Lesson 1: The Area of Parallelograms Through Rectangle Facts

Classwork
Opening Exercise
Name each shape.

Exercises
1. Find the area of each parallelogram below. Each figure is not drawn to scale.
   a. 
      \[
      \text{Area} = \text{base} \times \text{height} \\
      = 4 \text{ cm} \times 5 \text{ cm} \\
      = 20 \text{ cm}^2
      \]
   b. 
      \[
      \text{Area} = \text{base} \times \text{height} \\
      = 8 \text{ m} \times 10 \text{ m} \\
      = 80 \text{ m}^2
      \]
   c. 
      \[
      \text{Area} = \text{base} \times \text{height} \\
      = 7 \text{ ft} \times 11.5 \text{ ft} \\
      = 79.5 \text{ ft}^2
      \]
2. Draw and label the height of each parallelogram. Use the correct mathematical tool to measure the base and the height in inches, and calculate the area of each parallelogram.
   a. 
      \[
      \text{base}
      \]
   b. 
      \[
      \text{base}
      \]
   c. 
  
3. If the area of a parallelogram is \(\frac{35}{42}\) cm\(^2\) and the height is \(\frac{1}{7}\) cm, write an equation that relates the height, base, and area of the parallelogram. Solve the equation.
Lesson Summary
The formula to calculate the area of a parallelogram is $A = bh$, where $b$ represents the base and $h$ represents the height of the parallelogram.
The height of a parallelogram is the line segment perpendicular to the base.

Problem Set

Draw and label the height for each parallelogram.
1.

\[ \text{base} \]

2.

\[ \text{base} \]

Calculate the area of each parallelogram. The figures are not drawn to scale.
3.

\[ \text{6 cm} \]
\[ \text{8 cm} \]
\[ \text{13 cm} \]
4.

13.4 ft. 12.8 ft.

1.2 ft.

5.

7 \(\frac{2}{3}\) in.

5 \(\frac{1}{4}\) in.

2 \(\frac{1}{2}\) in.

3 \(\frac{5}{6}\) in.

6.

3 \(\frac{1}{2}\) m

7 \(\frac{1}{3}\) m

3 \(\frac{5}{6}\) m

7. Brittany and Sid were both asked to draw the height of a parallelogram. Their answers are below.

Brittany

Sid

Are both Brittany and Sid correct? If not, who is correct? Explain your answer.
8. Do the rectangle and parallelogram below have the same area? Explain why or why not.

[Rectangle: 15 ft. x 8 ft.]

[Parallelogram: 10 ft. x 8 ft.]

9. A parallelogram has an area of 20.3 square centimeters and a base of 2.5 centimeters. Write an equation that relates the area to the base and height, \( h \). Solve the equation to determine the length of the height.

\[ \text{Area} = \text{base} \times \text{height} \]

\[ 20.3 = 2.5 \times \text{height} \]

Solve for the height.