Unit: Geometry
Student Handout 1

Name _____

Date _____ Pd _____

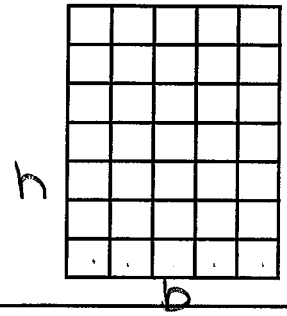
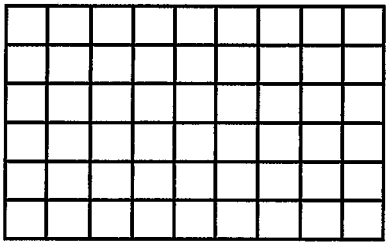
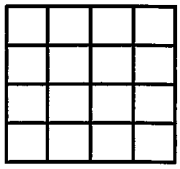
# AREA OF RECTANGLES AND PARALLELOGRAMS

## AREA OF RECTANGLES

- Area is the Surface measurement of a two-dimensional figure.
- Use the formula A=bh, where "b" is the length of the base, and "h" is the height of the rectangle.
- Area is measured in Square units:

Ex: inches • inches = $in^2$ feet • feet = $ft^2$ meters • meters = $M^2$

Count the dimensions of each of the rectangles below and the total squares. Then, use the formula to prove the area.

| RECTANGLE 1 | RECTANGLE 2 | RECTANGLE 3 |
|---|---|---|
|   |  |  |
| FORMULA: A=bh | FORMULA: | FORMULA: |
| PLUG IN VALUES: A=5(7) | PLUG IN VALUES: | PLUG IN VALUES: |
| AREA: 35 units$^2$ | AREA: | AREA: |

Determine the area of each rectangle below.

4.


Formula: A=bh

Plug in Values: A=8.6(3)

Area: A=25.8cm$^2$

5.


Formula: A=$2\frac{1}{4}(1\frac{1}{2})$

Plug in Values: A=$\frac{9}{4}\cdot\frac{3}{2}$

Area: A=$\frac{27}{8}$ $3\frac{3}{8}$ ft$^2$

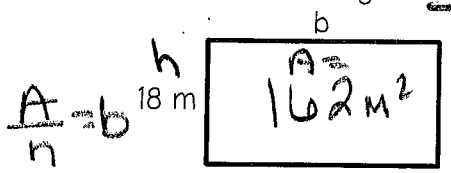
## WRITING FORMULAS

- Formulas can be manipulated to solve for missing information.

Ex: A = bh can be written as $b=\frac{A}{h}$, $h=\frac{A}{b}$.

Use your understanding of the area of rectangles to answer the questions below.

6. The area of the rectangle is 162 $m^2$.




$\frac{A}{h} = b$

$\frac{162}{18} = 9$

Formula: $A = bh$

Plug in Values: $162 = 18b$

Value of b: 9 m

7. Circle all of the formulas below that could be used to find the height of a rectangle with a base of 11 in and an area of 120 $in^2$.

a. $120 = 11(11)$

b. $11 = 120(h)$

c. $120 = 11(h)$ ($A = bh$)

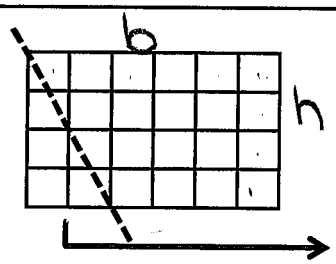
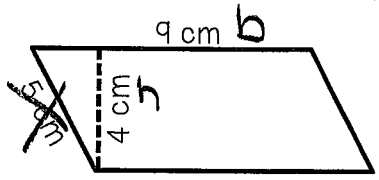
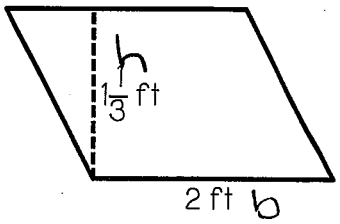
d. $h = \frac{120}{11}$ ($h = \frac{A}{b}$)

e. $h = \frac{11}{120}$

## AREA OF PARALLELOGRAMS

- The dimensions of a parallelogram are also referred to as the base and height.
- Use the formula $A = bh$, where "b" is the length of the base and "h" is the height of the parallelogram, which makes a 90° angle with the base. (right angle)

Count the dimensions of the first figure below and determine the area. Then, use the formula to prove the areas of parallelograms 2 and 3.

| PARALLELOGRAM 1 | PARALLELOGRAM 2 | PARALLELOGRAM 3 |
|---|---|---|
|   |   |   |
| FORMULA: $A = bh$ | FORMULA: $A = bh$ | FORMULA: |
| PLUG IN VALUES: $A = 6(4)$ | PLUG IN VALUES: $A = 9(4)$ | PLUG IN VALUES: |
| AREA: 24 $units^2$ | AREA: 36 $cm^2$ | AREA: |

Describe how the area of a rectangle and the area of a parallelogram with the same dimensions are related.

Both have the same area, which means they follow the same formula, $A = bh$

Summarize today's lesson: Height is perpendicular line that connects * the base to it's opposite side in the shortest distance.

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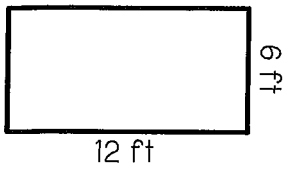
# AREA OF RECTANGLES AND PARALLELOGRAMS

Solve the problems below. Be sure to show your work. Figures are not drawn to scale.

1. Determine the area of the rectangle below.

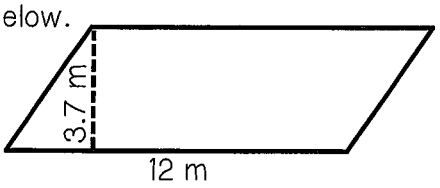



Formula: _____

Plug in Values: _____

Area: _____

2. Determine the area of the parallelogram below.

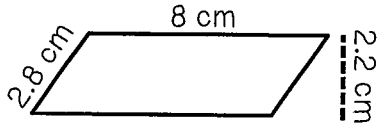



Formula: _____

Plug in Values: _____

Area: _____

3. Determine the area of the parallelogram below.

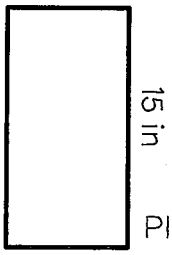



Formula: _____

Plug in Values: _____

Area: _____

4. Determine the area of the rectangle below.




Formula: _____

Plug in Values: _____

Area: _____

Read each question, sketch a picture, and then solve for the area.

5. A broken rectangular-shaped window is being replaced. It measures 24 inches by 18 inches. How many square inches of glass are needed to repair the window? Draw a picture to help.

6. A parallelogram is being painted on the wall of a playroom. The parallelogram measures 7.3 meters in length and has a height of 5 meters. How many square meters of paint are needed?