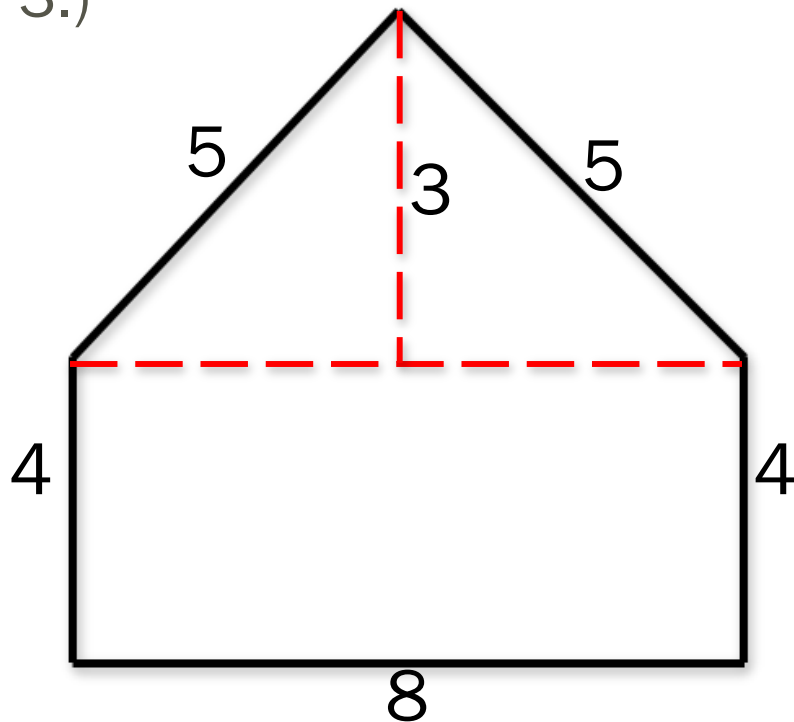
$$A = \frac{1}{2}(4 \times 10)$$

$$A = \frac{1}{2} \times 40$$

$$\boldsymbol{A = 20}$$

☞ Find the area for the following diagrams in your groups.

3.)

Solution:

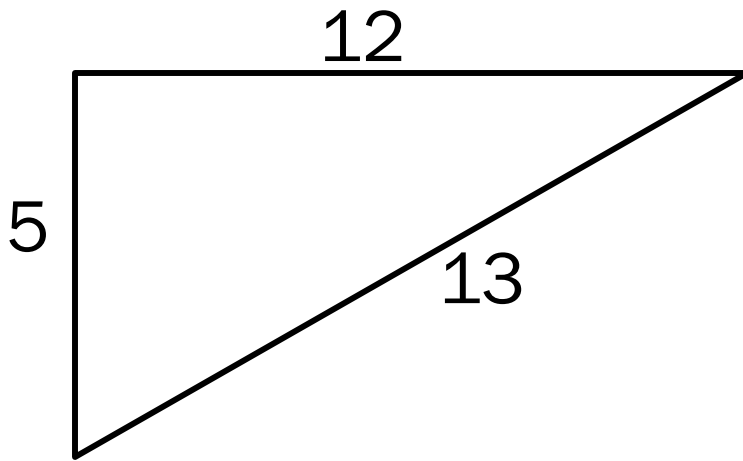Separate the Areas

$$A = \frac{1}{2}(8 \times 3) + (8 \times 4)$$

$$A = 12 + 32$$

$$A = 44$$

෩ Find the area for the following diagrams in your groups.

4.)

Solution:

12

5

13

Area of a Square

$$A = \frac{1}{2}(12 \times 5)$$

$$A = \frac{1}{2} \times 60$$
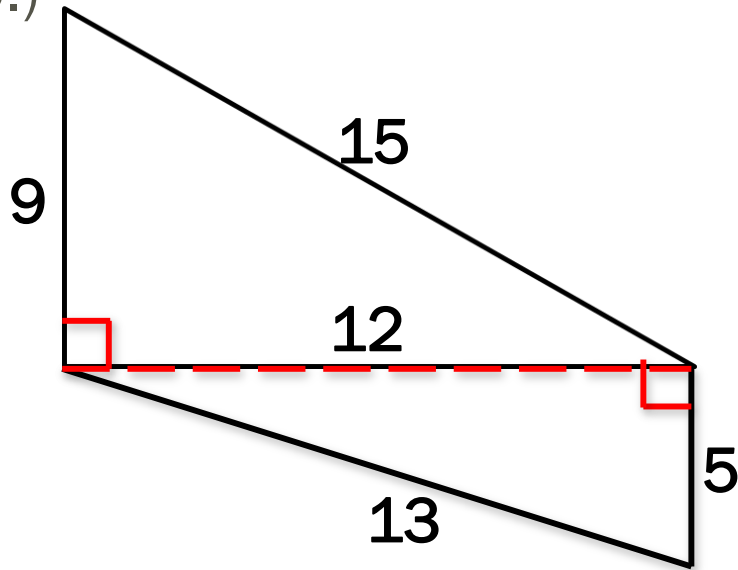
$$A = 30$$

 Find the area for the following diagrams in your groups.

5.)

Solution:

Separate the Areas

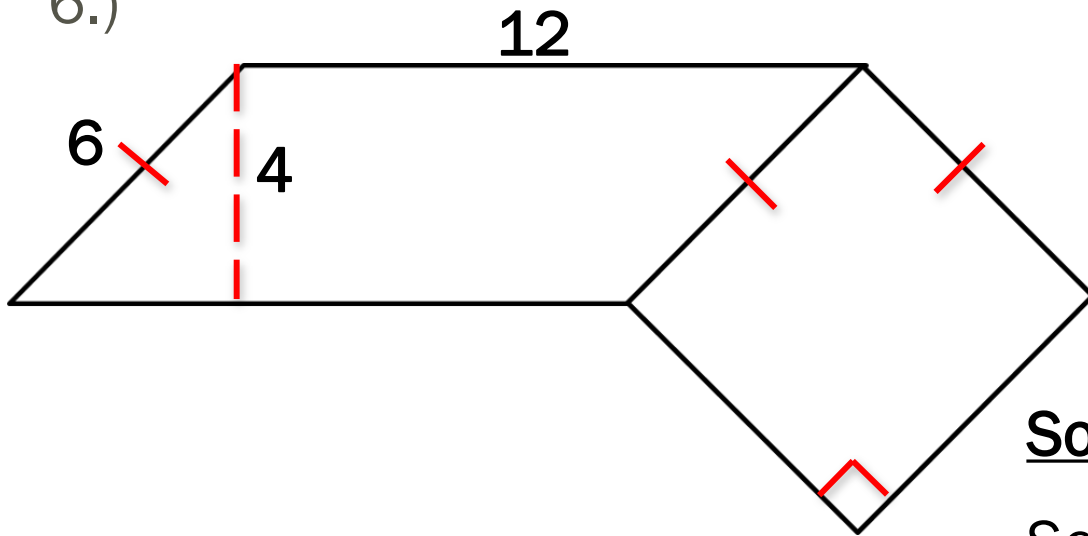$$A = \frac{1}{2}(12 \times 5) + \frac{1}{2}(12 \times 9)$$

$$A = 30 + 54$$

$$\boldsymbol{A = 84}$$

◌ Find the area for the following diagrams in your groups.

6.)

Solution:

Separate the Areas

$$A = (12 \times 4) + (6^2)$$

$$A = 48 + 36$$

$$\boldsymbol{A = 84}$$

ℝ Find the area for the following diagrams in your groups.

7.)

Solution:

Area of a Square

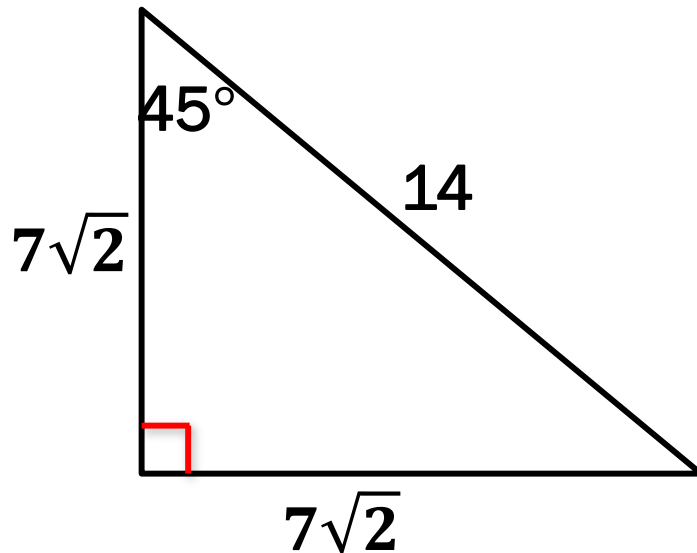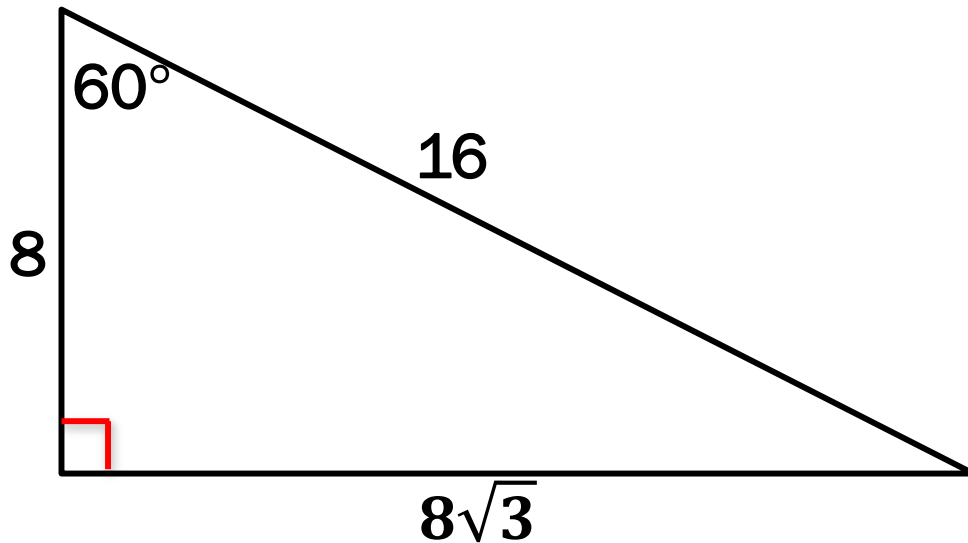$$A = \frac{1}{2}(7\sqrt{2} \times 7\sqrt{2})$$

$$A = \frac{1}{2} \times 28$$

$$A = 14$$

Group Practice

Find the area for the following diagrams in your groups.

8.)

Solution:

Area of a Square
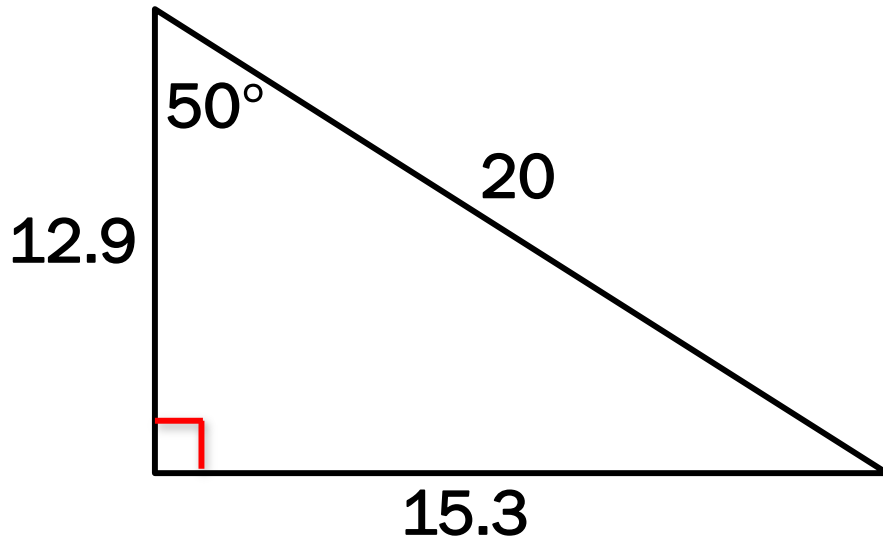
$$A = \frac{1}{2}(8\sqrt{3} \times 8)$$

$$A = \frac{1}{2} \times 64\sqrt{3}$$

$$A = 32\sqrt{3}$$

Group Practice

 Find the area for the following diagrams in your groups.

9.)

Solution:

Area of a Square

$$A = \frac{1}{2}(15.3 \times 12.9)$$

$$A = \frac{1}{2} \times 197.37$$

$$A = 98.685$$