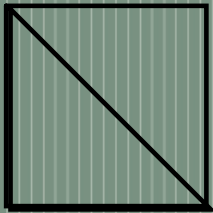




# Lesson 2: The Area of Right Triangles

## Student Outcomes

- Students justify the area formula for a right triangle by viewing the right triangle as part of a rectangle composed of two right triangles.



Apr 1-6:09 AM

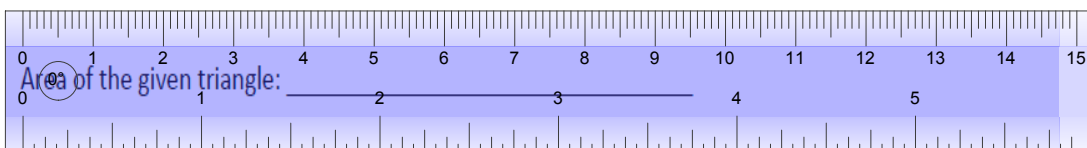
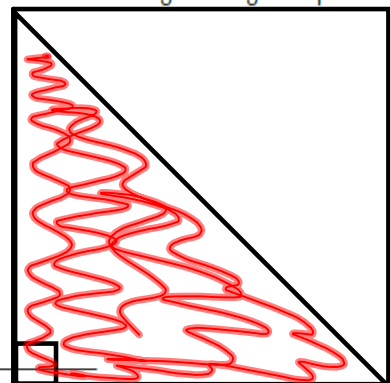
## Classwork

### Exploratory Challenge

- Use the shapes labeled with an "x" to predict the formula needed to calculate the area of a right triangle. Explain your prediction.

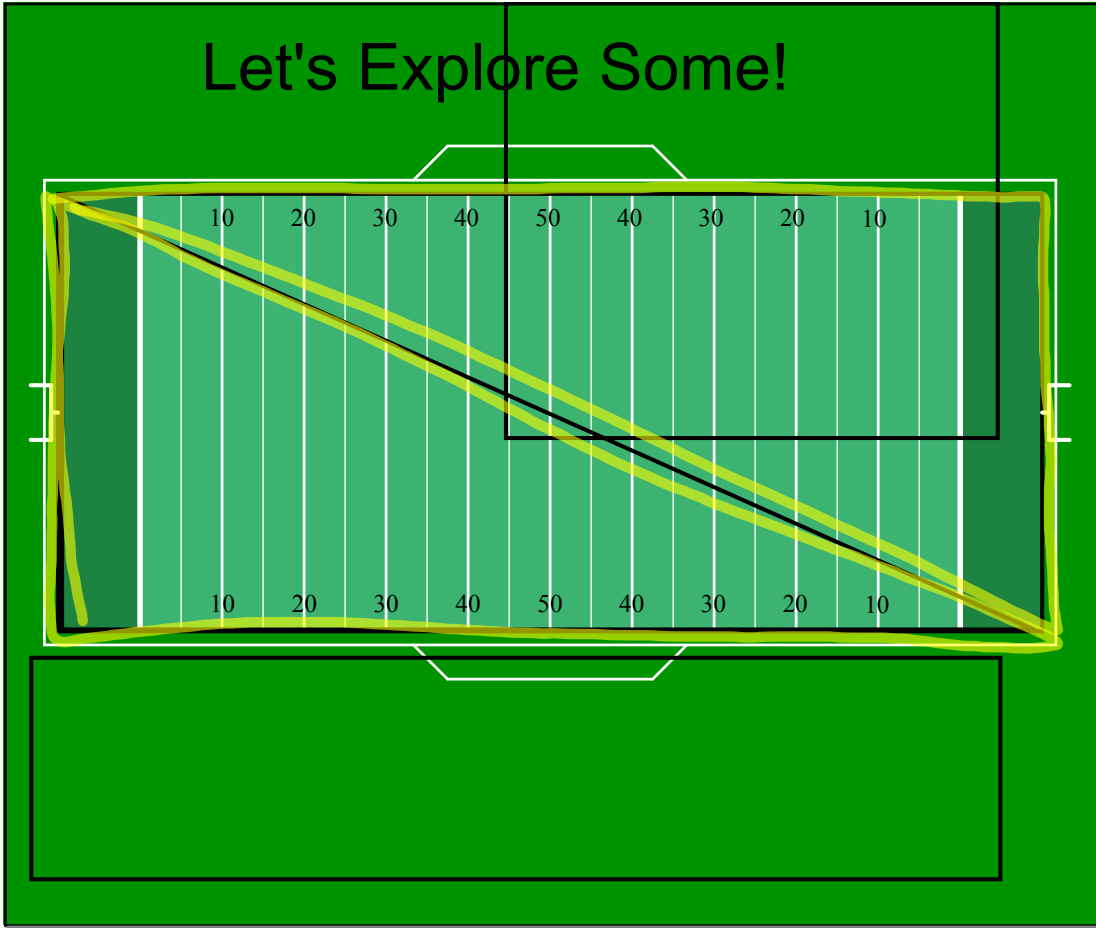
$$A = \frac{1}{2}bh$$
$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

Formula for the Area of Right Triangles: \_\_\_\_\_



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# Let's Explore Some!

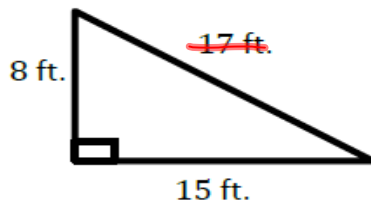


Football - American

## Exercises

Calculate the area of each triangle below. Each figure is not drawn to scale.

3.



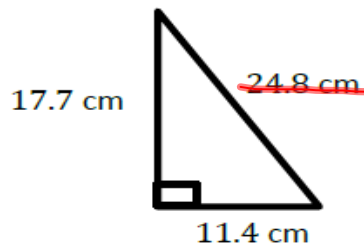
$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(15)(8)$$

$$A = 7.5(8)$$

$$A = 60 \text{ ft}^2$$

4.



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

$$A = \frac{1}{2}(11.4)(17.7)$$

$$A = 5.7(17.7)$$

$$A = 100.89 \text{ cm}^2$$

5.

6 in.  
10 in.  
8 in.  
 $8 \div 2 = 4$   
 $30 \div 2 = 15$

$$\begin{array}{r} 30 \overline{) 728} \\ \underline{-60} \phantom{0} \\ 128 \\ \underline{-120} \\ 8 \end{array}$$

6.

$10 \frac{1}{3} \text{ m}$   
 $8 \frac{2}{3} \text{ m}$   
 $5 \frac{3}{5} \text{ m}$

$A = \frac{1}{2} bh$   
 $A = \frac{1}{2} (8 \frac{2}{3}) (5 \frac{3}{5})$   
 $A = \frac{1}{2} (\frac{26}{3}) (\frac{28}{5})$   
 $A = \frac{26}{6} \cdot \frac{28}{5}$   
 $A = \frac{728}{30}$   
 $A = 24 \frac{4}{15} \text{ m}^2$

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7.

21.4 km  
32.7 km

8. Mr. Jones told his students they each need a half of a piece of paper. Calvin cut his piece of paper horizontally and Matthew cut his piece of paper diagonally. Which student has the larger area on their half piece of paper? Explain.

Calvin's Paper

Matthew's Paper

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9. Ben took 3 bathroom tiles to the store to be cut. The only direction he gave was that he needed the area of each tile to be half of the original size. If Ben wants each tile to be cut into two right triangles, did he provide the store with enough information? Why or why not?

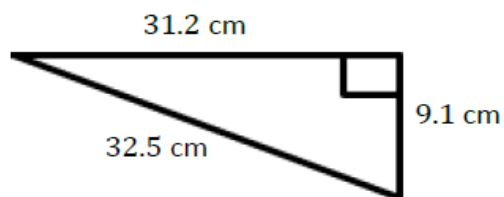
10. If the area of a triangle is 6.22 sq. in. and its base is 3.11 in., write an equation that relates the area to the height,  $h$ , and the base. Solve the equation to determine the height.

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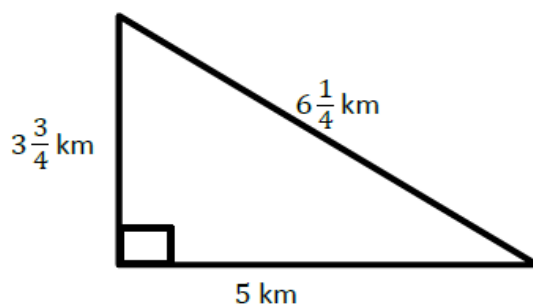
### Problem Set

Calculate the area of each right triangle below. Each figure is not drawn to scale.

1.

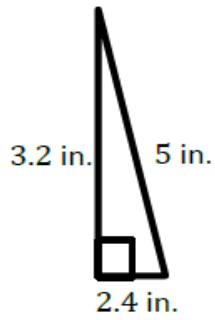


2.

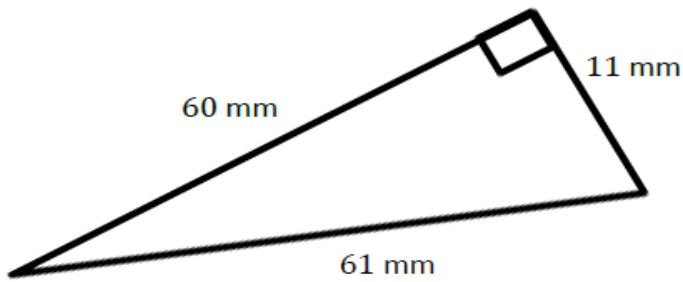


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3.

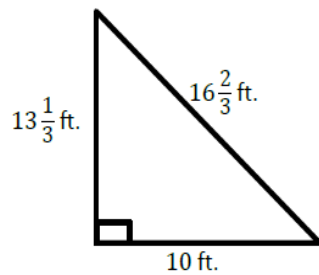


4.

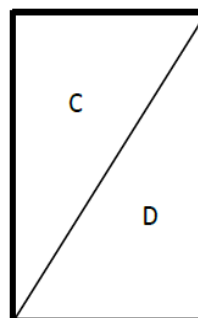
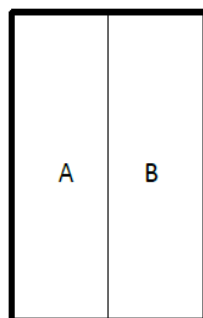


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5.



6. Elania has two congruent rugs at her house. She cut one vertically down the middle, and she cut diagonally through the other one.



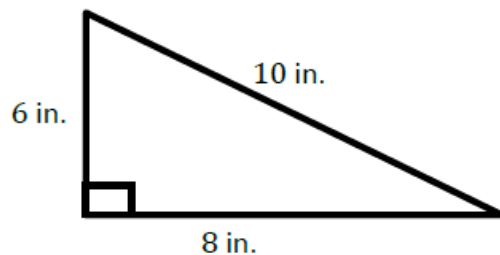
After making the cuts, which rug (labeled A, B, C, or D) has the larger area? Explain.

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7. Give the dimensions of a right triangle and a parallelogram with the same area. Explain how you know.
8. If the area of a right triangle is  $\frac{9}{16}$  sq. ft. and the height is  $\frac{3}{4}$  in., write an equation that relates the area to the base,  $b$ , and the height. Solve the equation to determine the base.

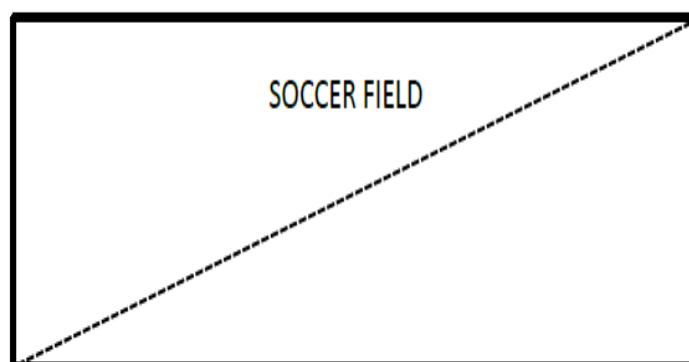
### Exit Ticket

1. Calculate the area of the right triangle. Each figure is not drawn to scale.

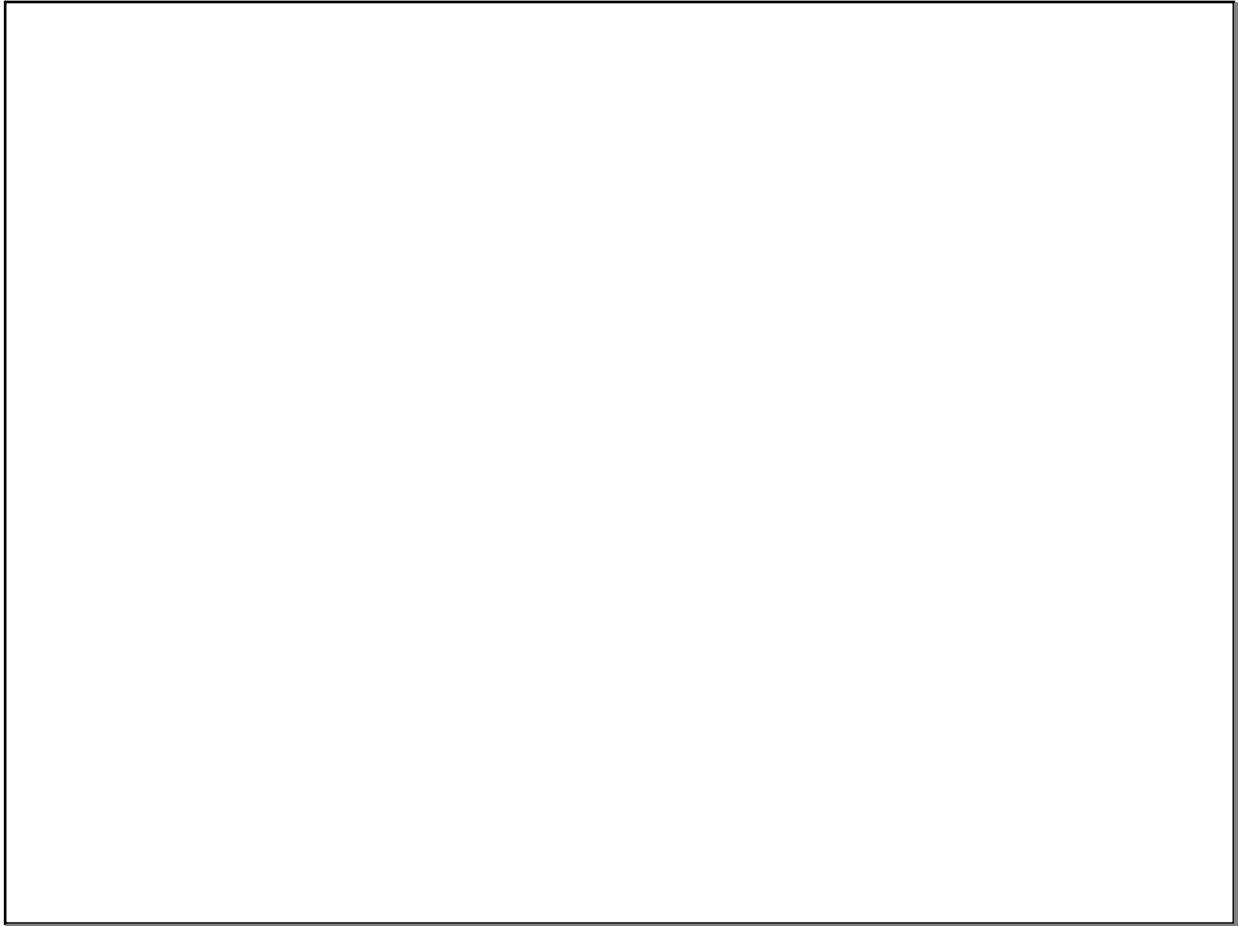


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2. Dan and Joe are responsible for cutting the grass on the local high school soccer field. Joe cuts a diagonal line through the field, as shown in the diagram below, and says that each person is responsible for cutting the grass on one side of the line. Dan says that this is not fair because he will have to cut more grass than Joe. Is Dan correct? Why or why not?



Apr 1-6:19 AM



Apr 1-6:18 AM