

# Math 6: Week of May 25th

## Unit: Geometry

### Lesson 2: Area of Triangles

**Target:** Find the area of triangles using specific formulas.

### Lesson 3: Area of Trapezoids

**Target:** Find the area of trapezoids using specific formulas.

#### Directions:

- Go through the slides (notes) and work through the examples on a separate piece of paper. If you have your math notebook, use it!
- Complete the practice problems on a separate piece of paper. You can use a calculator but continue to show your work.
- Check your answers with the key given at the end of the lesson. If you got one wrong, double check your steps with your notes and recalculate it.
- Are you stuck?
  - Use Google Classroom or Gmail to ask Mrs. Thomas a question.
  - Live video helps sessions: Thursdays at 9:30am using Meet through Google Classroom

Disclaimer: Any figures used in these lessons are not drawn to scale.

## Area of Triangles

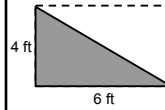
Lesson 2

Triangles are half as big as rectangles. The formula we use is:

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

\*Another Way:  $\text{Area} = \frac{\text{base} \times \text{height}}{2}$

Find the area of the shaded region.



1. Use the formula  $A = \frac{1}{2}bh$ .

$$b = 6 \quad h = 4$$

2. Multiply  $\frac{1}{2} \times 6 \times 4 = 12$

**Answer: 12 ft<sup>2</sup>**

$\frac{1}{2} = 0.5$   
You can solve using fractions or decimals!

Another way to solve it:

$$\frac{6 \times 4}{2} = \frac{24}{2} = 12$$

**Answer: 12 ft<sup>2</sup>**

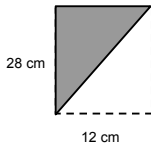
## Area of Triangles

Lesson 2

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

\*Another Way:  $\text{Area} = \frac{\text{base} \times \text{height}}{2}$

Find the area of the shaded region.



1. Use the formula  $A = \frac{1}{2}bh$ .

$$b = 28 \quad h = 12$$

2. Multiply  $\frac{1}{2} \times 28 \times 12 = 168$

Works with a decimal too!  $0.5 \times 28 \times 12 = 168$

Another way to solve it:

$$\frac{28 \times 12}{2} = \frac{336}{2} = 168$$

**Answer: 168 cm<sup>2</sup>**

**Answer: 168 cm<sup>2</sup>**

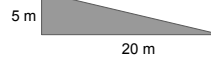
## Area of Triangles

Lesson 2

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

\*Another Way:  $\text{Area} = \frac{\text{base} \times \text{height}}{2}$

Find the area of the triangles.



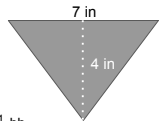
1.  $A = \frac{1}{2}bh$ .

2. Solve  $\frac{1}{2} \times 20 \times 5 = 50$

$$0.5 \times 20 \times 5 = 50$$

**Answer: 50 m<sup>2</sup>**

Usually the height is represented using a dotted line.



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

2. Solve  $\frac{1}{2} \times 7 \times 4 = 14$

$$0.5 \times 7 \times 4 = 14$$

**Answer: 14 in<sup>2</sup>**

## Area of Trapezoids

Lesson 3

### Vocabulary:

**Trapezoid:** A quadrilateral with one pair of parallel sides.



**Congruent:** Figures, or shapes, that are the exact same shape and size.



Example

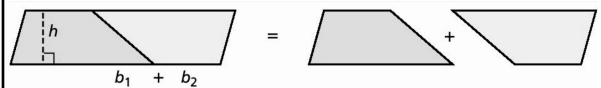


Non-Example

## Area of Trapezoids

Lesson 3

Trapezoids are half as big as parallelograms.



The formulas we can use are:

$$A = \frac{1}{2}(b_1 + b_2)h$$

$$\text{Area} = \frac{(b_1 + b_2)h}{2}$$

Area = one half x (base 1 + base 2) x height

$b_1$  = base 1

$b_2$  = base 2

$h$  = height

Since we are multiplying by a half again, we can also use the other formula and divide by 2!

## Area of Trapezoids

Lesson 3

$$A = \frac{1}{2}(b_1 + b_2) h$$

Area = one half x (base 1 + base 2) x height

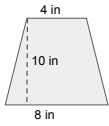
$$\text{Area} = \frac{(b_1 + b_2) h}{2}$$

2

Find the area of the trapezoid.

Use the formula and solve.

Another way to solve it:



$$A = \frac{1}{2}(4+8) 10$$

$$A = \frac{1}{2} (12) 10$$

$$A = \frac{1}{2} (120)$$

$$\text{Area} = 60 \text{ in}^2$$

$$\frac{(4+8) \times 10}{2} = \frac{12 \times 10}{2} = \frac{120}{2} = 60$$

Answer: 60 in<sup>2</sup>

## Area of Trapezoids

Lesson 3

$$A = \frac{1}{2}(b_1 + b_2) h$$

Area = one half x (base 1 + base 2) x height

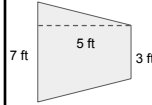
$$\text{Area} = \frac{(b_1 + b_2) h}{2}$$

2

Find the area of the trapezoid.

Use the formula and solve.

Another way to solve it:



$$A = \frac{1}{2}(7+3) 5$$

$$A = \frac{1}{2} (10) 5$$

$$A = \frac{1}{2} (50)$$

$$\text{Area} = 25 \text{ ft}^2$$

$$\frac{(7+3) \times 5}{2} = \frac{10 \times 5}{2} = \frac{50}{2} = 25$$

Answer: 25 ft<sup>2</sup>

## Area of Trapezoids

Lesson 3

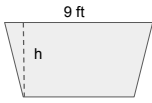
$$A = \frac{1}{2}(b_1 + b_2) h$$

Area = one half x (base 1 + base 2) x height

$$\text{Area} = \frac{(b_1 + b_2) h}{2}$$

2

Find the missing height. Start with what you KNOW!



$$22.5 = \frac{1}{2}(9 + 6) h$$

$$22.5 = \frac{1}{2} (15) h$$

$$22.5 = (7.5) h \quad \text{***What times 7.5 = 22.5?***}$$

$$22.5 \div 7.5 = 3 \quad 3 \times 7.5 = 22.5$$

$$A = 22.5 \text{ ft}^2$$

$$h = 3 \text{ ft}$$

## Practice Problems: Worksheets

Lesson 2 ~ Area of Triangles

Lesson 3 ~ Area of Trapezoids

Check your work!

Worksheet  
Answers  
Provided Here!

If you're stuck, ASK!  
Live Meet help sessions are provided  
every Thursday at 9:30am. Check  
Google Classroom for more  
information.

11.	15,000 yd <sup>2</sup>	L2- Area of Triangles
10.	120 in <sup>2</sup>	L3- Area of Trapezoids
9.	450 cm <sup>2</sup>	
8.	5 in <sup>2</sup>	
7.	225 cm <sup>2</sup>	
6.	270 in <sup>2</sup>	
5.	24 m <sup>2</sup>	
4.	180 in <sup>2</sup>	
3.	400 mm <sup>2</sup>	
2.	925 cm <sup>2</sup>	
1.	Done for you	
1.	Done for you	
2.	30 ft <sup>2</sup>	
3.	0.08 cm <sup>2</sup>	
4.	37.5 m <sup>2</sup>	
5.	11 m	
6.	12 ft	
7.	63 in <sup>2</sup>	
8.	6 cm	

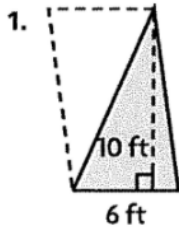
Name \_\_\_\_\_

## Explore Area of Triangles

COMMON CORE STANDARD CC.6.G.1

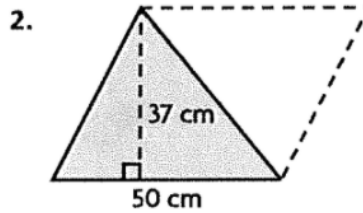
Solve real-world and mathematical problems involving area, surface area, and volume.

Find the area of each triangle.

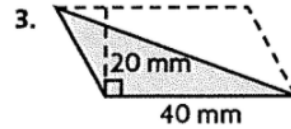


$30 \text{ ft}^2$

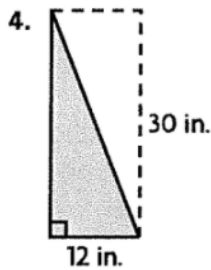
\_\_\_\_\_



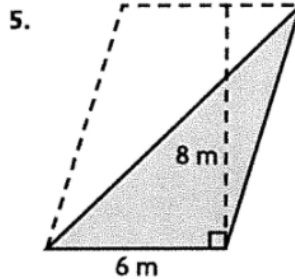
\_\_\_\_\_



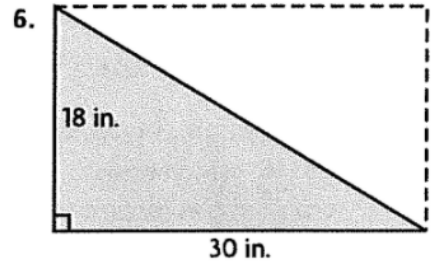
\_\_\_\_\_



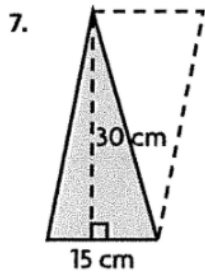
\_\_\_\_\_



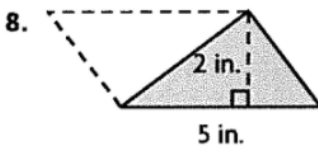
\_\_\_\_\_



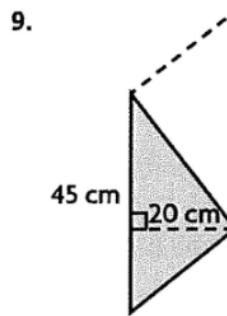
\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

## Problem Solving **REAL WORLD**

10. Fabian is decorating a triangular pennant for a football game. The pennant has a base of 10 inches and a height of 24 inches. What is the total area of the pennant?

\_\_\_\_\_

11. Ryan is buying a triangular tract of land. The triangle has a base of 100 yards and a height of 300 yards. What is the area of the tract of land?

\_\_\_\_\_

Name \_\_\_\_\_

### Area of Trapezoids

**COMMON CORE STANDARD CC.6.G.1**

Solve real-world and mathematical problems involving area, surface area, and volume.

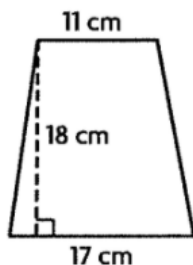
Find the area of the trapezoid.

1.  $A = \frac{1}{2}(b_1 + b_2)h$

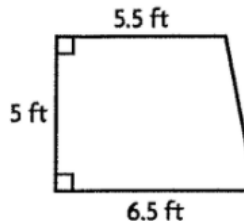
$A = \frac{1}{2} \times (\underline{11} + \underline{17}) \times 18$

$A = \frac{1}{2} \times \underline{28} \times 18$

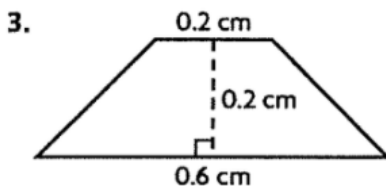
$A = \underline{252} \text{ cm}^2$



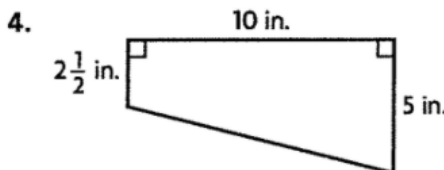
2.  $A = \underline{\hspace{2cm}}$



$A = \underline{\hspace{2cm}}$

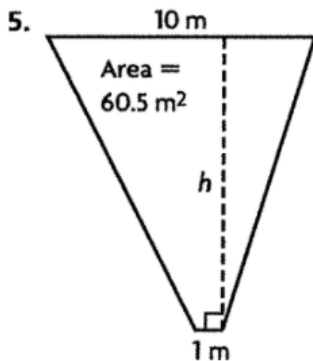


$A = \underline{\hspace{2cm}}$

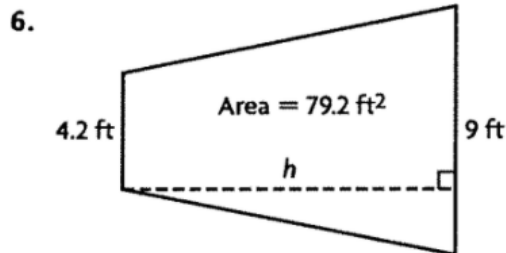


$A = \underline{\hspace{2cm}}$

Find the height of the trapezoid.



$h = \underline{\hspace{2cm}}$



$h = \underline{\hspace{2cm}}$

### Problem Solving **REAL WORLD**

7. Sonia makes a wooden frame around a square picture. The frame is made of 4 congruent trapezoids. The shorter base is 9 in., the longer base is 12 in., and the height is 1.5 in. What is the area of the picture frame?

8. Bryan cuts a piece of cardboard in the shape of a trapezoid. The area of the cutout is 43.5 square centimeters. If the bases are 6 centimeters and 8.5 centimeters long, what is the height of the trapezoid?