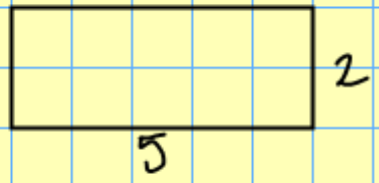
Lesson 3

Objective: Demonstrate understanding of area and perimeter formulas by solving multi-step real world problems.

Fluency Practice

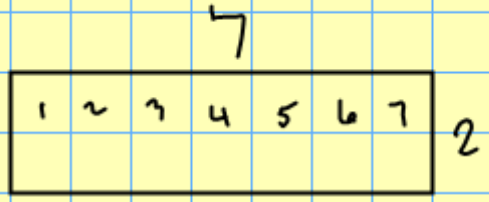
Sprint: Missing Products and Factors

Find the Area and Perimeter



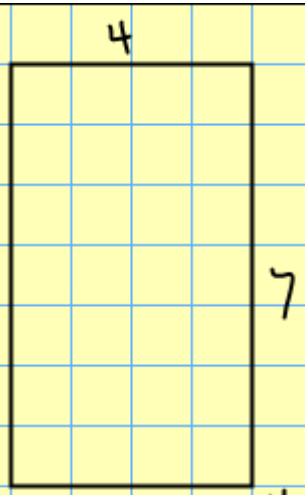
P = 14 units

A = 10 units²



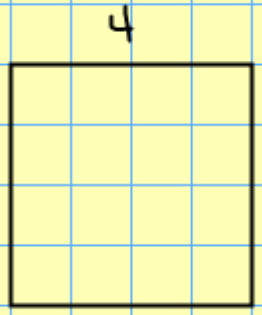
P = 18 units

A = 14 sq. units



P = 22 units

A = 28 sq. units



P = 16 units

A = 16 sq. units

4cm × 8 sq. cm

2 cm

A = L x W

8 = ___ x 2

15 sq. cm × 3cm

5 cm

15 = 5 x ___

42 sq. cm

6 cm

× 7cm

42 = 6 x ___

Concept Development

1. Model the problem.

- Can you draw something?
- What can you draw?
- What conclusions can you make from your drawing?

2. Calculate to solve and write a statement.

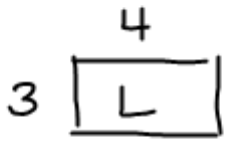
Give everyone two minutes to finish work on that question, sharing their work and thinking with a peer. All should then write their equations and statements of the answer.

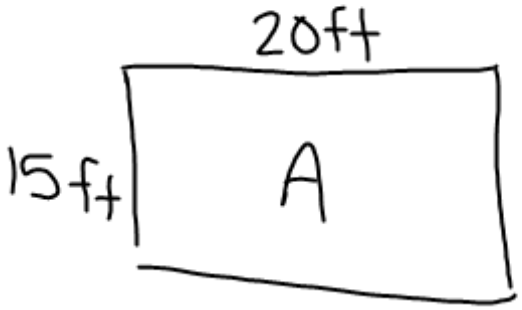
3. Assess the solution.

Give students one or two minutes to assess the solutions presented by their peers on the board, comparing the solutions to their own work. Highlight alternative methods to reach the correct solution.

Problem 1

The projection screen in the school auditorium is 5 times as long and 5 times as wide as the screen in the library. The screen in the library is 4 feet long with a perimeter of 14 feet. What is the perimeter of the screen in the auditorium?





$P = (L+W) \times 2$

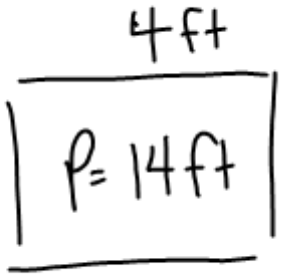
$(20+15)$

$35 \times 2 = 70$

The auditorium screen has a perimeter of 70 ft.

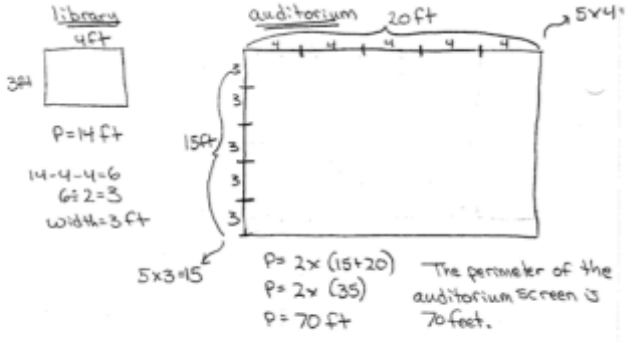
$P = 14$ ft

$L = 4$ ft



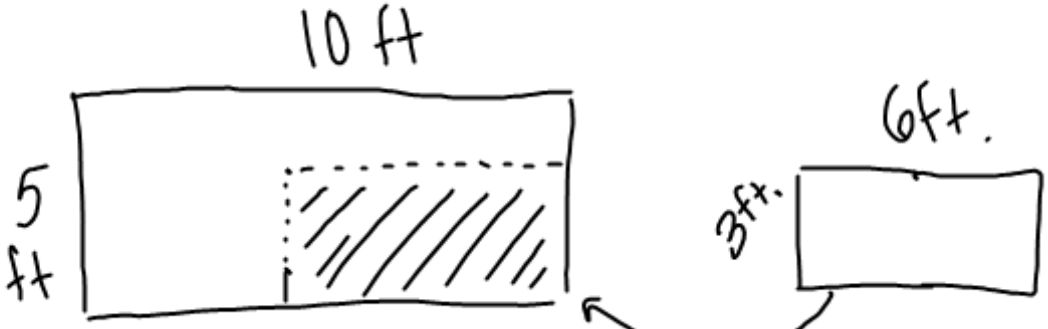
$P = (L+W) \times 2$

$14 = (4+3) \times 2$



Problem 2

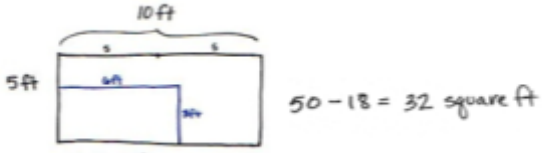
The width of David's tent is 5 feet. The length is twice the width. David's rectangular air mattress measures 3 feet by 6 feet. If David puts the air mattress in the tent, how many square feet of floor space will be available for the rest of his things?



AREA = 50 sq. ft.

AREA = 18 sq. ft.

$$\begin{array}{r} 4\ 10 \\ \cancel{8}\cancel{0} \\ -\ 18 \\ \hline 32 \end{array}$$



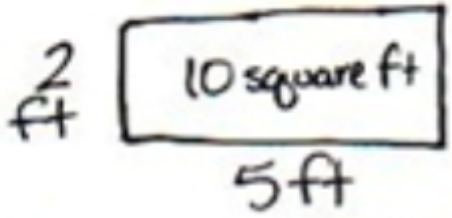
There will be 32 square feet of space left in the tent.

He will have 32 sq. ft of available space in his tent.

Problem 3

Jackson's bedroom has an area of 90 square feet. The area of his bedroom is 9 times that of his closet. If the closet is 2 feet wide, what is its length?

90 square ft ÷ 9 = 10 square ft



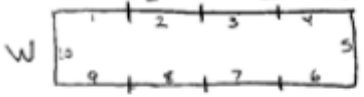
10 square ft ÷ 2 ft = 5 ft

The length of the closet is 5 feet.

Problem 4

The length of a rectangular deck is 4 times its width. If the deck's perimeter is 30 feet, what is the deck's area?

① L = 4 times the width



P = 30 ft

P = 2 × (l + w)

Width = 1 unit
length = 4 units
> 5 units
P = 2 × 5

P = 10 units

10 × a = 30 feet

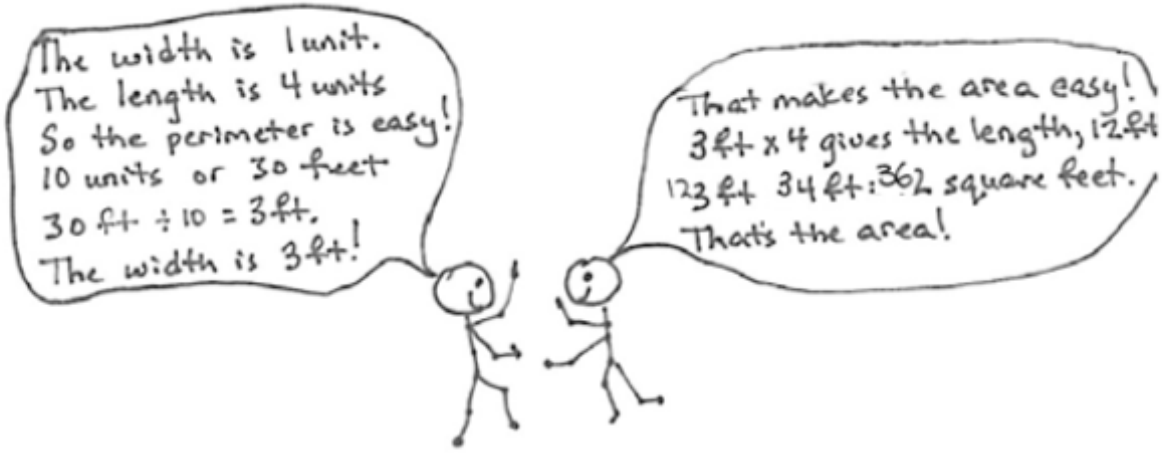
a = 3 feet per unit

W = 3 ft

② W = 3 ft
L = 12 ft

A = 12 ft × 3 ft

A = 36 square feet



Name _____ Date _____

Solve the following problems. Use pictures, words, or diagrams to help you solve.

1. Katie cut out a piece of wrapping paper that was 2 times as long and 3 times as wide as the box that she was wrapping. The box was 5 inches long and 4 inches wide. What is the perimeter of the wrapping paper that Katie cut?

2. Alexis has a piece of red paper that is 4 centimeters wide. Its length is twice its width. She glues a piece of blue paper on top of the red piece measuring 3 centimeters by 7 centimeters. How many square centimeters of red paper will be visible on top?

3. Brinn's kitchen has an area of 81 square feet. The kitchen is 9 times as many square feet as Brinn's pantry. If the pantry is 3 feet wide, what is the length of the pantry?

4. The length of Marshall's poster is 2 times its width. If the perimeter is 72 inches, what is the area of the poster?