# Eureka Math

## 4th Grade
## Module 3
## Lesson 1

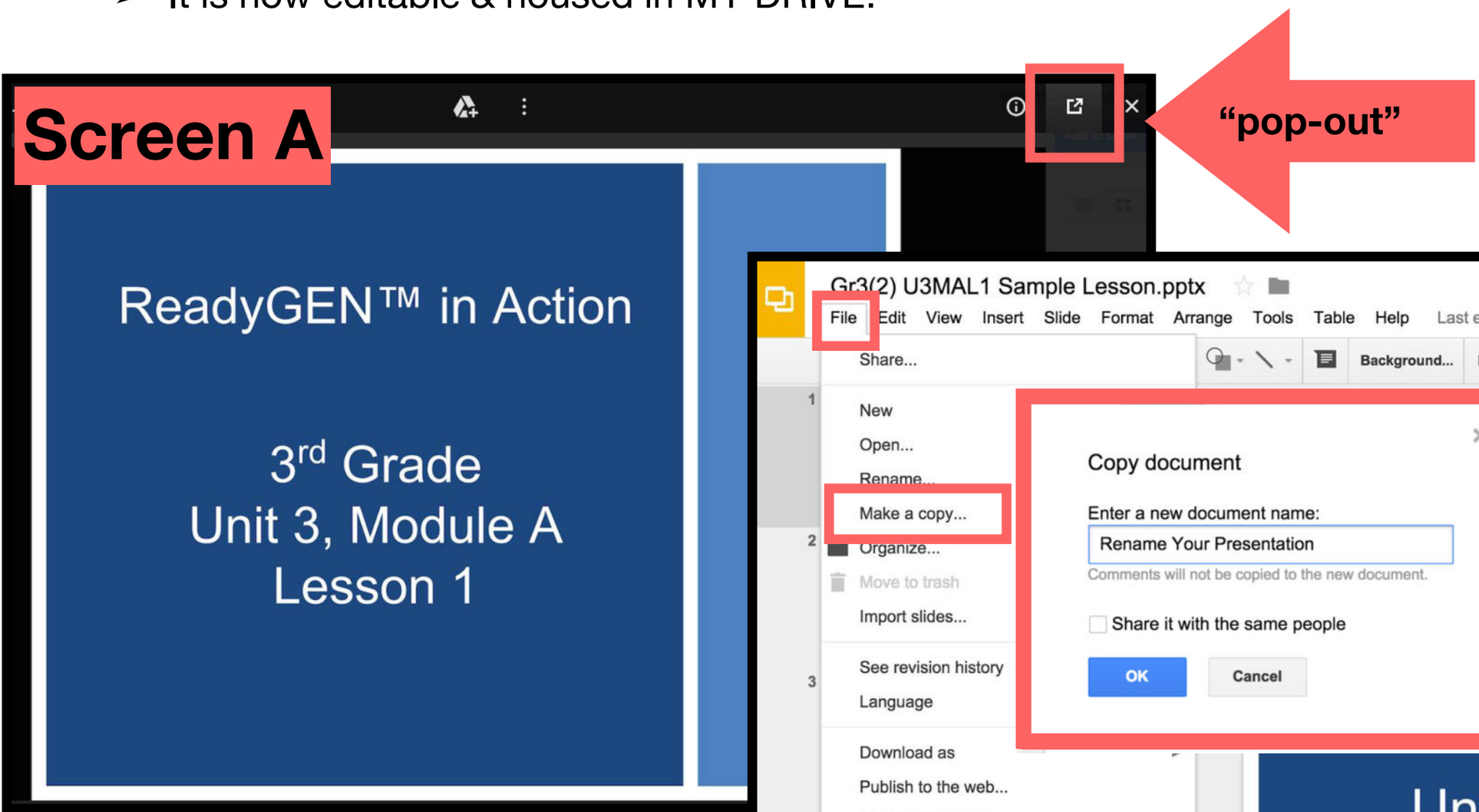
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

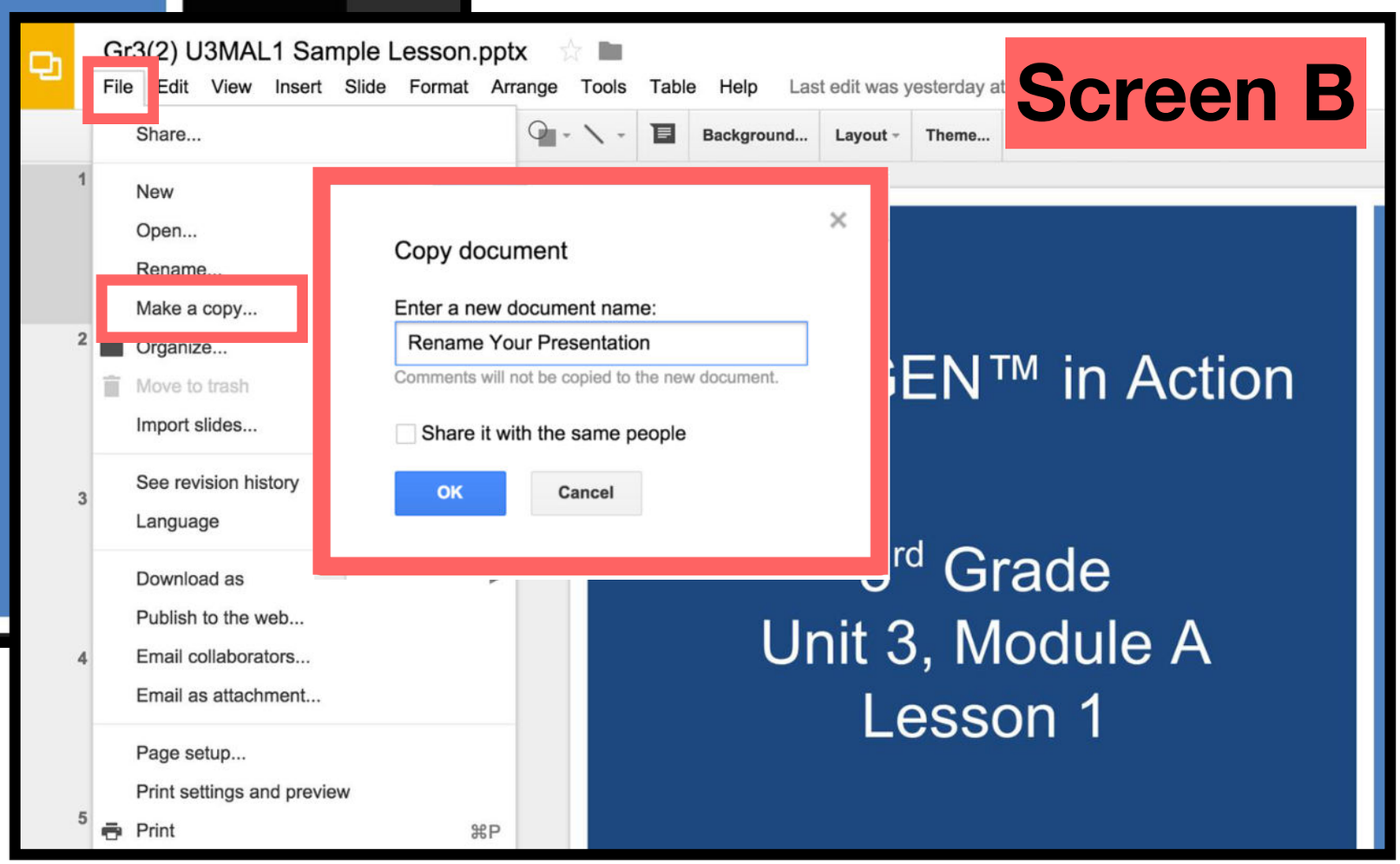
Directions for customizing presentations are available on the next slide.

# Customize this Slideshow

## Reflecting your Teaching Style and Learning Needs of Your Students

- When the Google Slides presentation is opened, it will look like Screen A.
- Click on the “pop-out” button in the upper right hand corner to change the view.
- The view now looks like Screen B.
- Within Google Slides (not Chrome), choose FILE.
- Choose MAKE A COPY and rename your presentation.
- Google Slides will open your renamed presentation.
- It is now editable & housed in MY DRIVE.



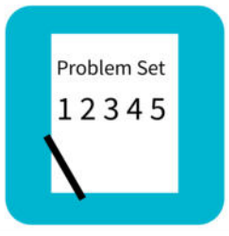



# Icons


Read, Draw, Write

Learning Target

Personal White Board

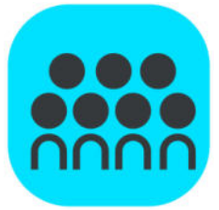



Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

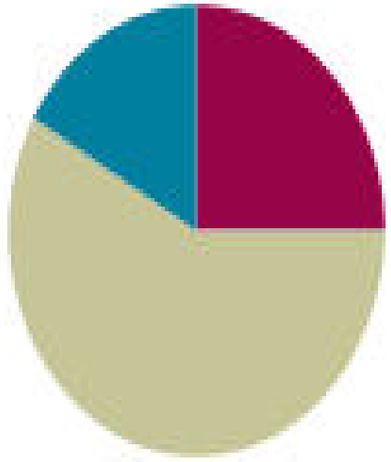
Small Group Time

# Lesson 1

Objective: Investigate and use the formulas for area and perimeter of rectangles.

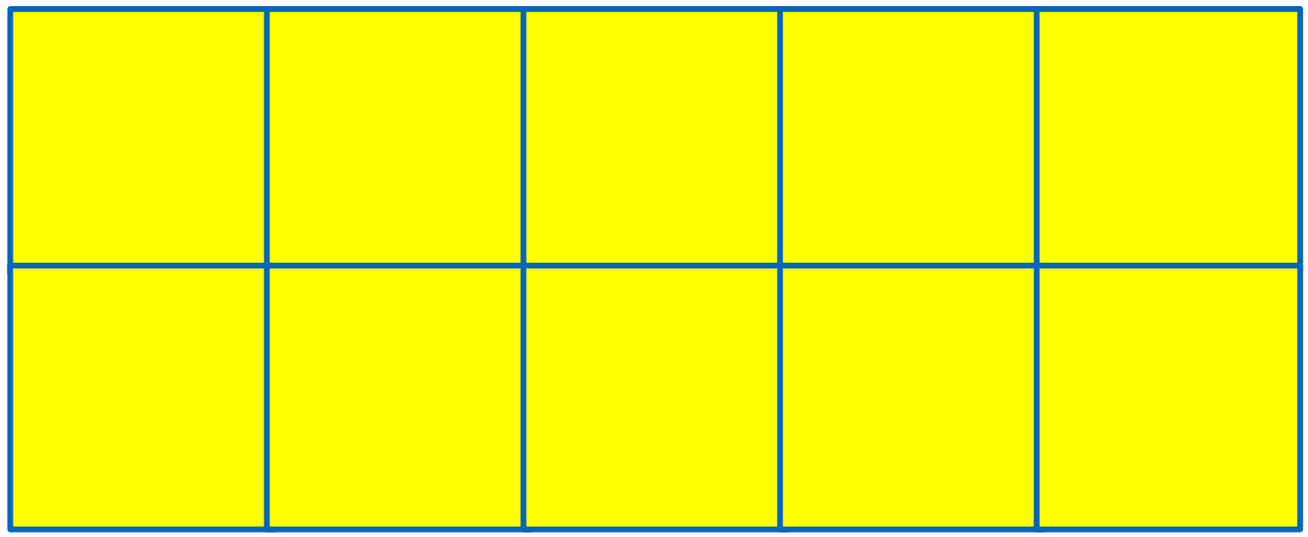
**Suggested Lesson Structure**

| | |
|---|---|
| Fluency Practice | (15 minutes) |
| Concept Development | (35 minutes) |
| Student Debrief | (10 minutes) |
| **Total Time** | **(60 minutes)** |



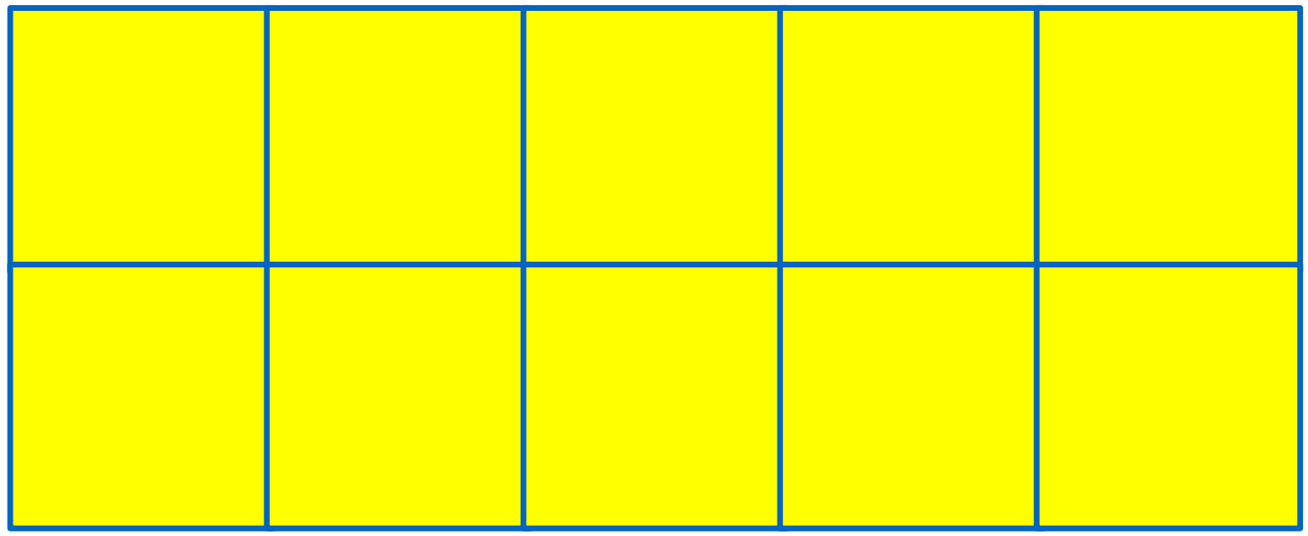
# I can investigate and use the formulas for area and perimeter of rectangles.

# Perimeter and Area



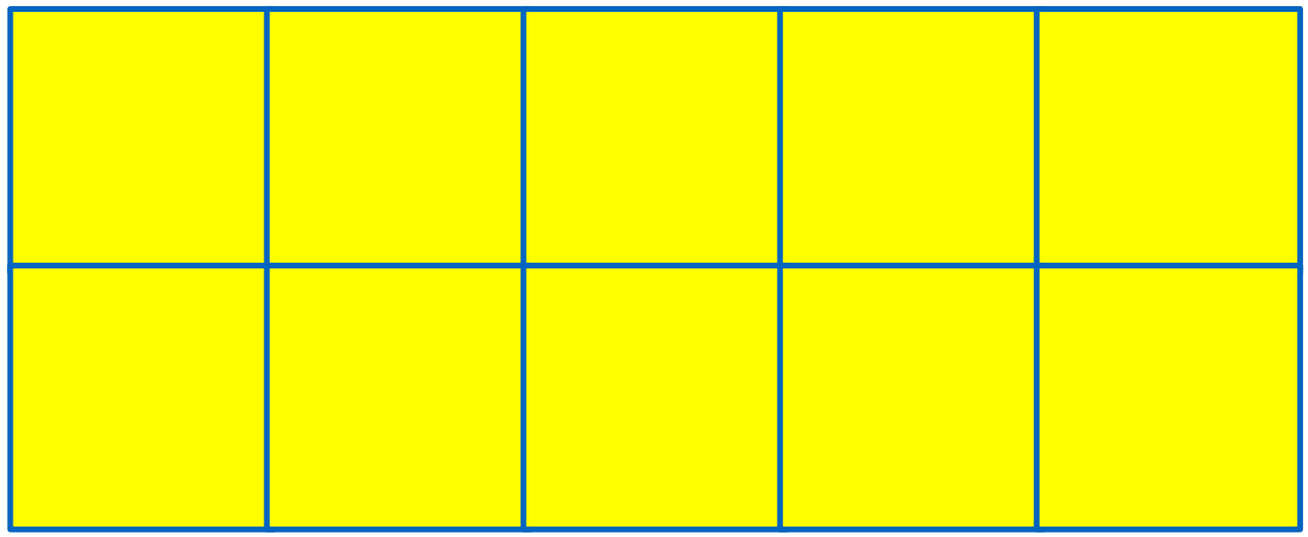
**What is the length of the longest side?**

# Perimeter and Area



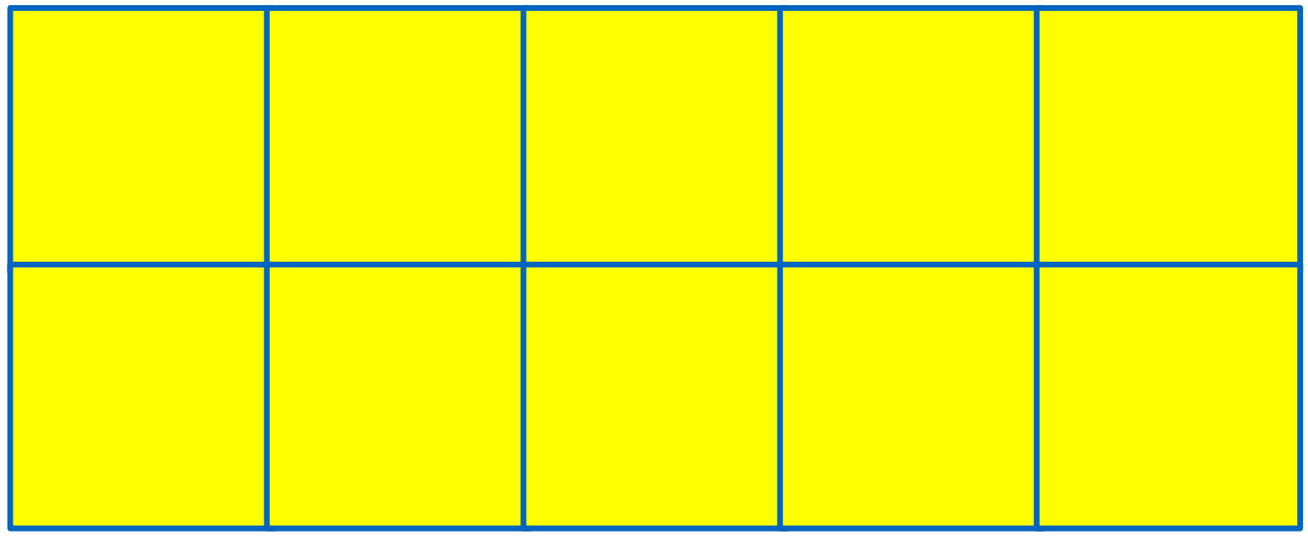
**What is the length of the opposite side?**

# Perimeter and Area



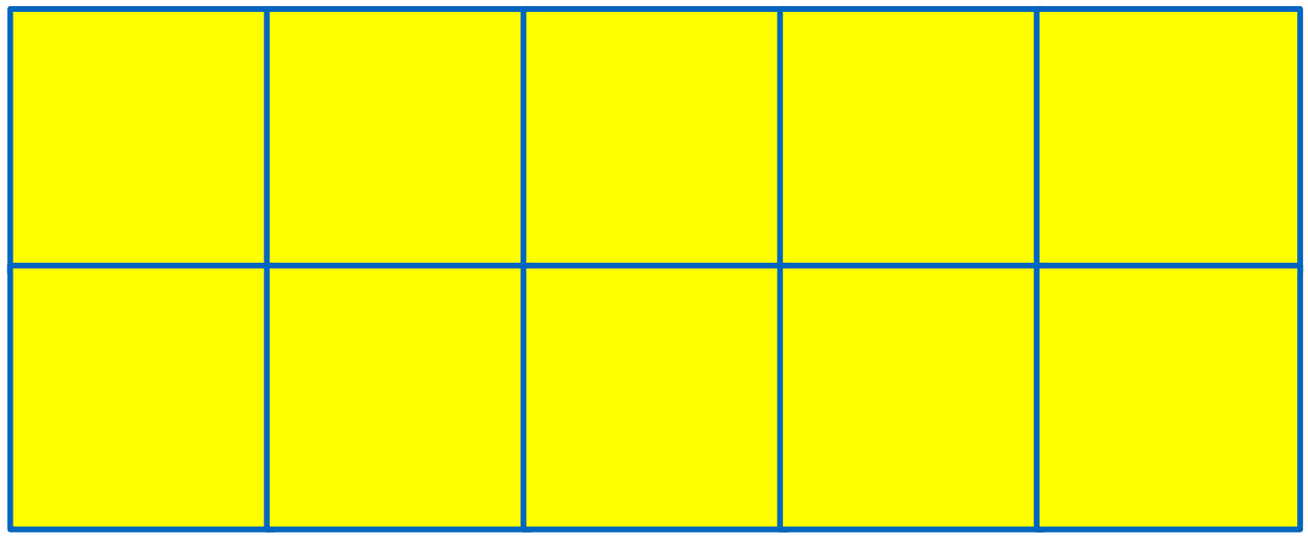
**What is the sum of the rectangle's two longest sides?**

# Perimeter and Area



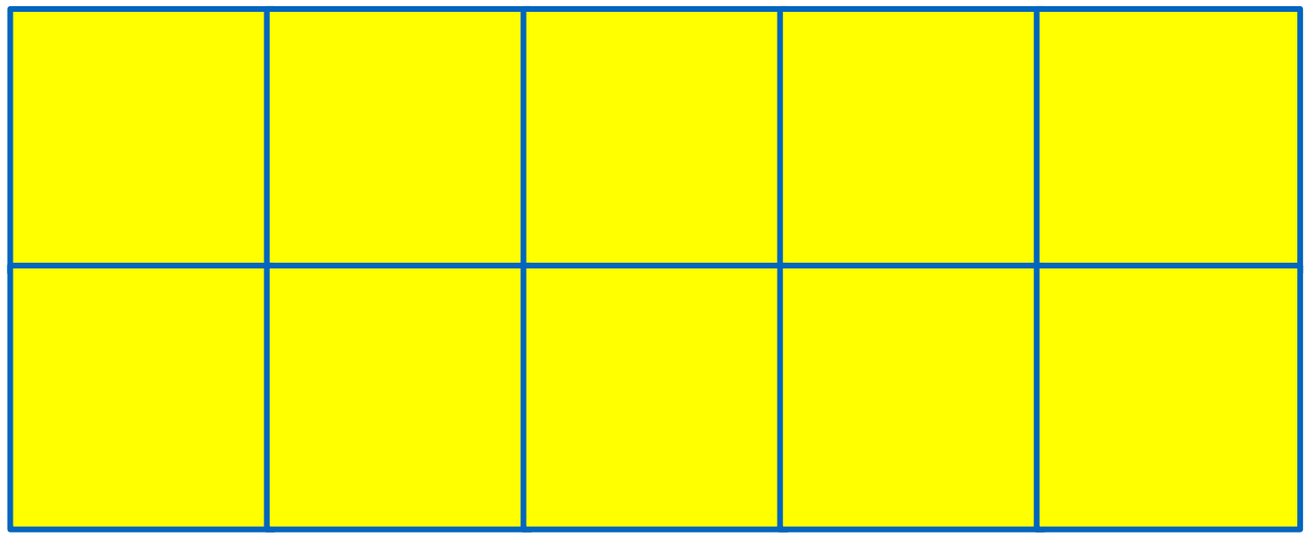
**What is the length of the shortest side?**

# Perimeter and Area



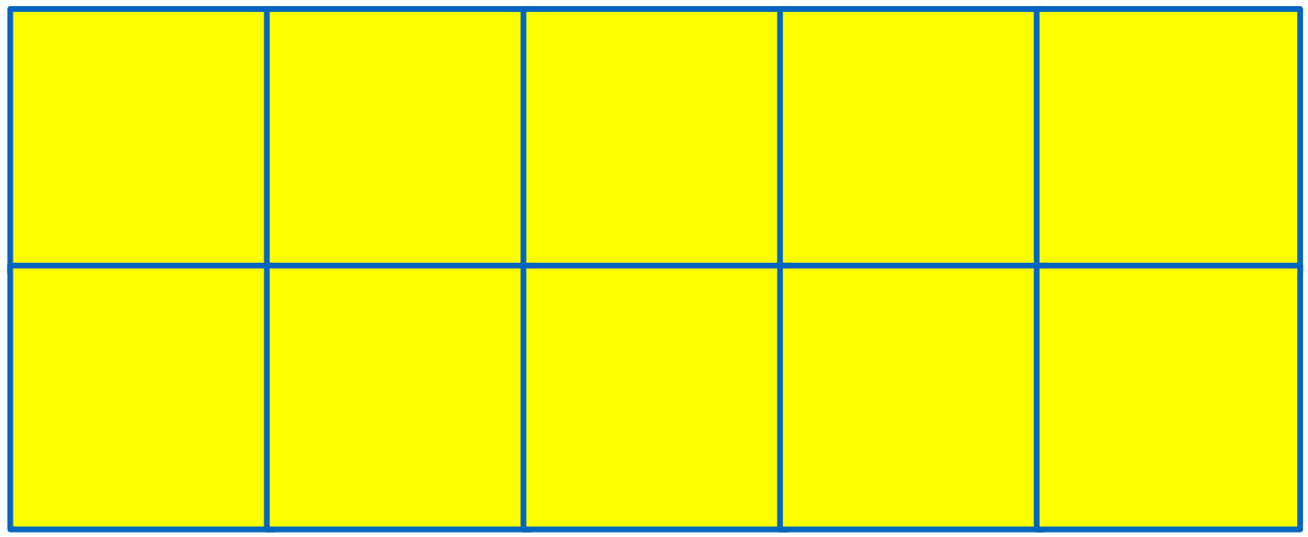
**What is the length of the unknown side?**

# Perimeter and Area



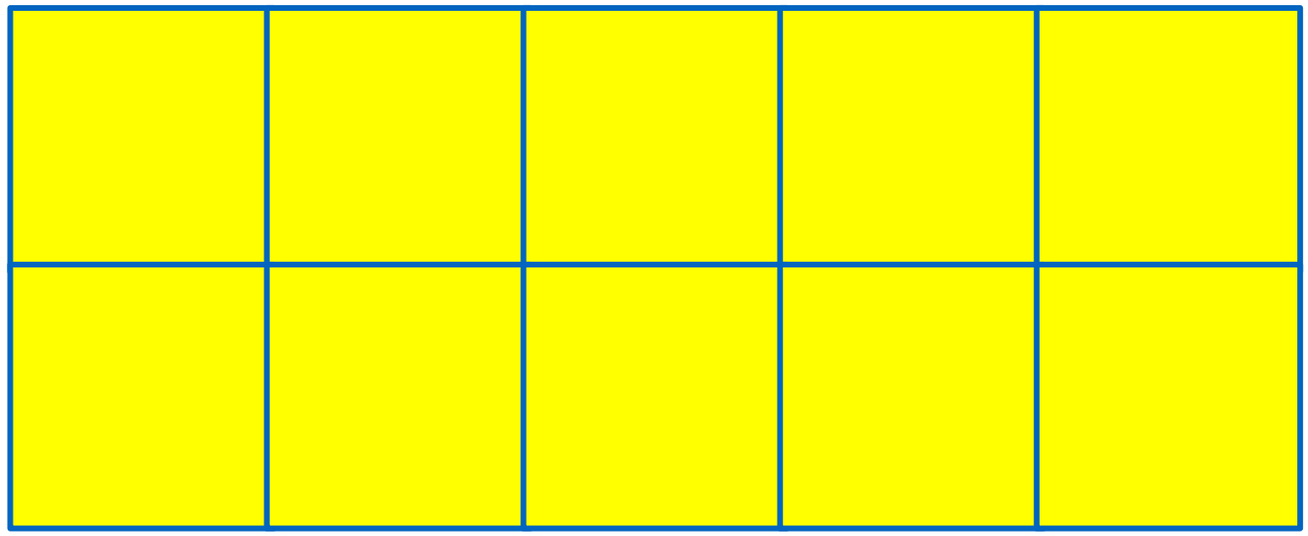
**What is the sum of the rectangle's two shortest sides?**

# Perimeter and Area



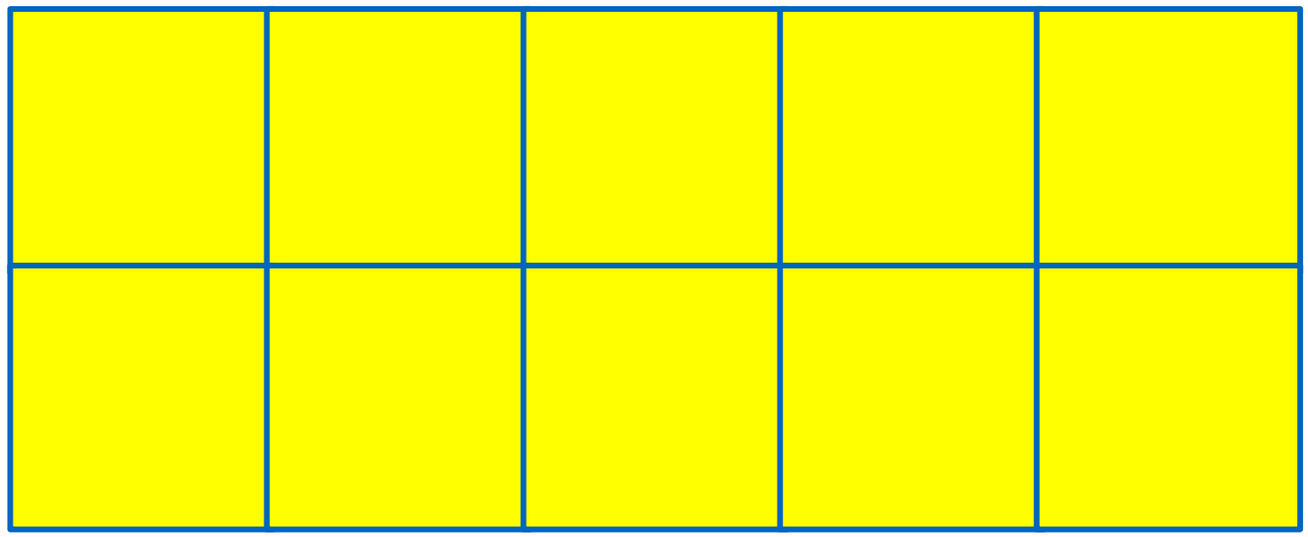
**What is the perimeter?**

# Perimeter and Area



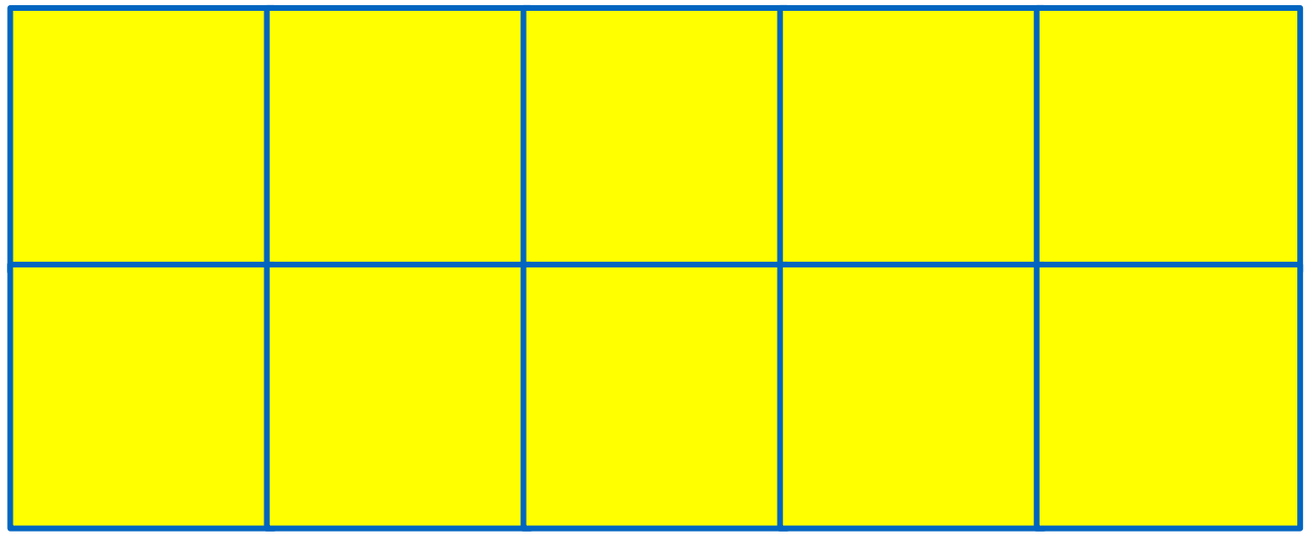
**How many square units are in one row?**

# Perimeter and Area



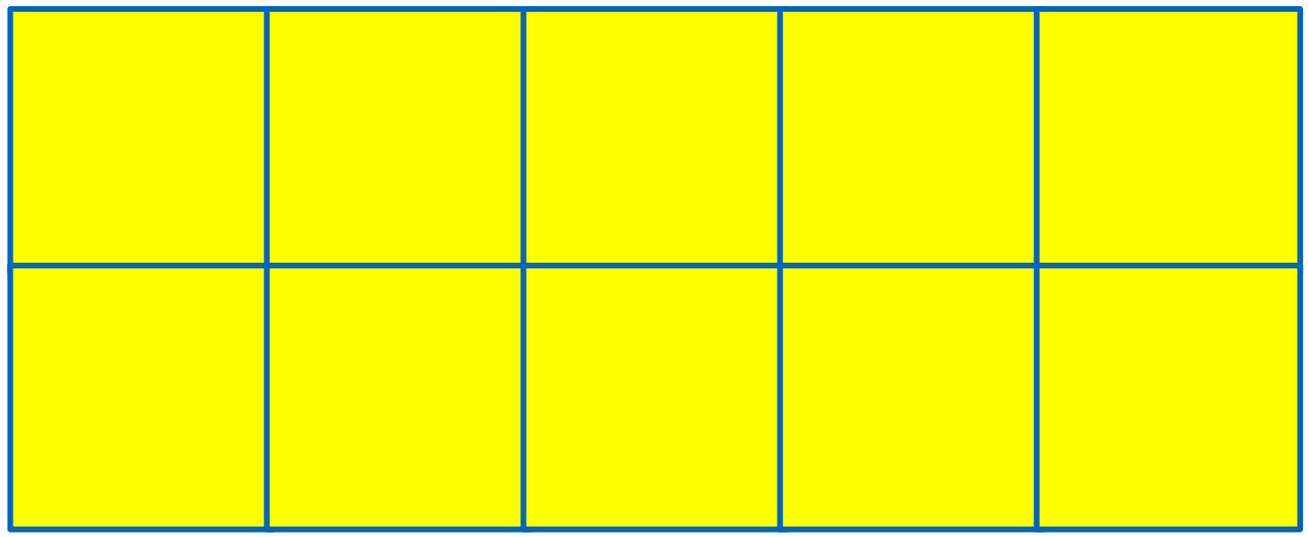
**How many rows of 5 units are there?**

# Perimeter and Area



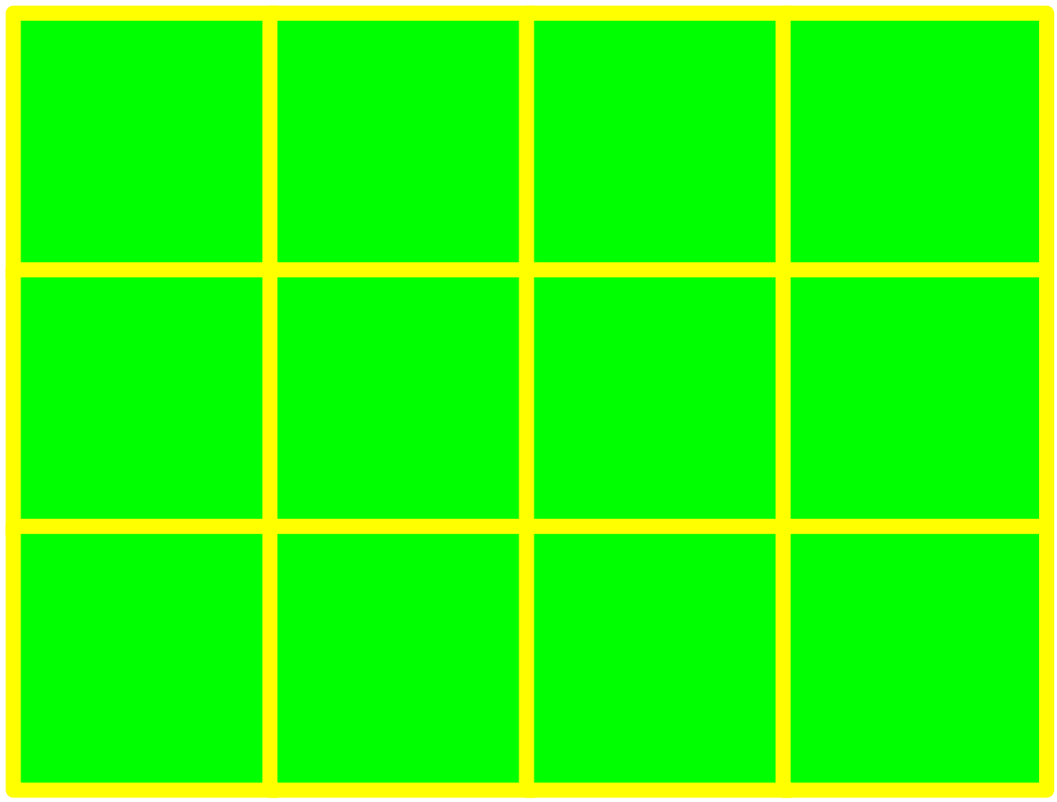
**Let's find how many square units there are in the rectangle, counting by fives.**

# Perimeter and Area



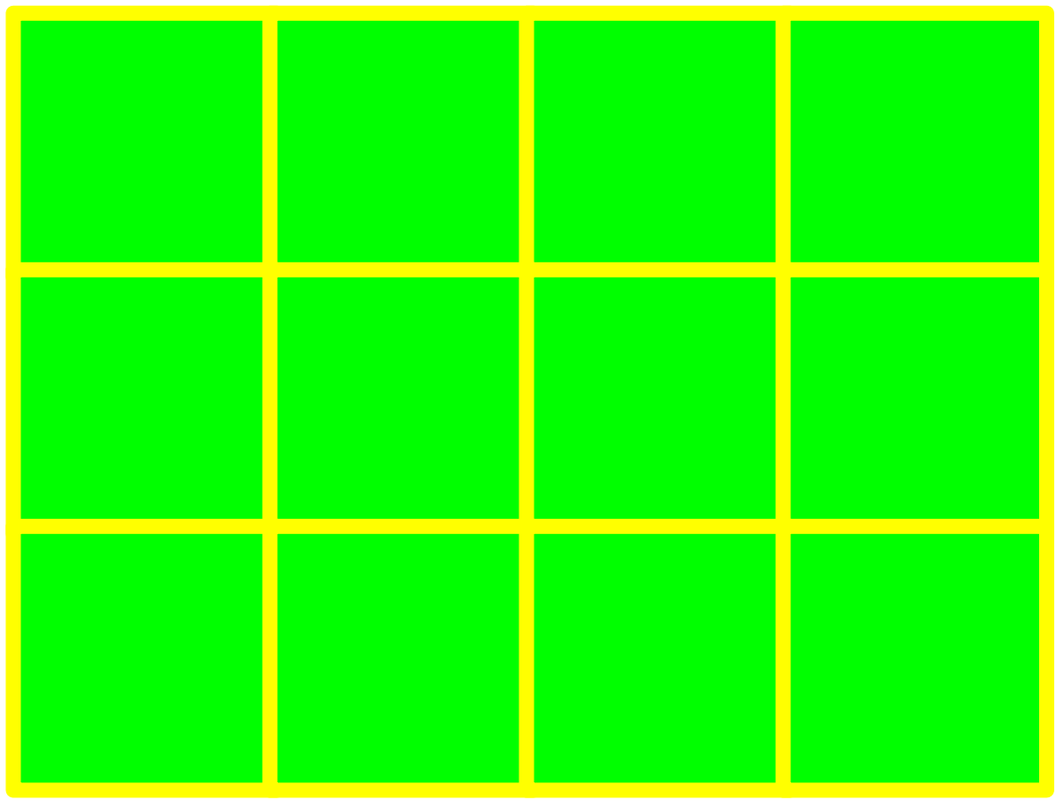
**What is the area?**

# Perimeter and Area



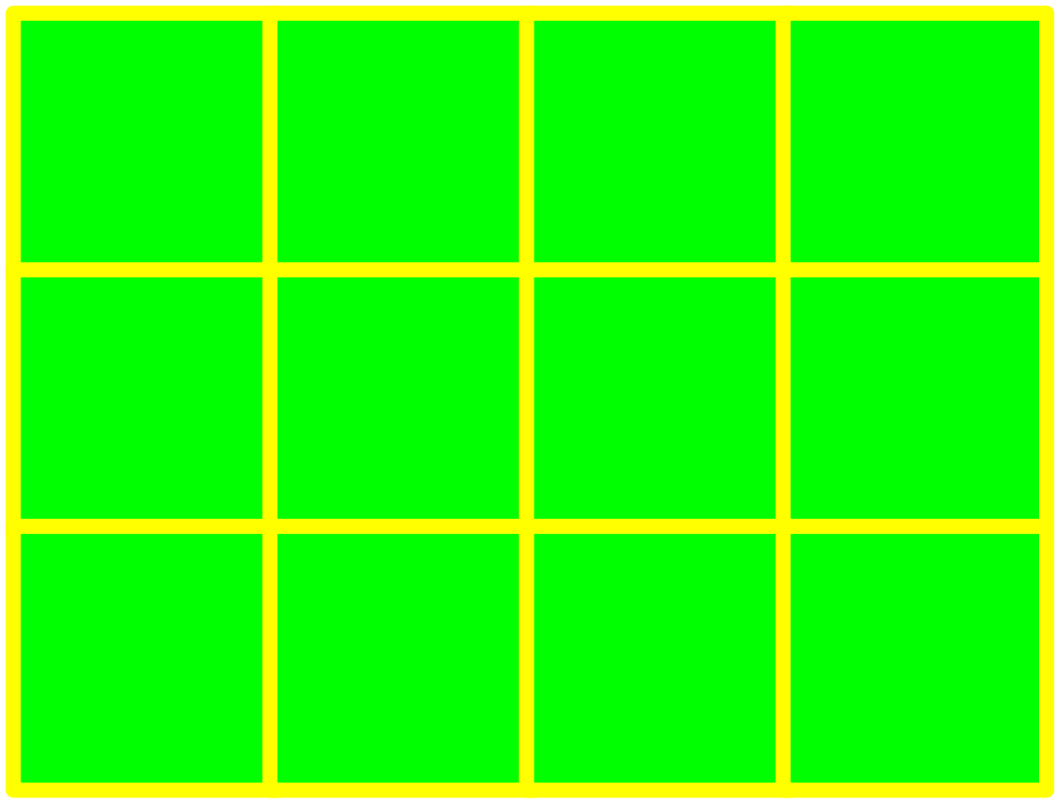
**What is the length of the longest side?**

# Perimeter and Area



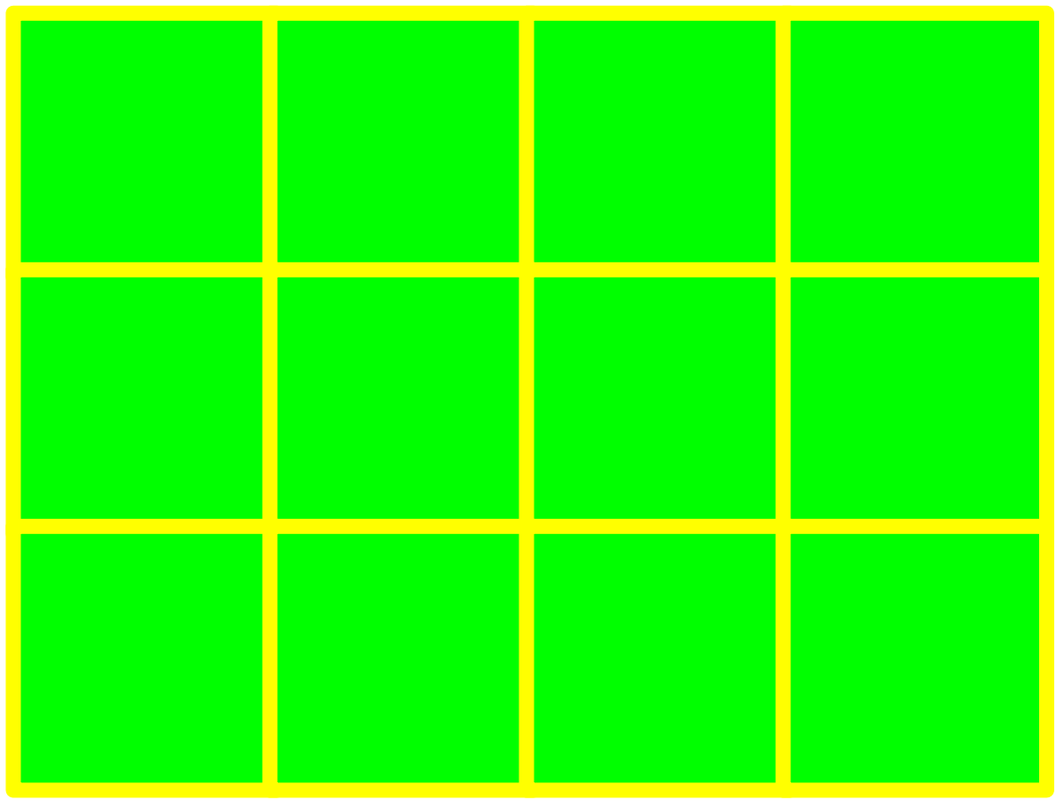
**What is the length of the opposite side?**

# Perimeter and Area



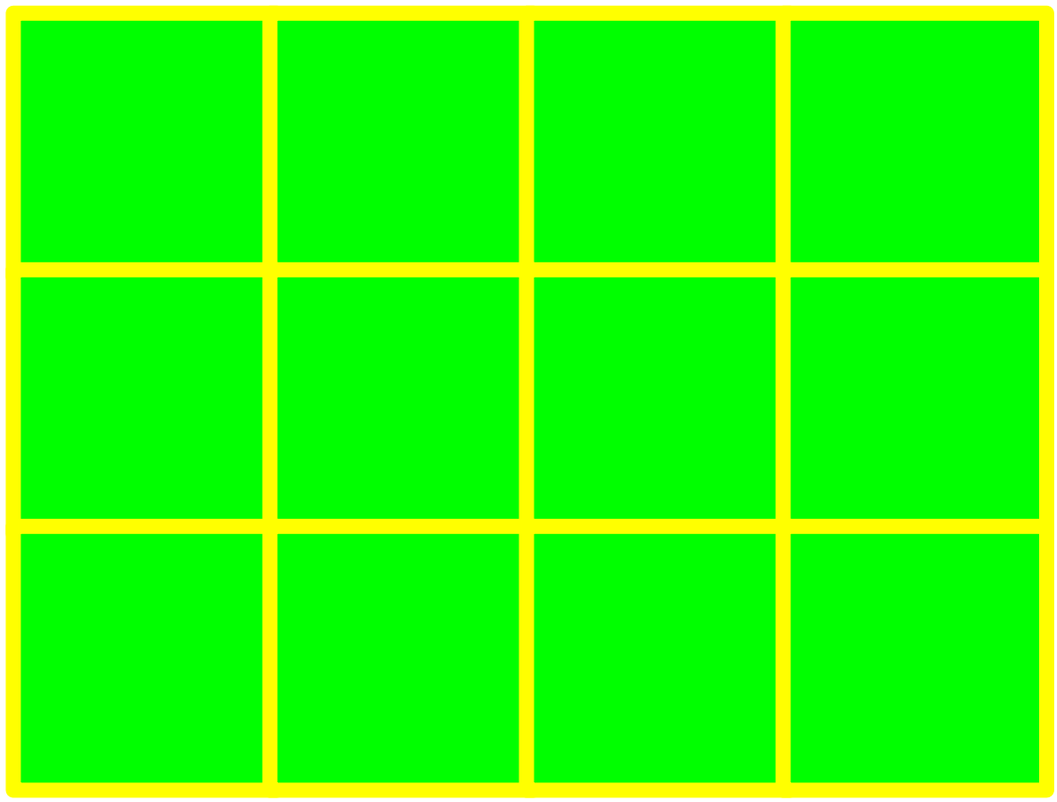
**What is the sum of the rectangle's two longest sides?**

# Perimeter and Area



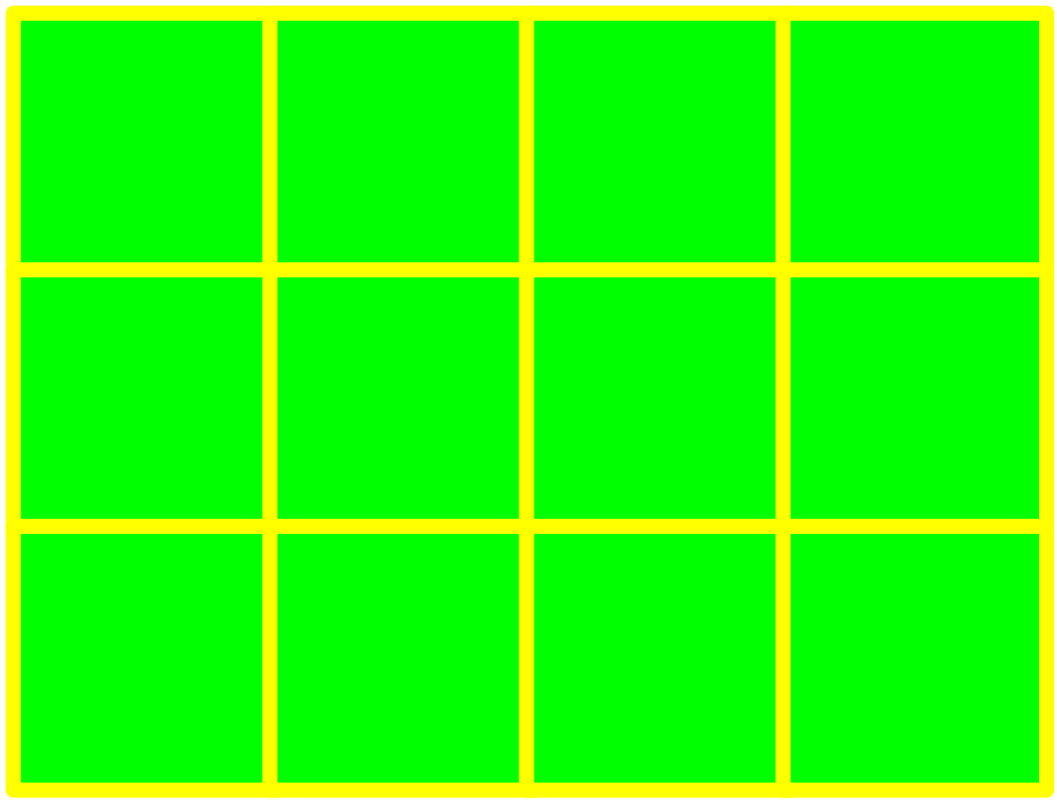
**What is the length of the shortest side?**

# Perimeter and Area



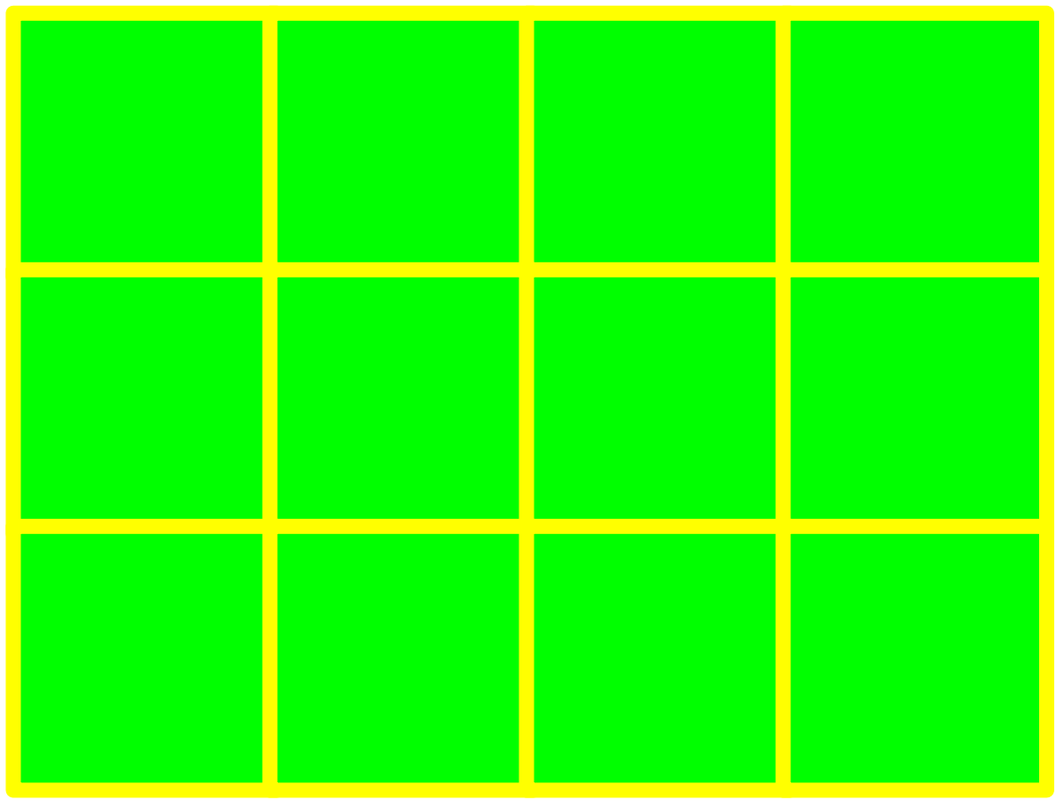
**What is the length of the unknown side?**

# Perimeter and Area



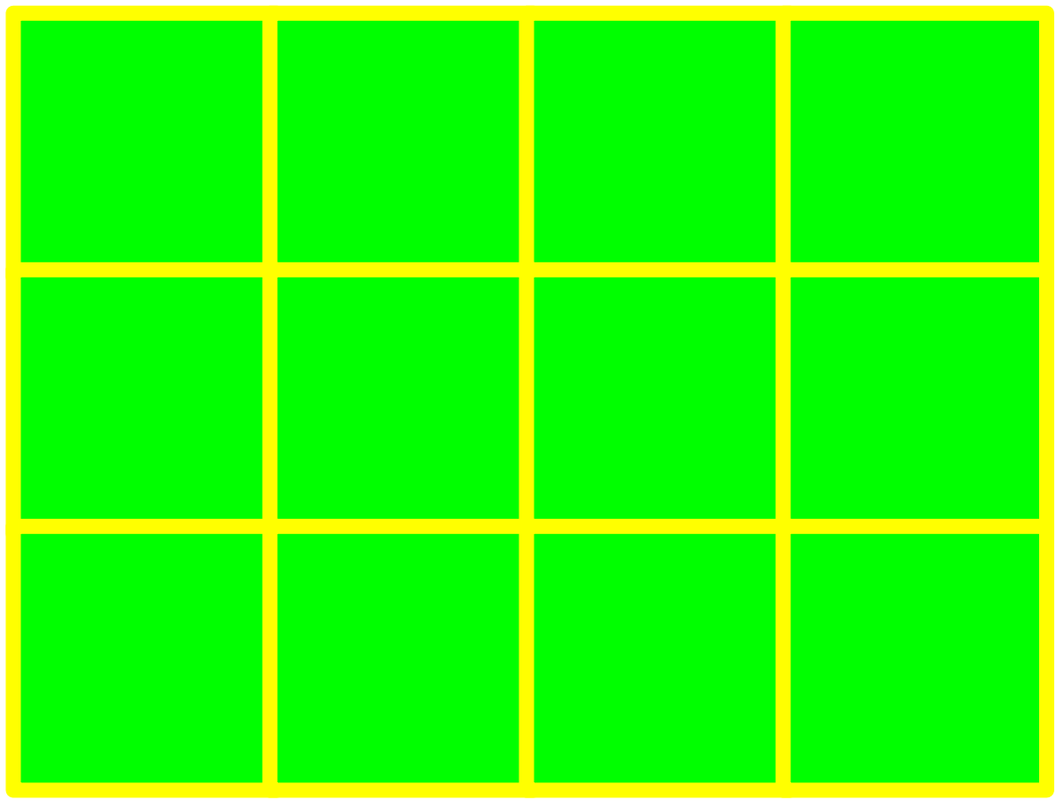
**What is the sum of the rectangle's two shortest sides?**

# Perimeter and Area



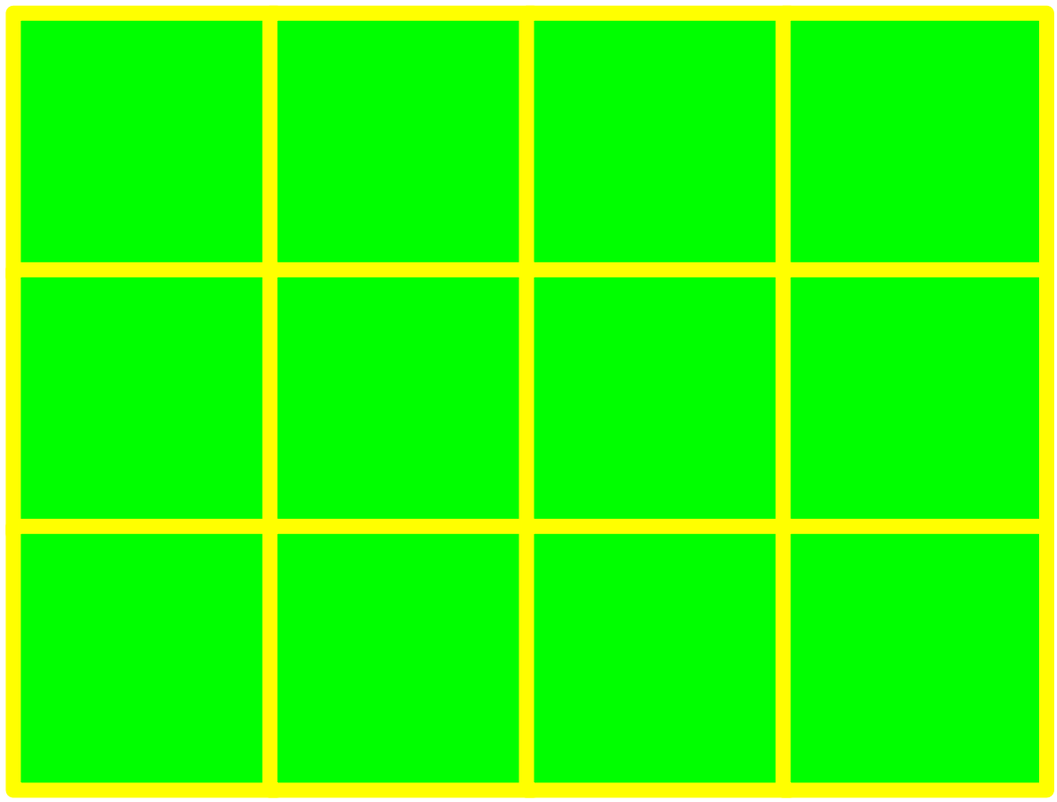
**What is the perimeter?**

# Perimeter and Area



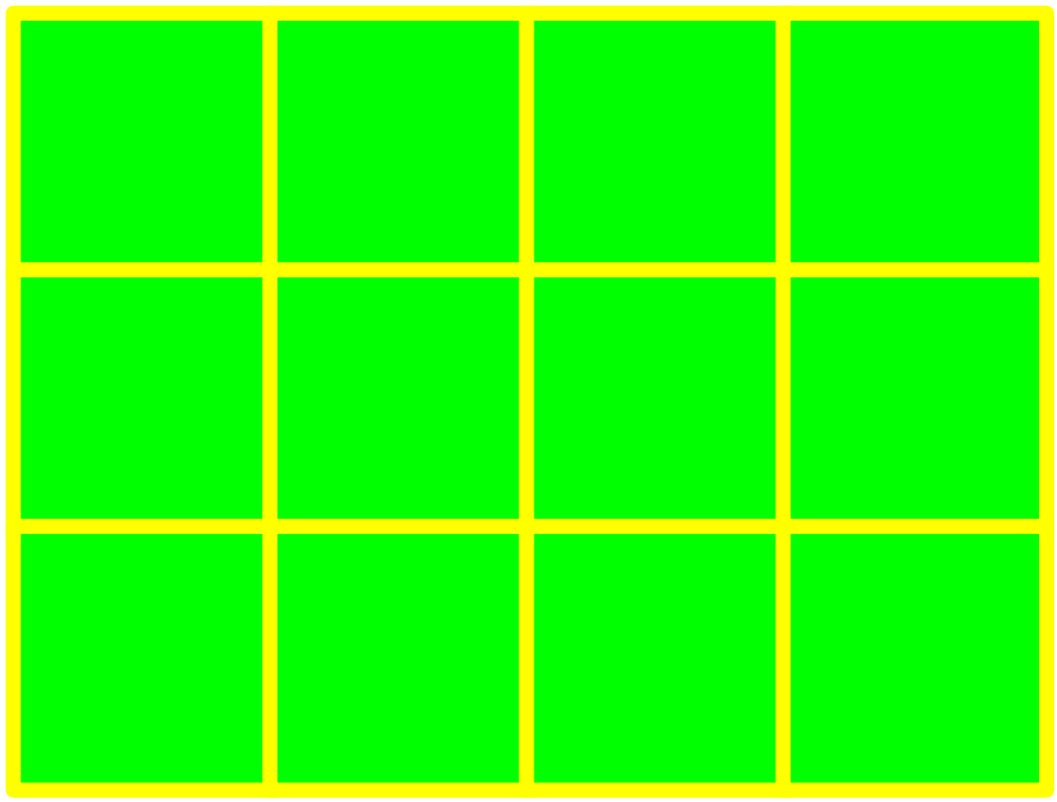
**How many square units are in one row?**

# Perimeter and Area



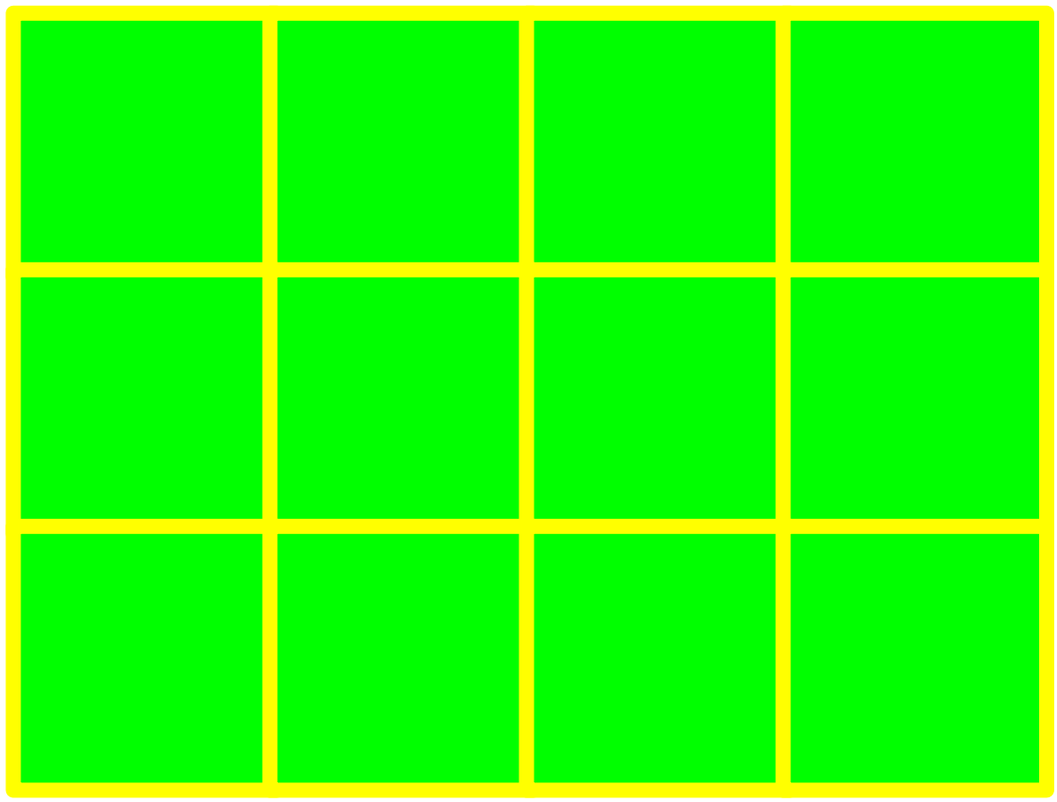
**How many rows of 4 units are there?**

# Perimeter and Area



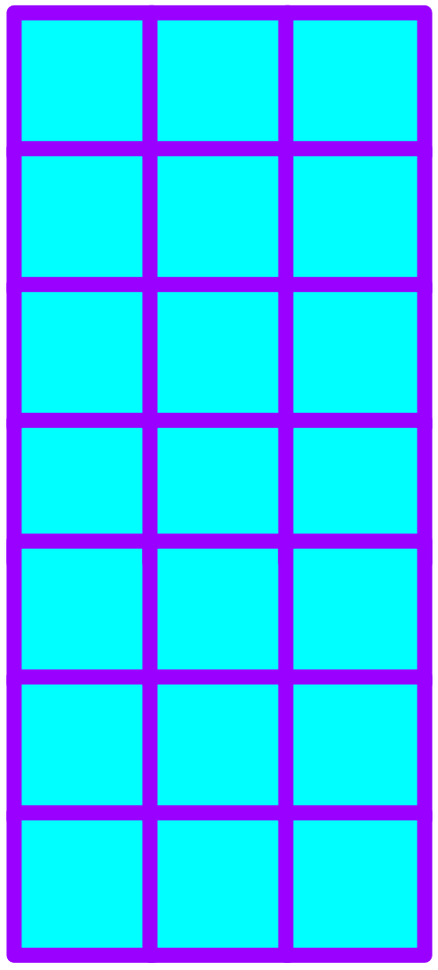
**Let's find how many square units there are in the rectangle, counting by fours.**

# Perimeter and Area



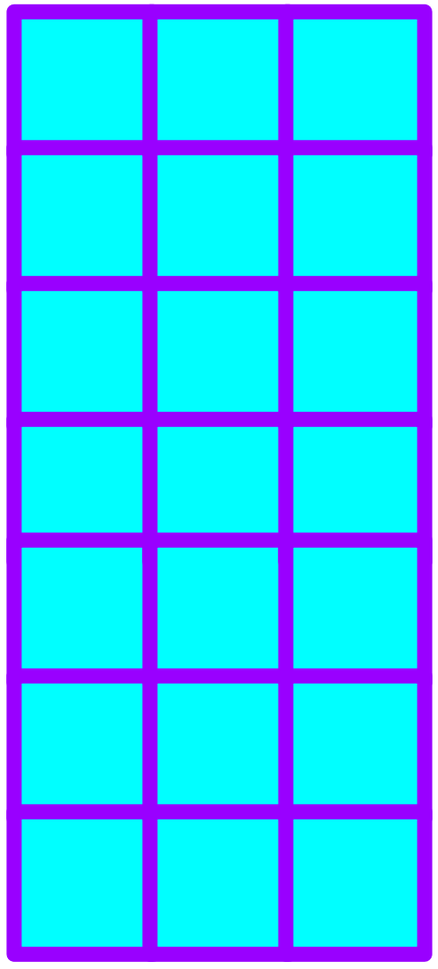
**What is the area?**

# Perimeter and Area



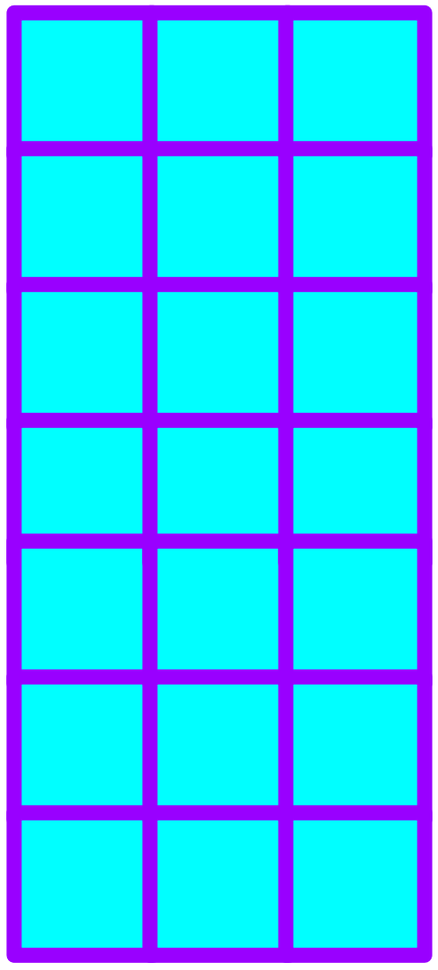
**What is the length of the longest side?**

# Perimeter and Area



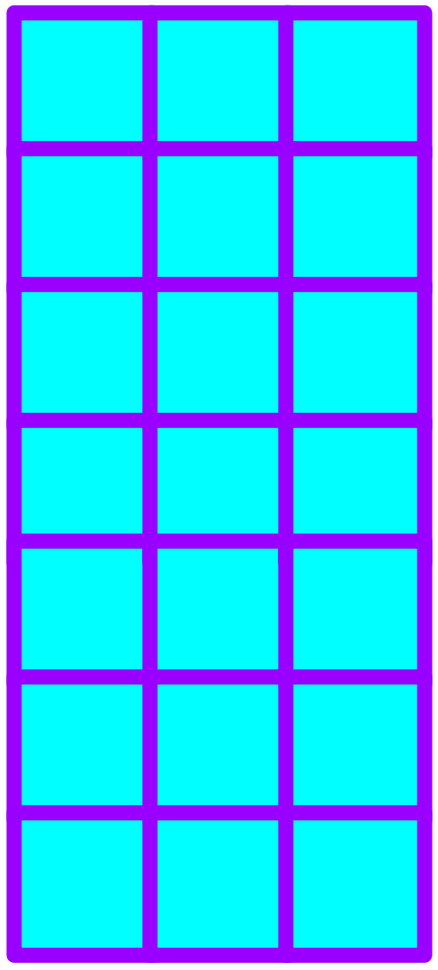
**What is the length of the opposite side?**

# Perimeter and Area



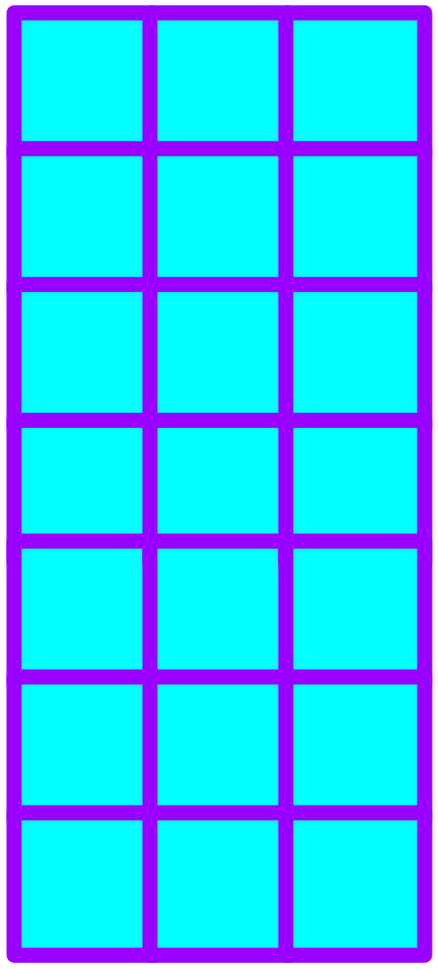
**What is the sum of the rectangle's two longest sides?**

# Perimeter and Area



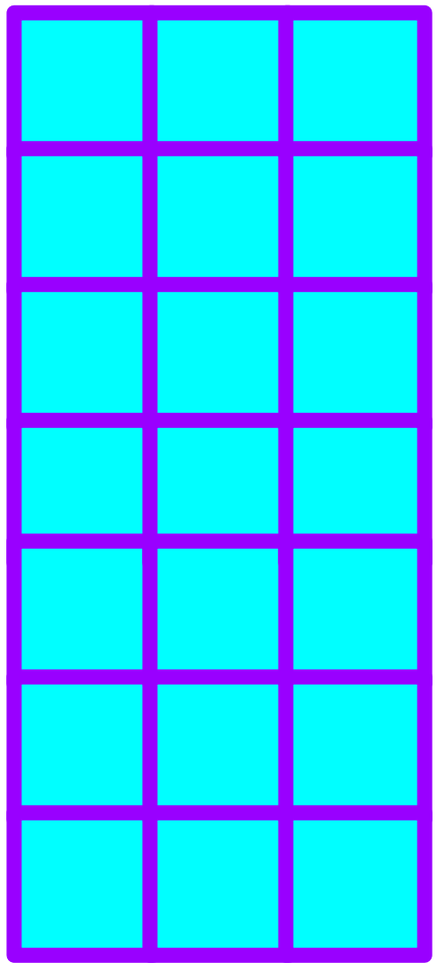
**What is the length of the shortest side?**

# Perimeter and Area



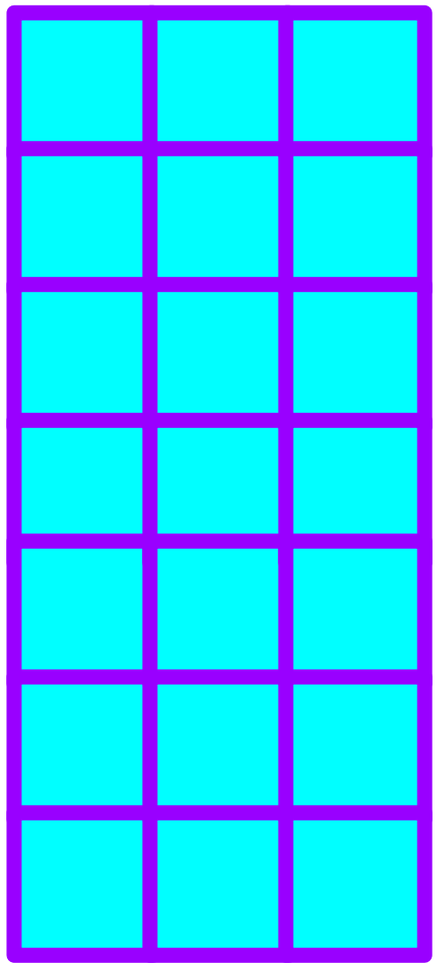
**What is the length of the unknown side?**

# Perimeter and Area



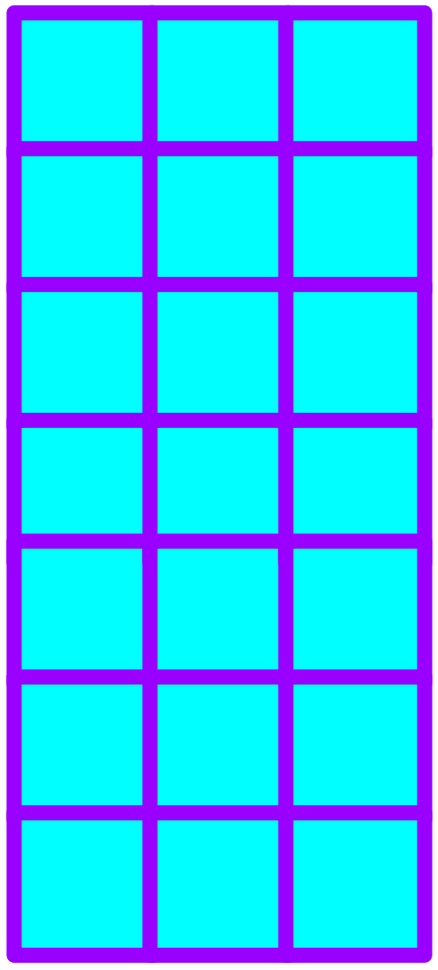
**What is the sum of the rectangle's two shortest sides?**

# Perimeter and Area



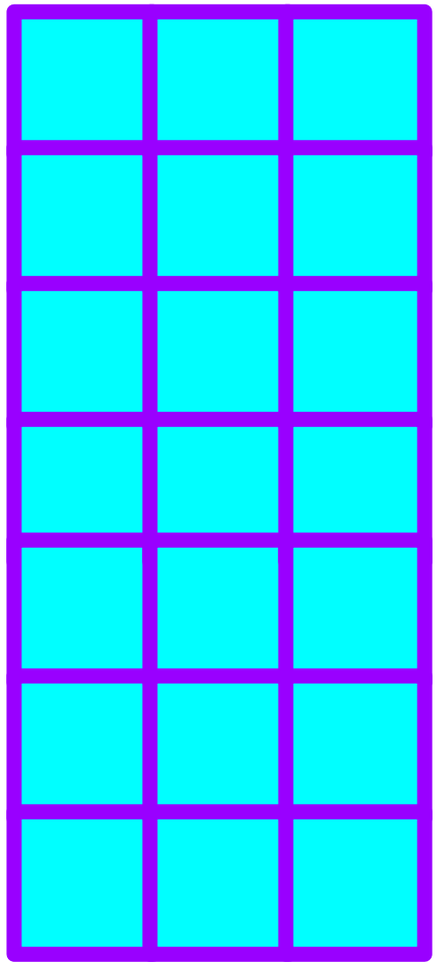
**What is the perimeter?**

# Perimeter and Area



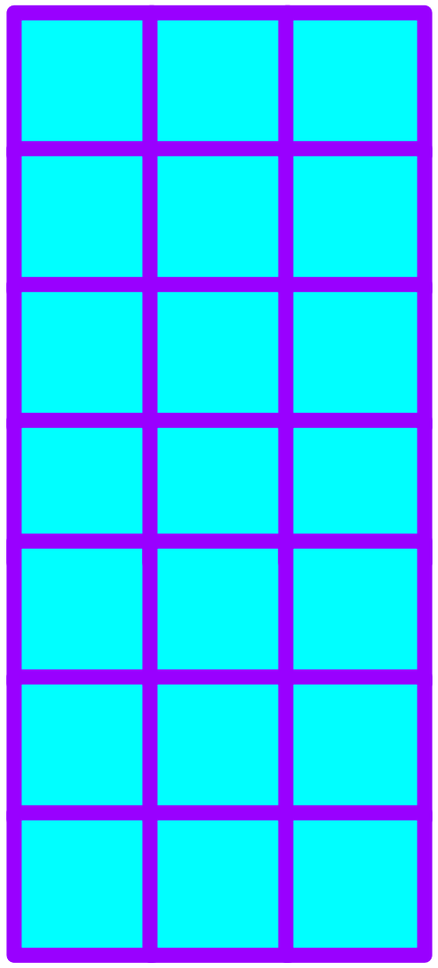
**How many square units are in one row?**

# Perimeter and Area



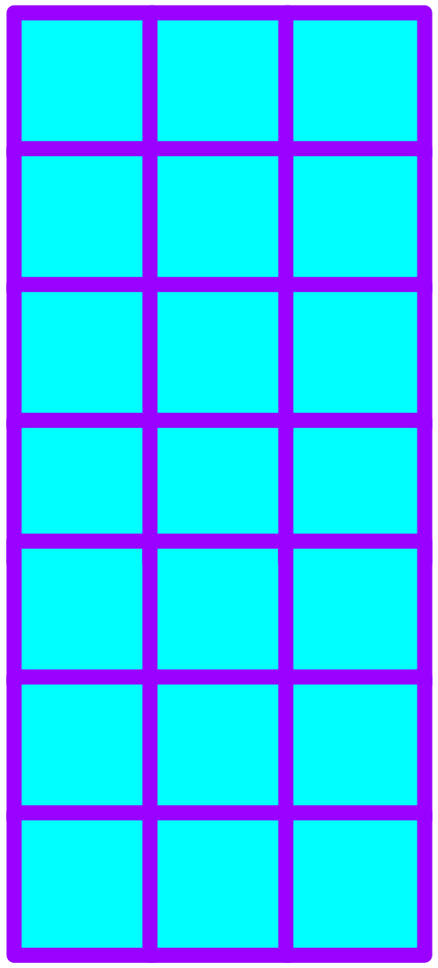
**How many rows of 3 units are there?**

# Perimeter and Area



**Let's find how many square units there are in the rectangle, counting by threes.**

# Perimeter and Area



**What is the area?**

# Multiply a Number by Itself

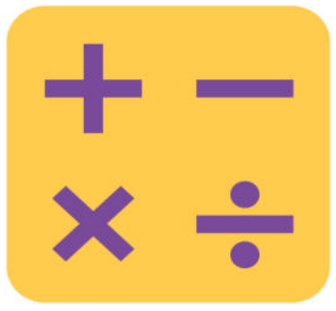
$$1 \times 1 =$$

**Say the complete multiplication equation.**

# Multiply a Number by Itself

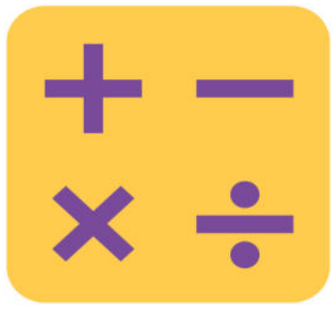
$$2 \times 2 =$$

**Say the complete multiplication equation.**



# Multiply a Number by Itself

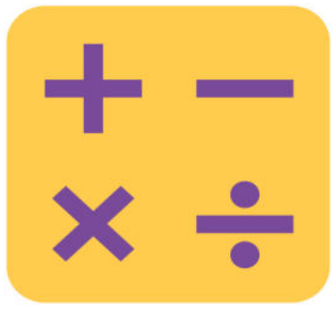
**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

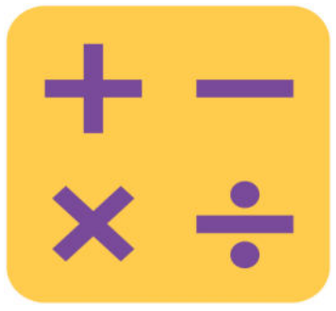
**10**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

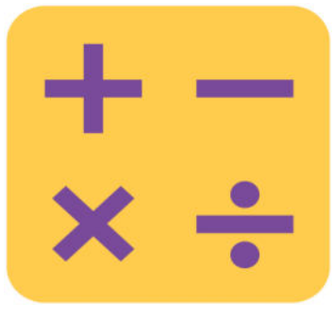
**5**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

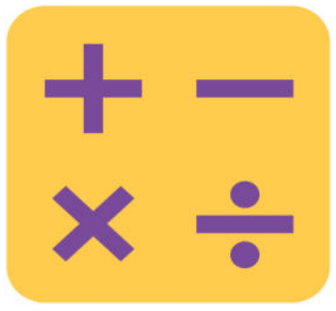
**3**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

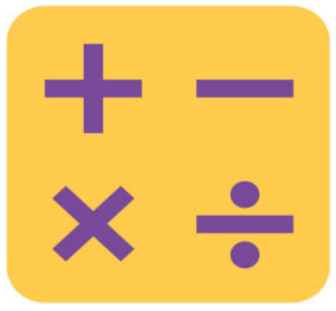
**6**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

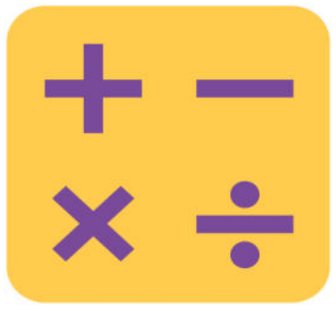
**8**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

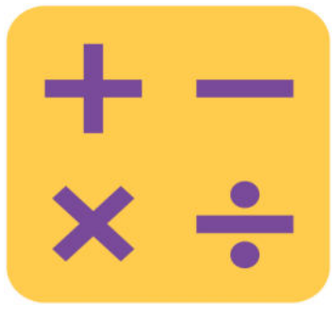
**4**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

**7**



# Multiply a Number by Itself

**Now, I'm going to call out a number. You say the answer when it's multiplied by itself.**

**9**

# Group Counting

## Counting by 3s

**Watch me closely as we will count forward and backward**

# Group Counting

## Counting by 4s

**Watch me closely as we will count forward and backward**

# Group Counting

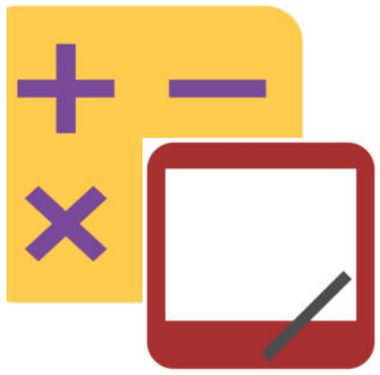
## Counting by 6s

**Watch me closely as we will count forward and backward**

# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

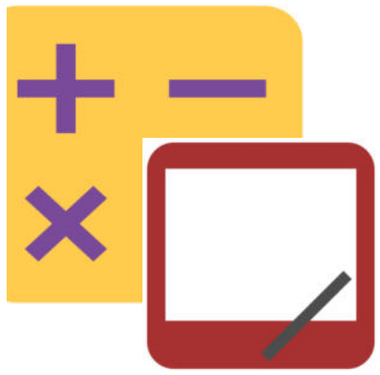
$3 \times \_\_\_ = 12$



# Find the Unknown Factor

**Say the multiplication sentence.**

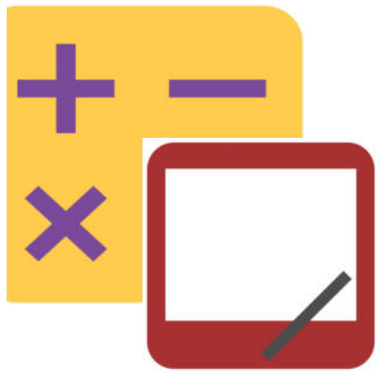
$3 \times 4 = 12$



# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

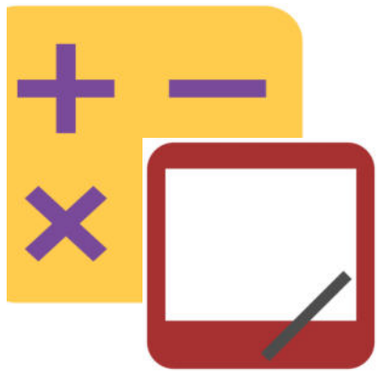
$4 \times \_\_\_ = 12$



# Find the Unknown Factor

**Say the multiplication sentence.**

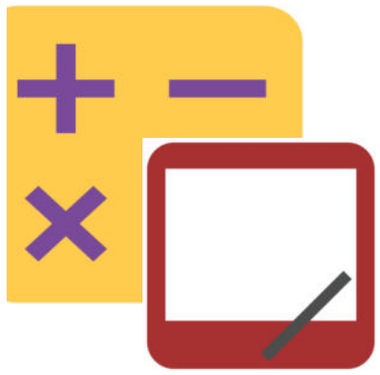
$4 \times 3 = 12$



# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

**$3 \times \_\_\_ = 24$**



# Find the Unknown Factor

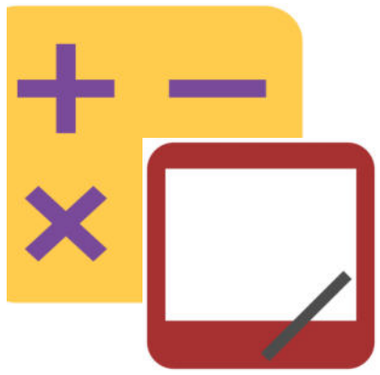
**Say the multiplication sentence.**

$3 \times 8 = 24$

# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

$6 \times \_\_\_ = 12$



# Find the Unknown Factor

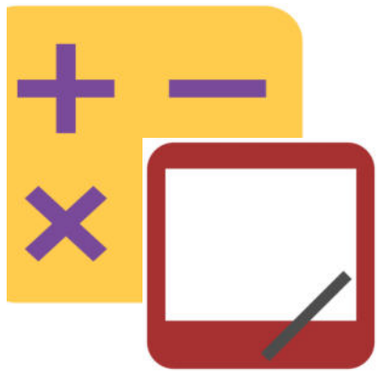
**Say the multiplication sentence.**

$6 \times 2 = 12$

# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

**$6 \times \_\_\_ = 24$**



# Find the Unknown Factor

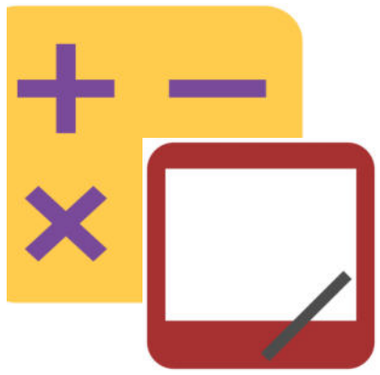
**Say the multiplication sentence.**

$$6 \times 4 = 24$$

# Find the Unknown Factor

**On your personal white boards, write the unknown factor**

$3 \times \_\_\_ = 18$



# Find the Unknown Factor

**Say the multiplication sentence.**

$3 \times 6 = 18$

# Concept Development

## Materials Needed

**Teacher: Grid paper, chart paper**

**Student: Grid paper, personal white board**

# Concept Development

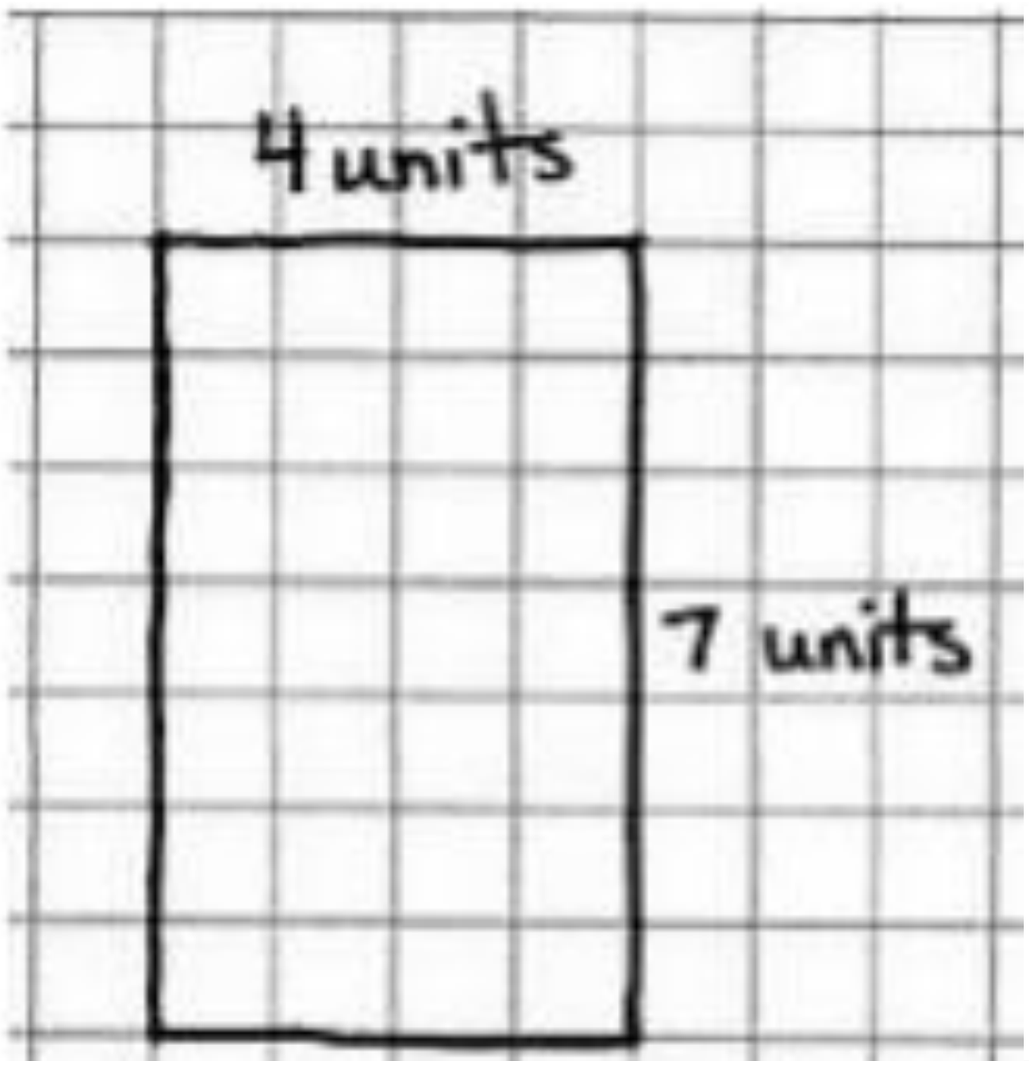
**Draw a rectangle on your grid paper that is four units wide and seven units long.**

# Concept Development

**Draw a rectangle on your grid paper that is four units wide and seven units long.**

**Tell your partner what you notice about your rectangle.**

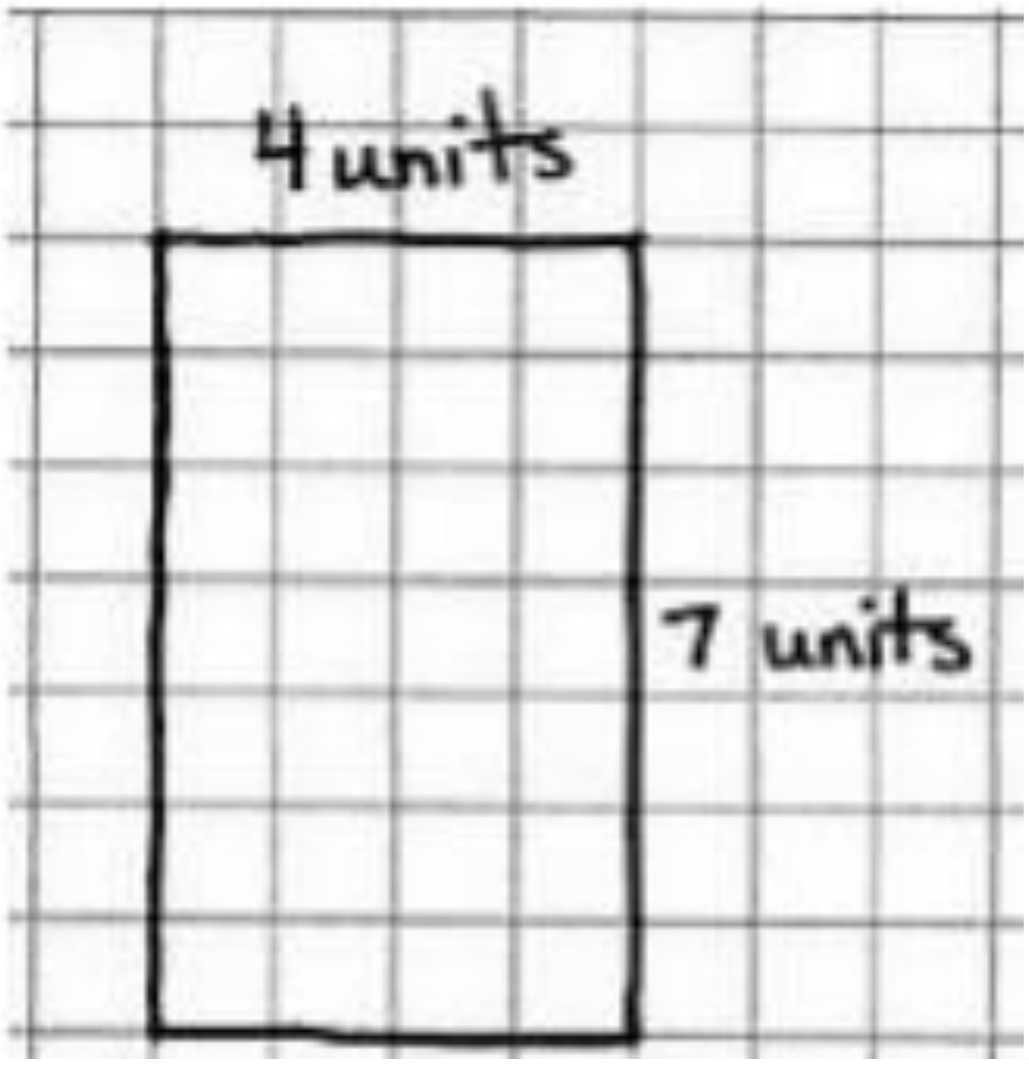
# Concept Development




**Place the point of your pencil on one of the corners of the rectangle. Trace around the outside of the rectangle until you get back to where you started.**

**What do we call the measurement of the distance around a rectangle?**

# Concept Development

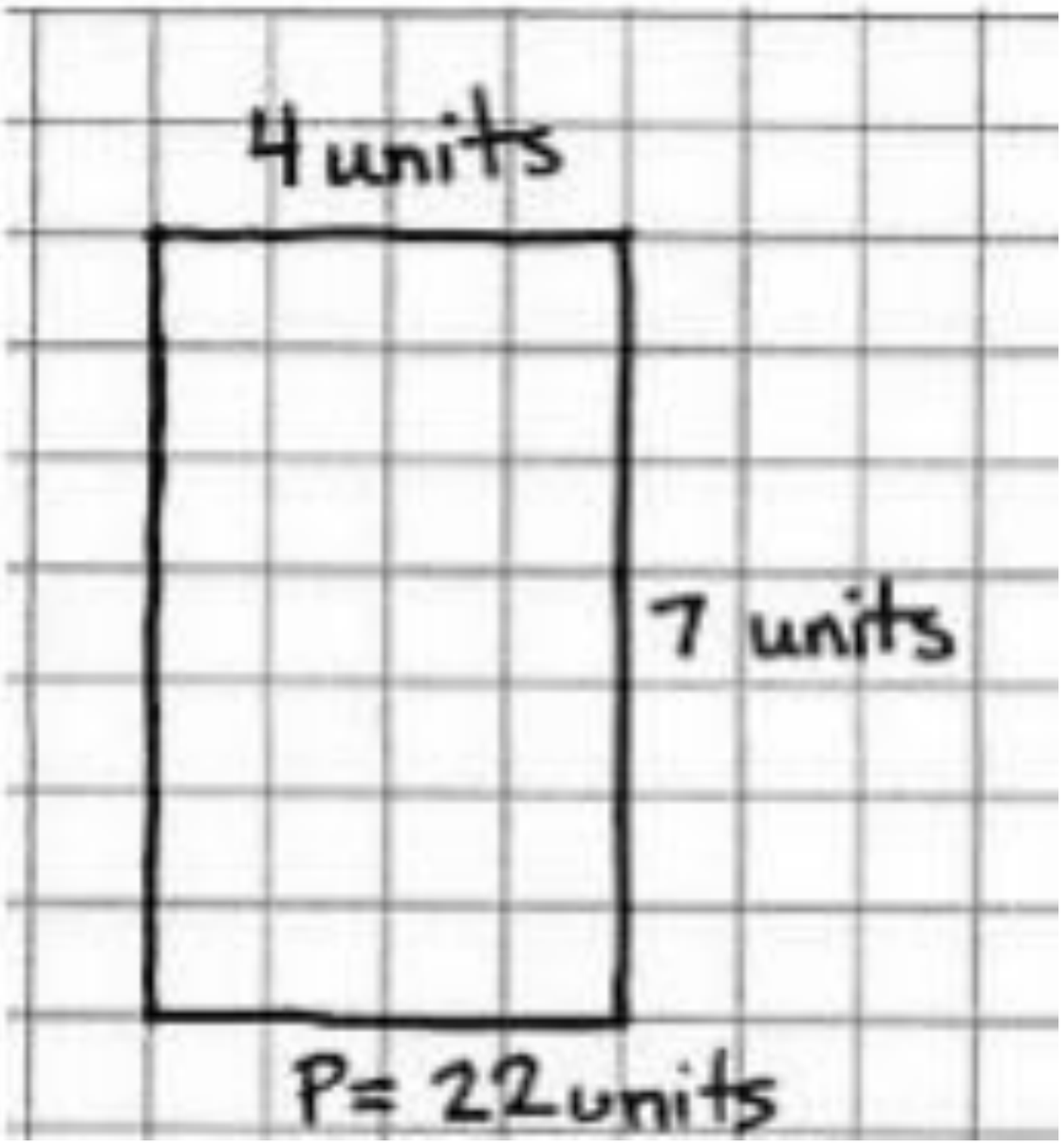



**Trace the perimeter again.**

**This time, count the units as you trace them.**

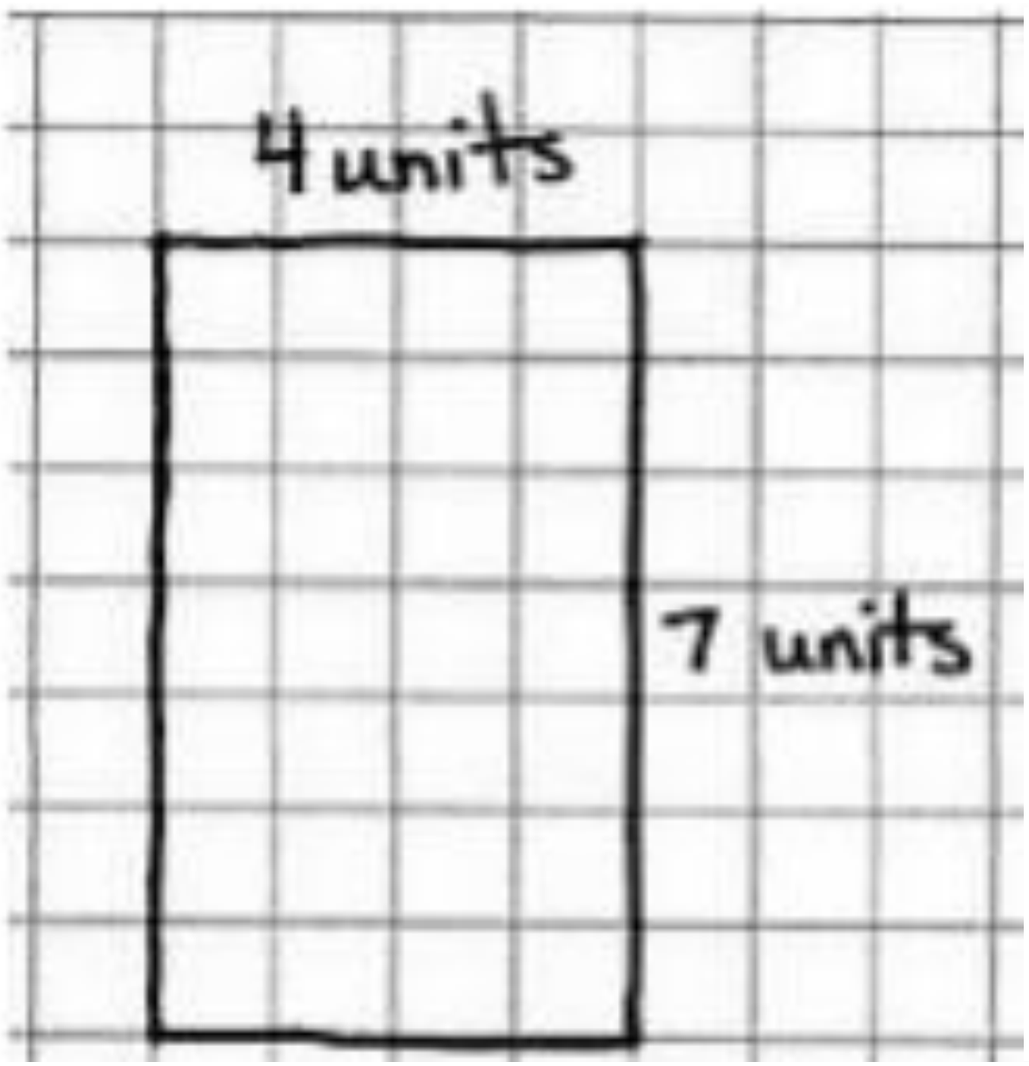
**What is the perimeter of the rectangle?**

# Concept Development



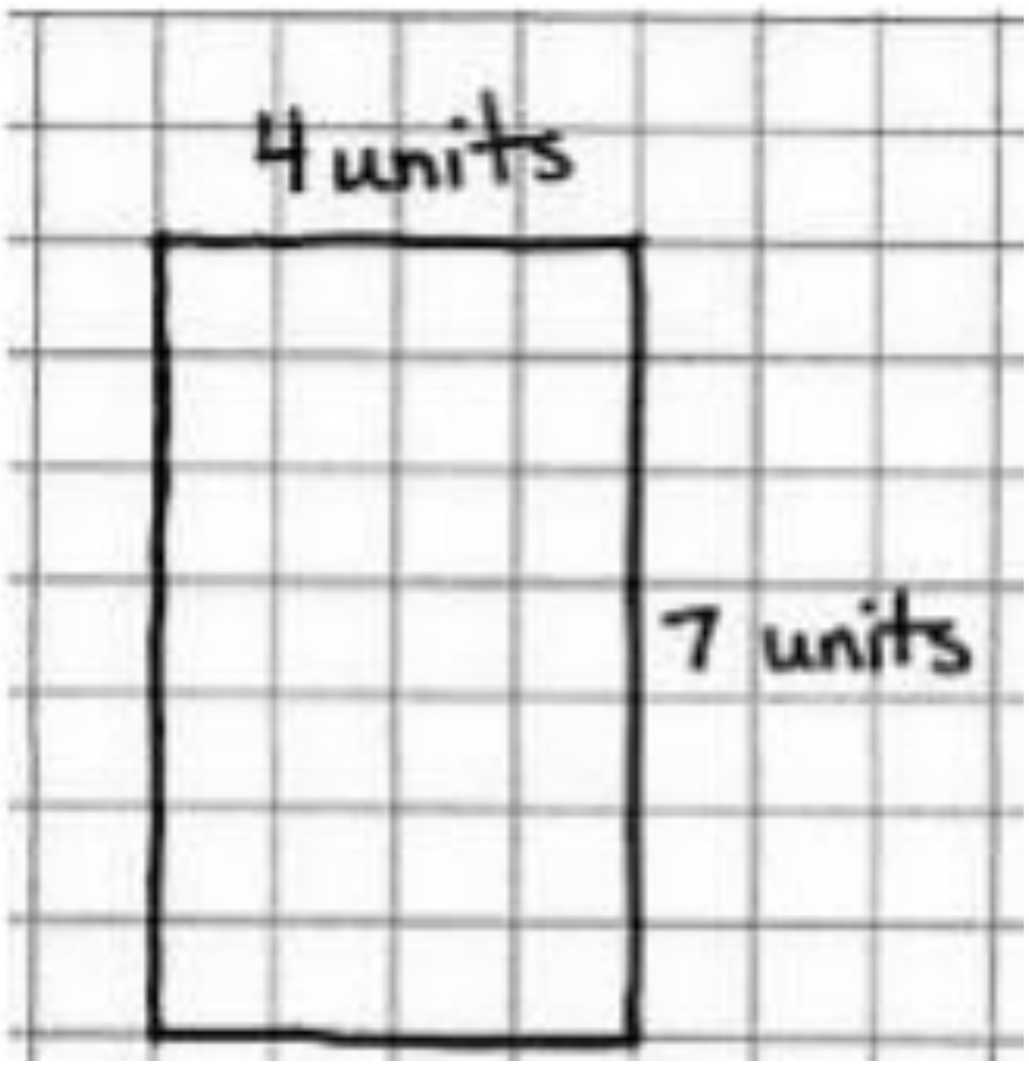

**The perimeter of the rectangle is 22 units.**

# Concept Development




**When we know the measurements of the length and width of a rectangle, is there a quicker way to determine the perimeter than to count the units while tracing?**

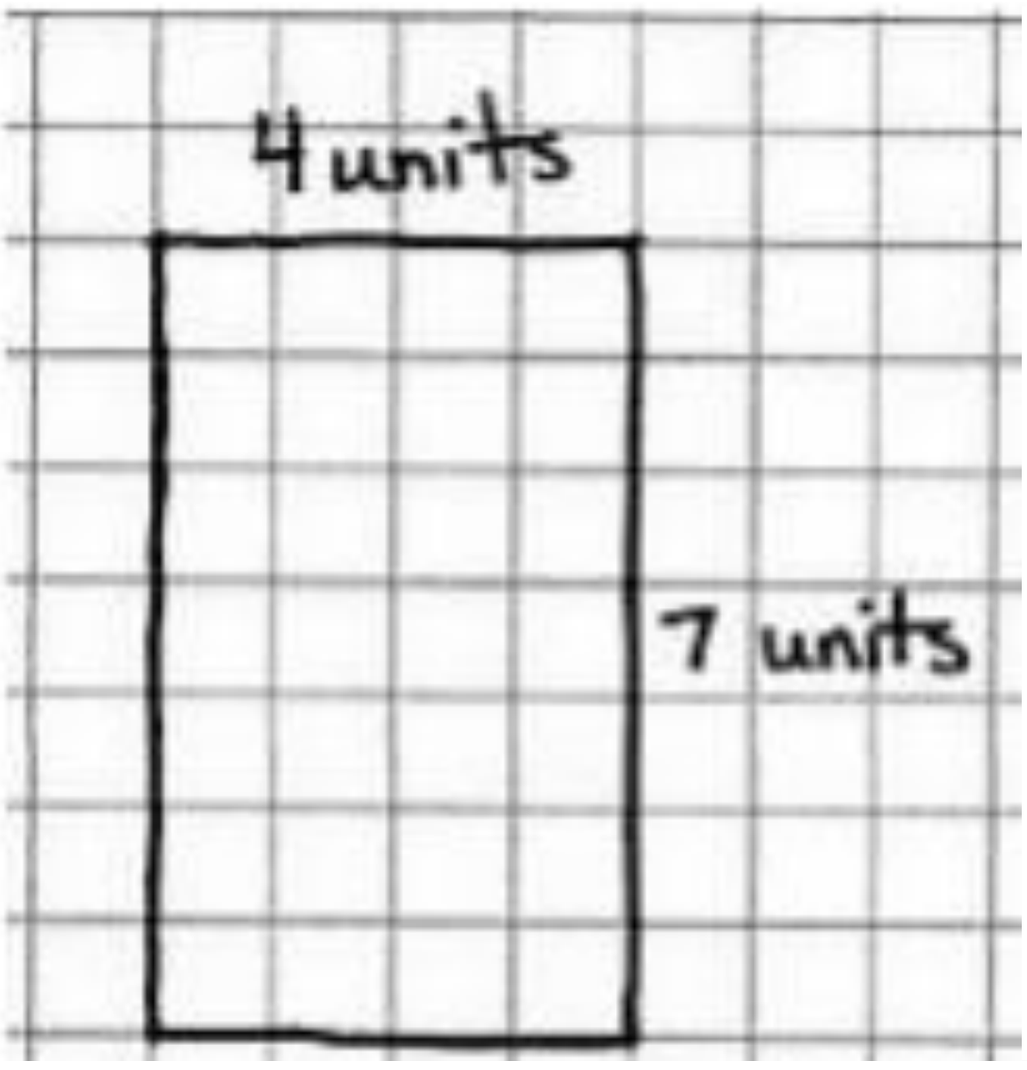
# Concept Development




**Take your pencil and count all of the squares within your rectangle.**

**These squares represent the area of the rectangle.**

# Concept Development



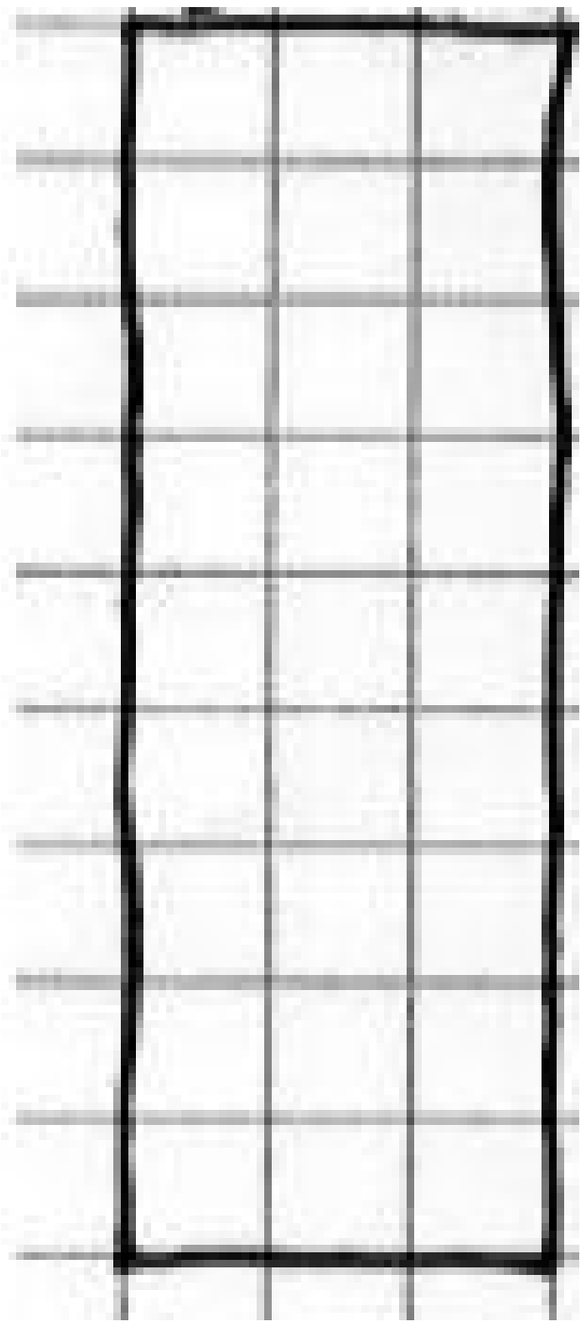

**Take your pencil and count all of the squares within your rectangle.**

**These squares represent the area of the rectangle.**

**How do I find the area of the rectangle?**

# Concept Development

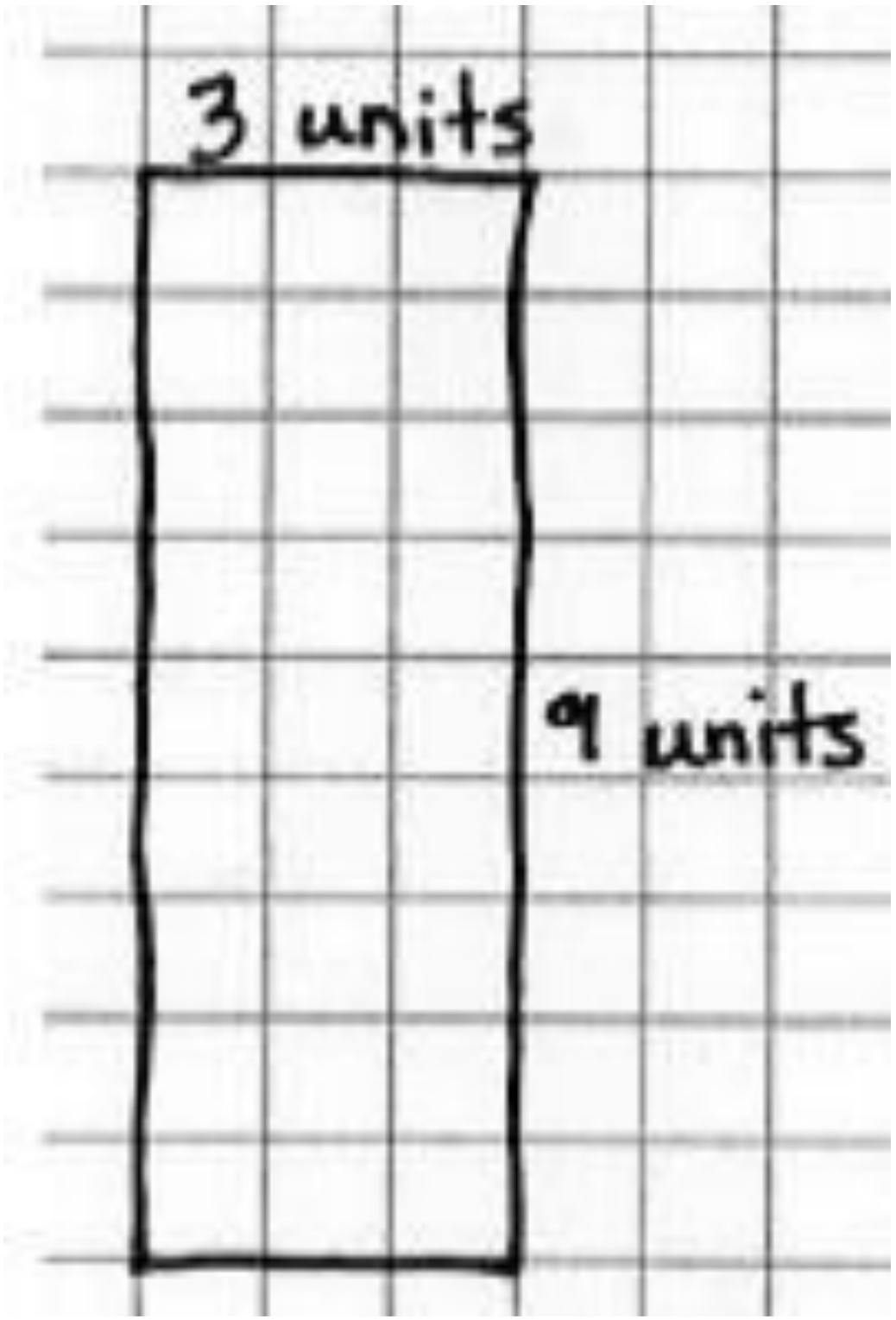
**Draw a rectangle on your grid paper that is 3 units wide and 9 units long.**



# Concept Development

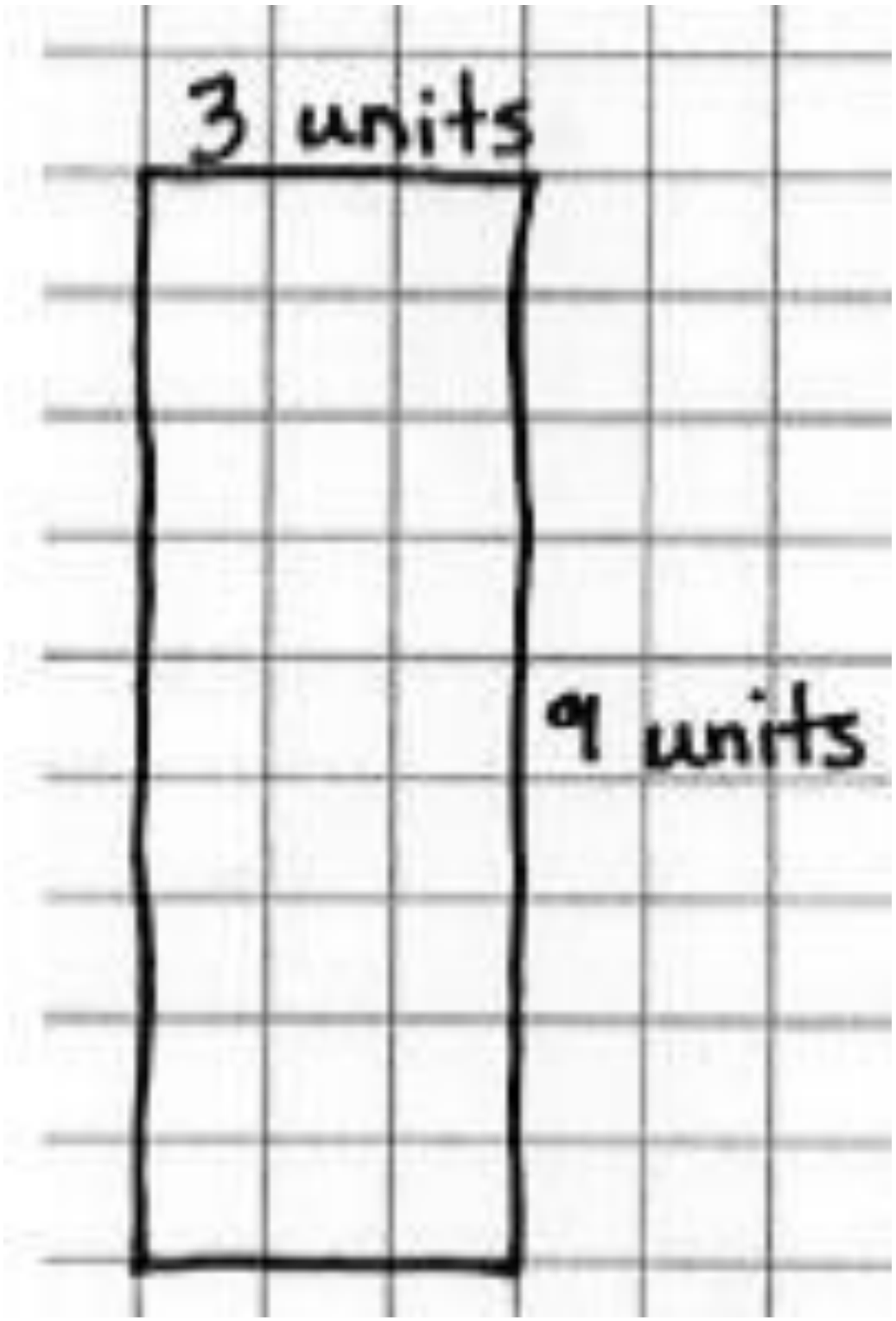
**Watch as I label the length and width of the rectangle.**

**Now, label the length and width of your rectangle.**



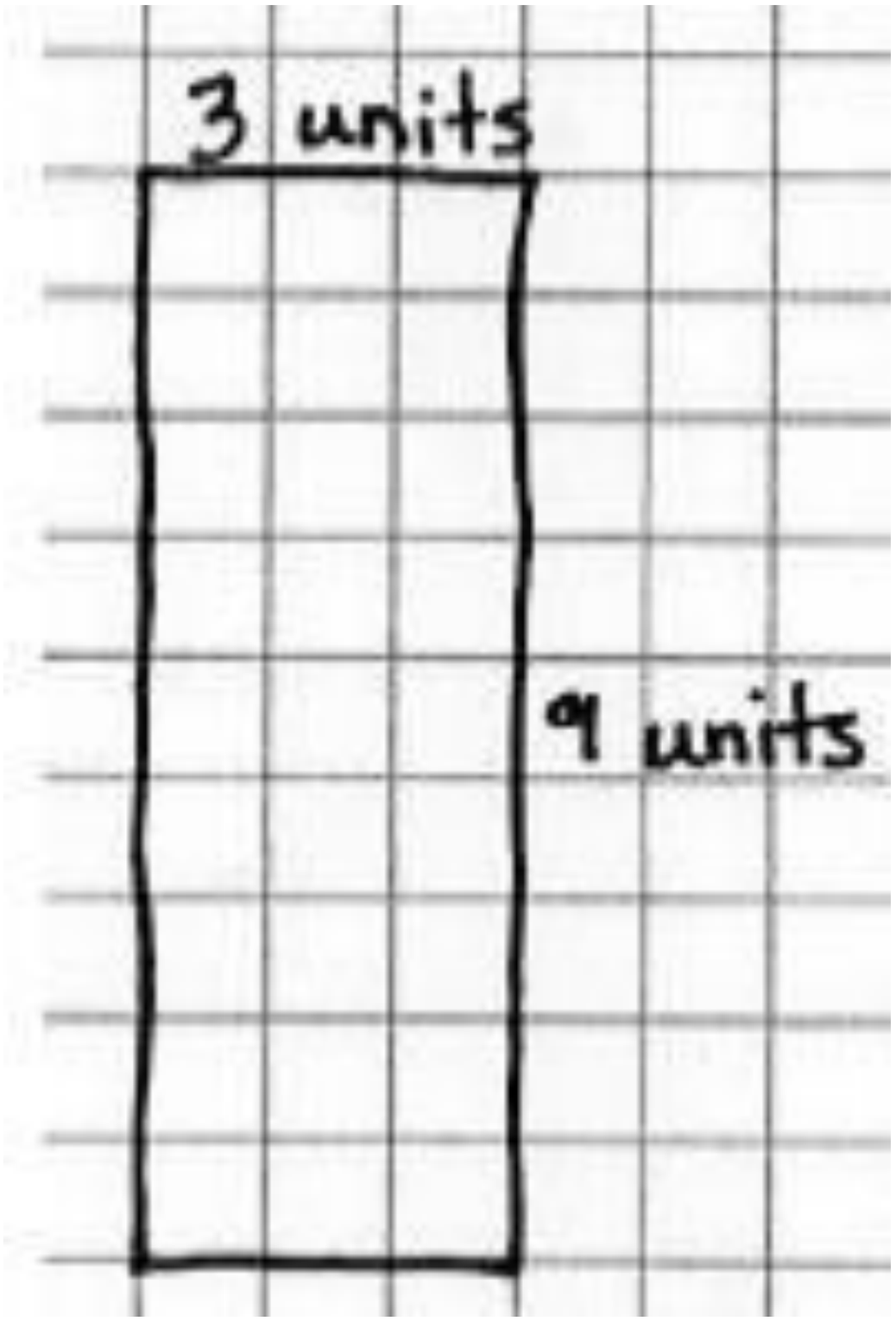
# Concept Development

**How can I find the perimeter?**



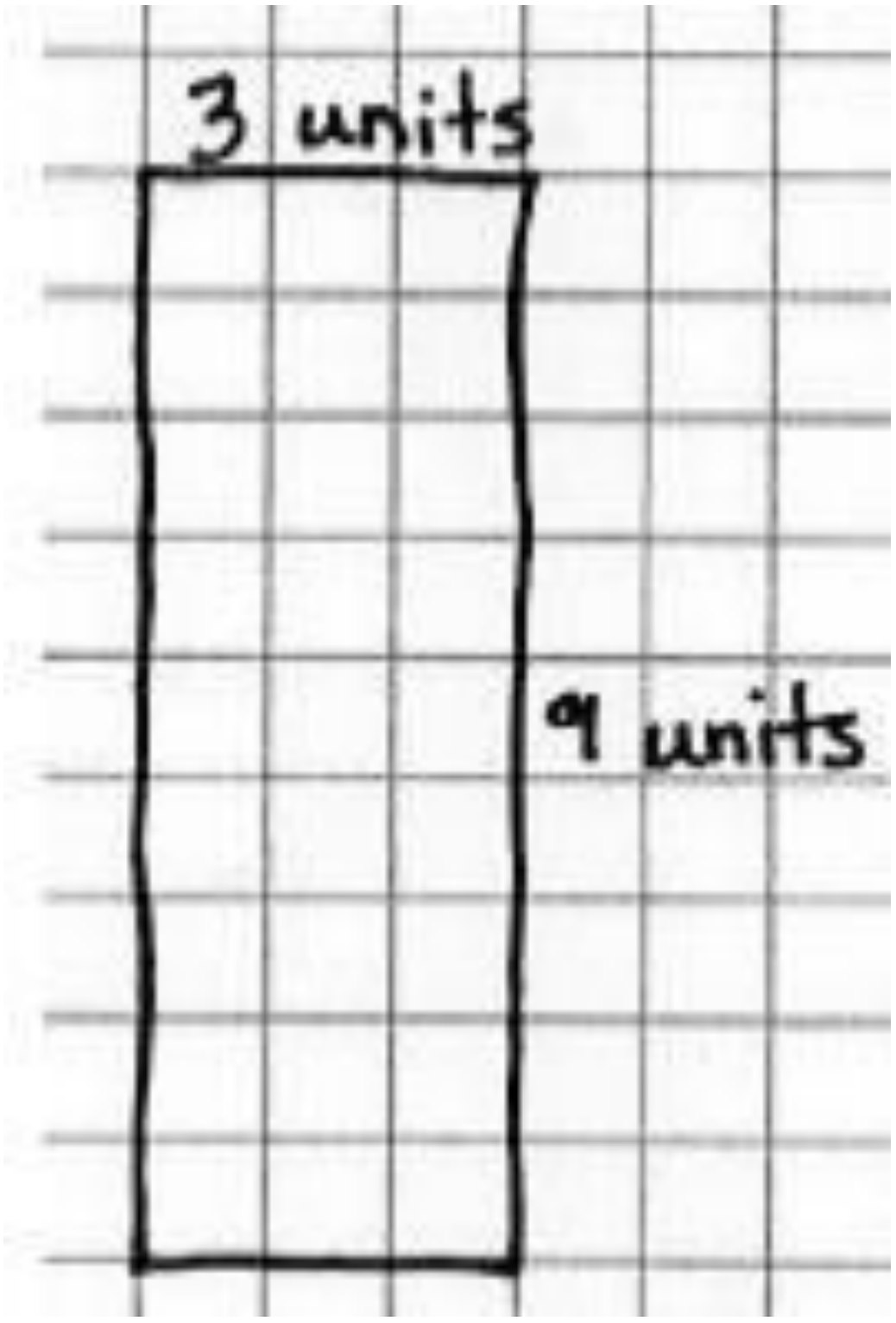
# Concept Development

**Use your pencil to trace along one width and one length. Along how many units did you trace?**



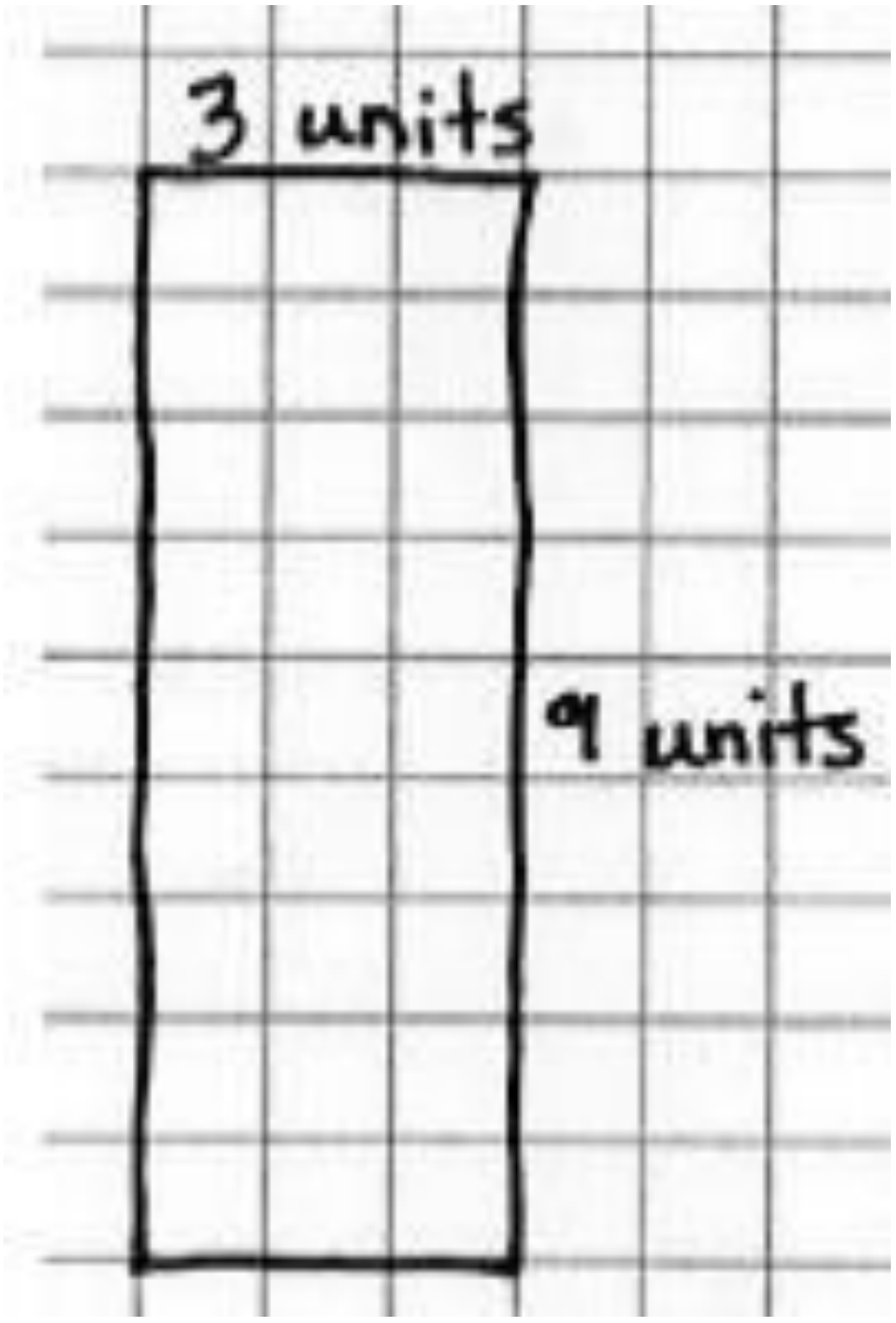
# Concept Development

**How does 12 relate to the length and width of the rectangle?**



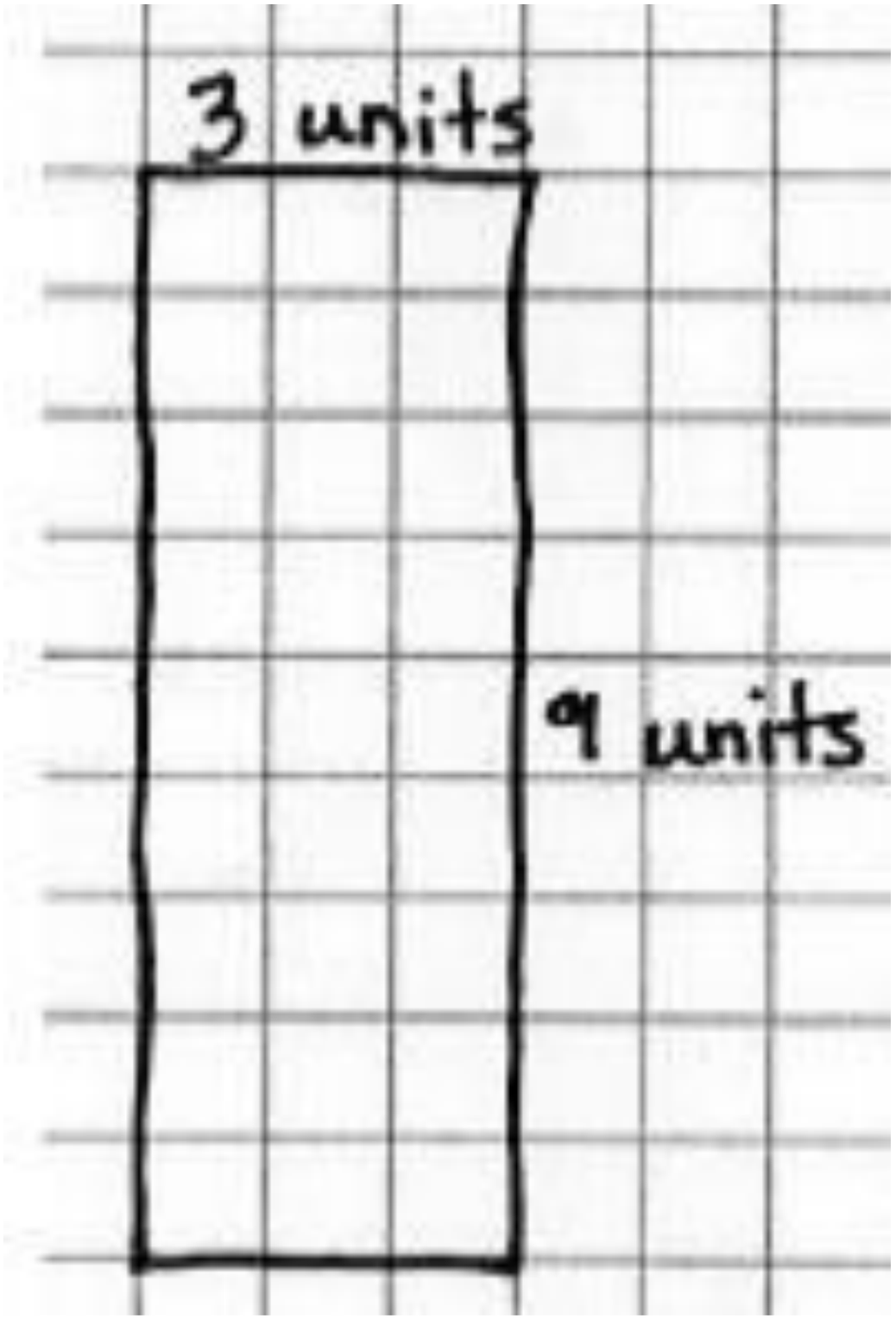
# Concept Development

**How does the sum of the length and width relate to finding the perimeter of the rectangle?**



# Concept Development

**You have just mentioned many formulas, like counting along the side of the rectangle or adding sides or doubling.**



# Concept Development

**Talk to your partner about the most efficient way to find the perimeter**

# Concept Development

**Let's create a chart to keep track of the formulas for finding the perimeter of a rectangle.**

| Formulas for Perimeter |
| --- |
| |

# Concept Development

**Let's create a chart to keep track of the formulas for finding the perimeter of a rectangle.**

| Formulas for Perimeter |
| --- |
| $P = l + w + l + w$ |

# Concept Development

**Let's create a chart to keep track of the formulas for finding the perimeter of a rectangle.**

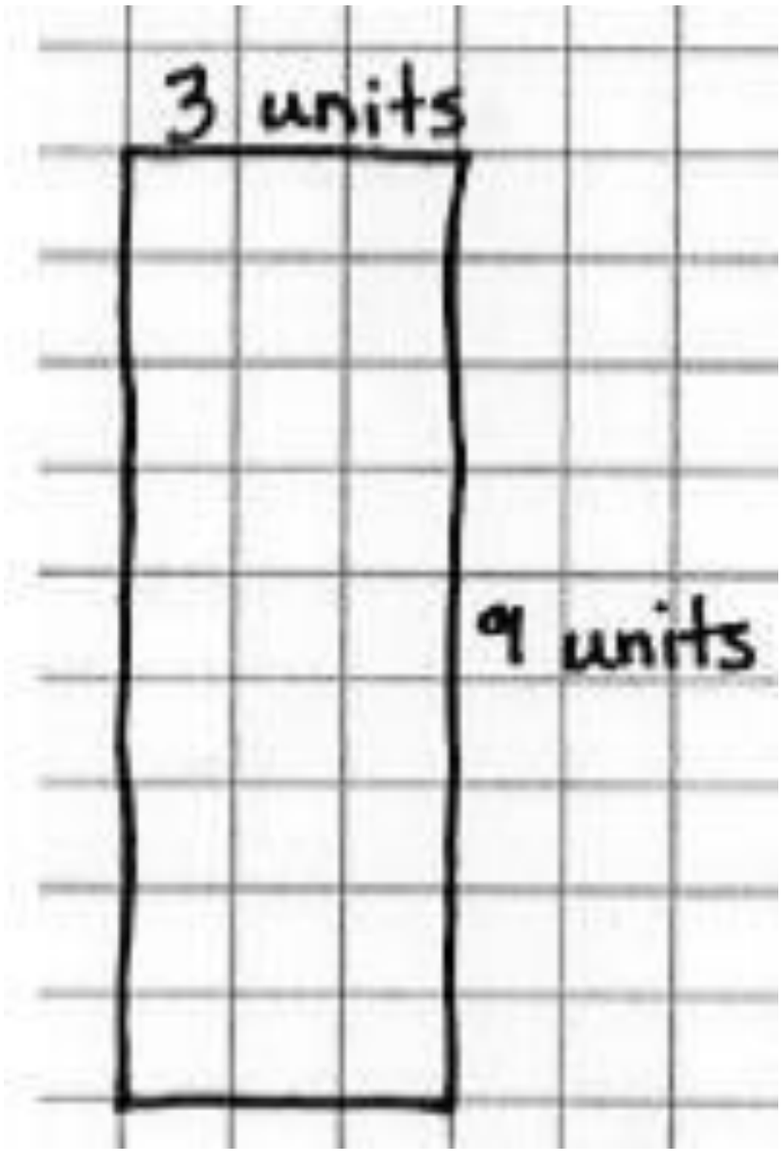
| Formulas for Perimeter |
| --- |
| $P = l + w + l + w$ |
| $P = 2l + 2w$ |

# Concept Development

**Let's create a chart to keep track of the formulas for finding the perimeter of a rectangle.**

| Formulas for Perimeter |
| --- |
| $P = l + w + l + w$ |
| $P = 2l + 2w$ |
| $P = 2 \times (l + w)$ |

# Concept Development




| Formulas for Perimeter |
| --- |
| $P = l + w + l + w$ |
| $P = 2l + 2w$ |
| $P = 2 \times (l + w)$ |

**Use the blue formula to find the perimeter of the rectangle**

# Concept Development

**Now draw a rectangle that is 2 units wide and 4 units long. Find the perimeter by using the formula I just mentioned.**

$$P = 2 \times (l + w)$$

**Then, solve for the perimeter using a different formula to check your work.**

# Concept Development

**On your white board, draw a rectangle.**
**Label the width as 5 units.**


**If the perimeter is 26 units,**
**how can we determine the length?**

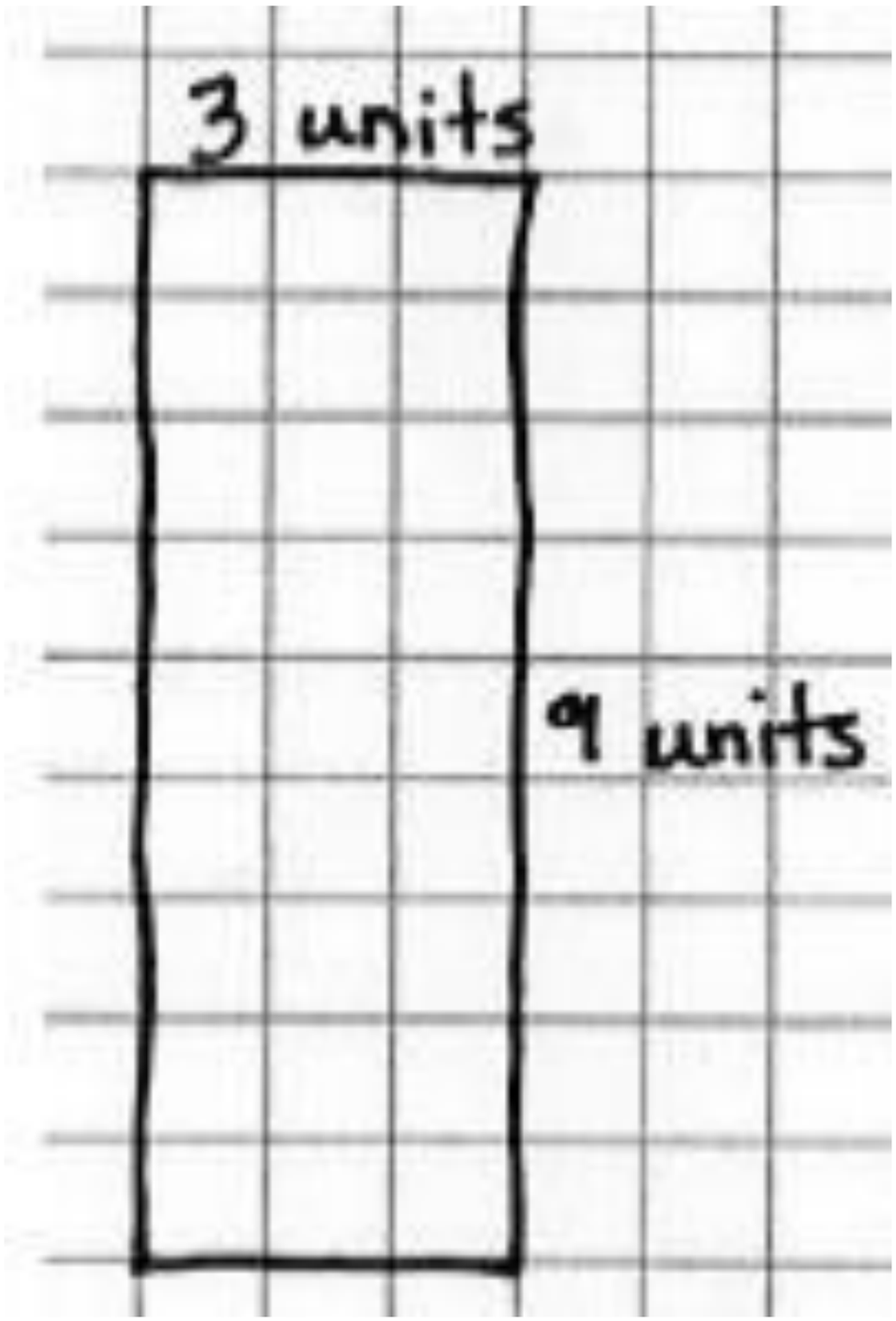
# Concept Development

**On your white board, draw a rectangle.**
**Label the width as 8 units.**


**If the perimeter is 28 units,**
**how can we determine the length?**

# Concept Development

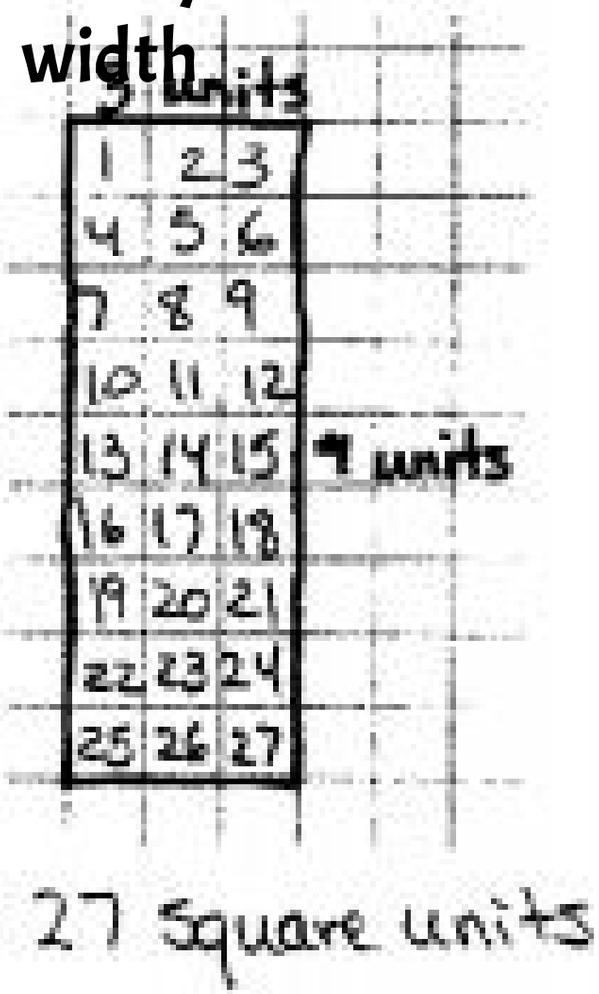
**Let's look back at the rectangle with the width of 3 units and the length of 9 units.**




**How can we find the area of the rectangle?**

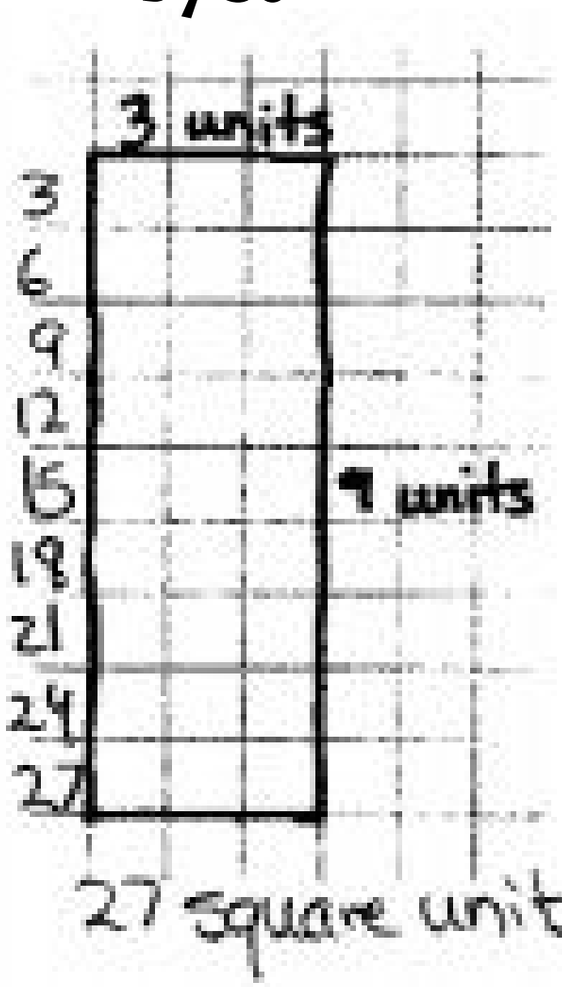
# Concept Development

**Count by 1s**



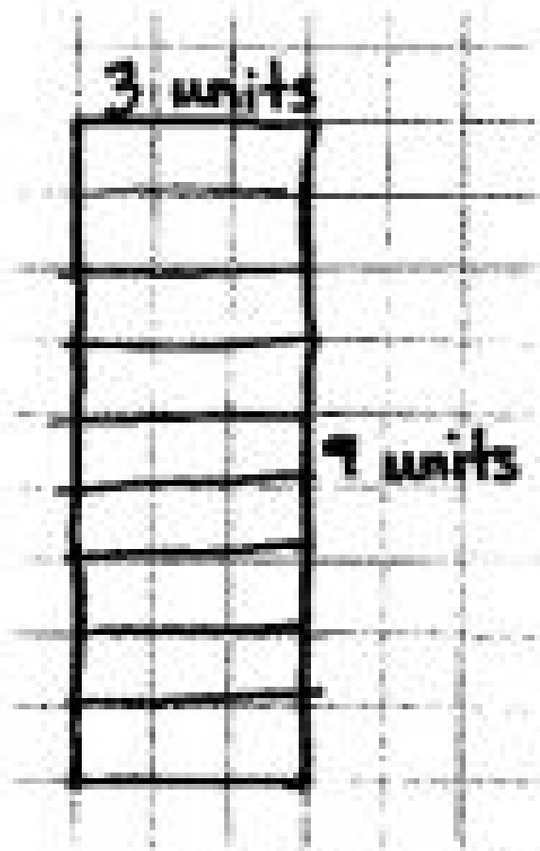

27 Square units

**Count by 3s**




27 Square units

**Multiply length times**

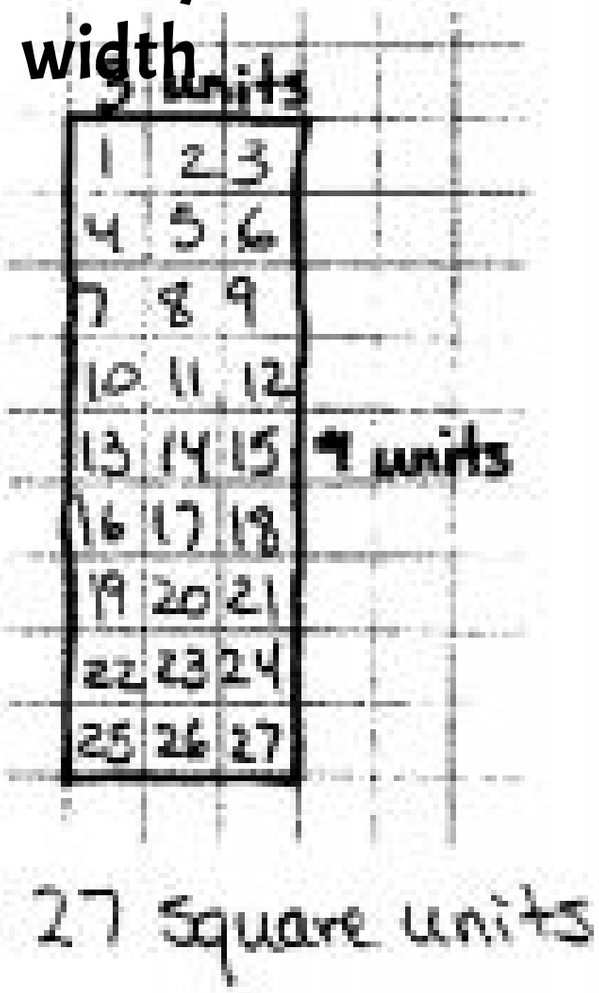



9 x 3 = 27

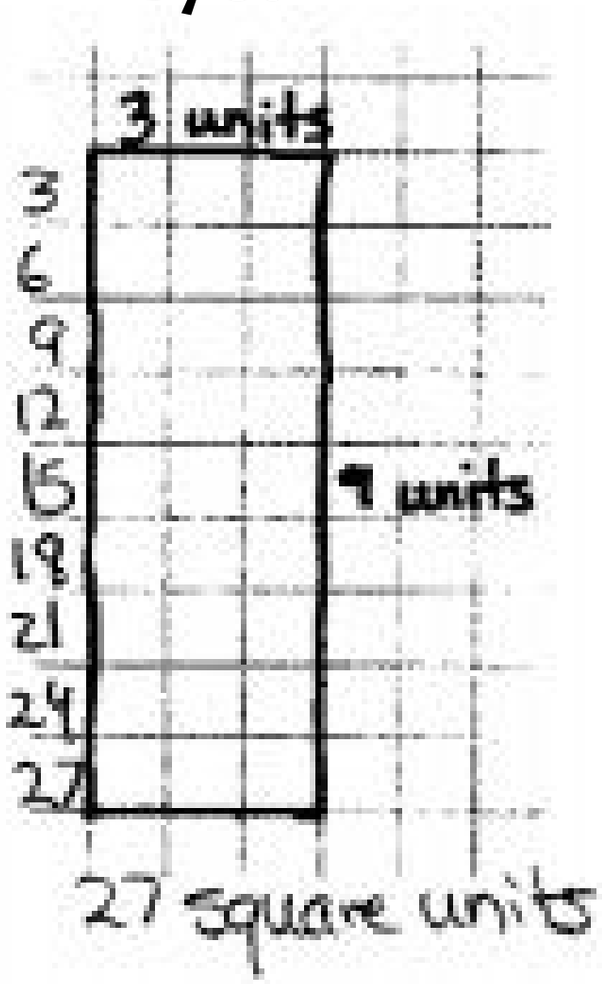
27 Square units

# Concept Development

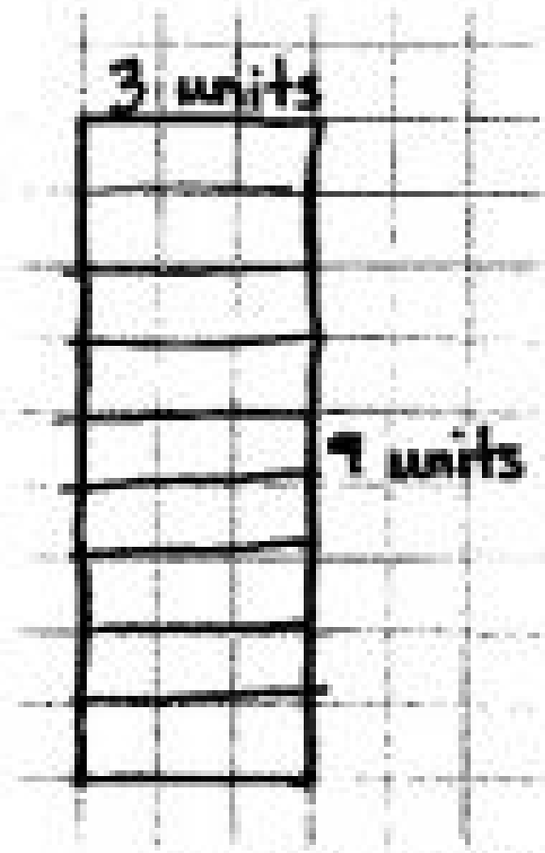
**Count by 1s**




**Count by 3s**




**Multiply length times**



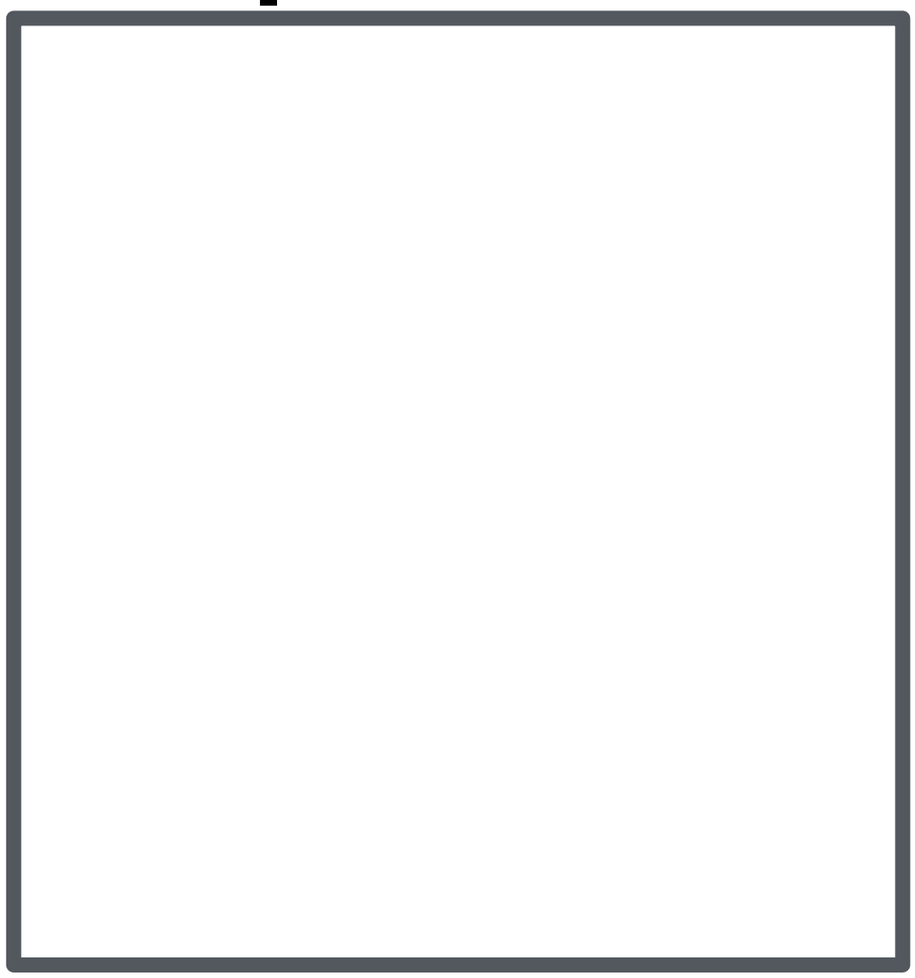

**Talk to your partner about the most efficient way to find the area of a rectangle.**

# Concept Development

**4 units**

**Find the area for the rectangle.**

# Concept Development



**5 units**

**Find the area for the rectangle.**

# Concept Development

**We discussed a formula for finding the perimeter of a rectangle.** $P = 2 \times (l + w)$

**We just discovered a formula for finding the area of a rectangle.**

**If we use A for area, l for length, and w for width, how could we write the formula?**

# Concept Development

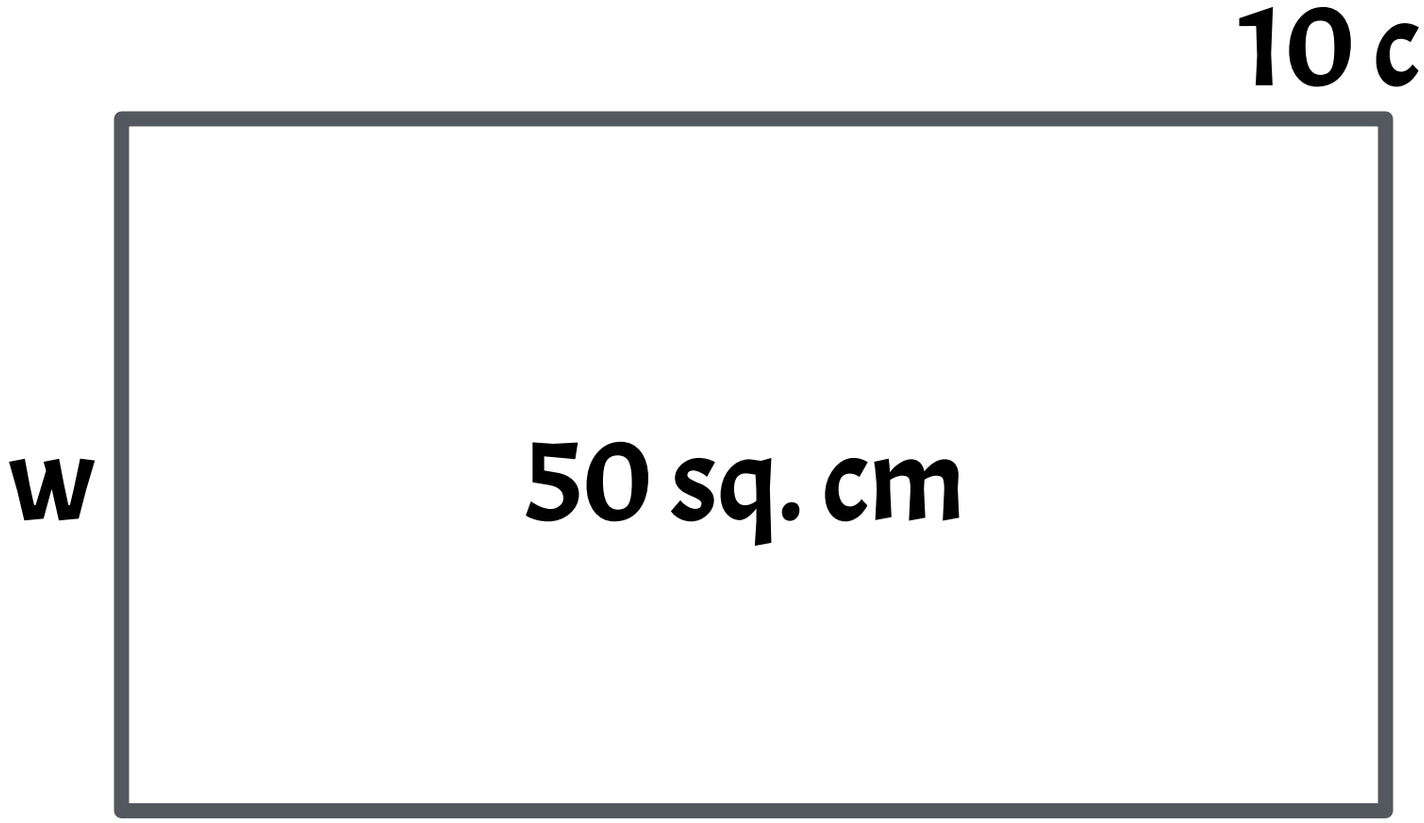
**We discussed a formula for finding the perimeter of a rectangle.** $P = 2 \times (l + w)$

**We just discovered a formula for finding the area of a rectangle.**

**If we use A for area, l for length, and w for width, how could we write the formula?**

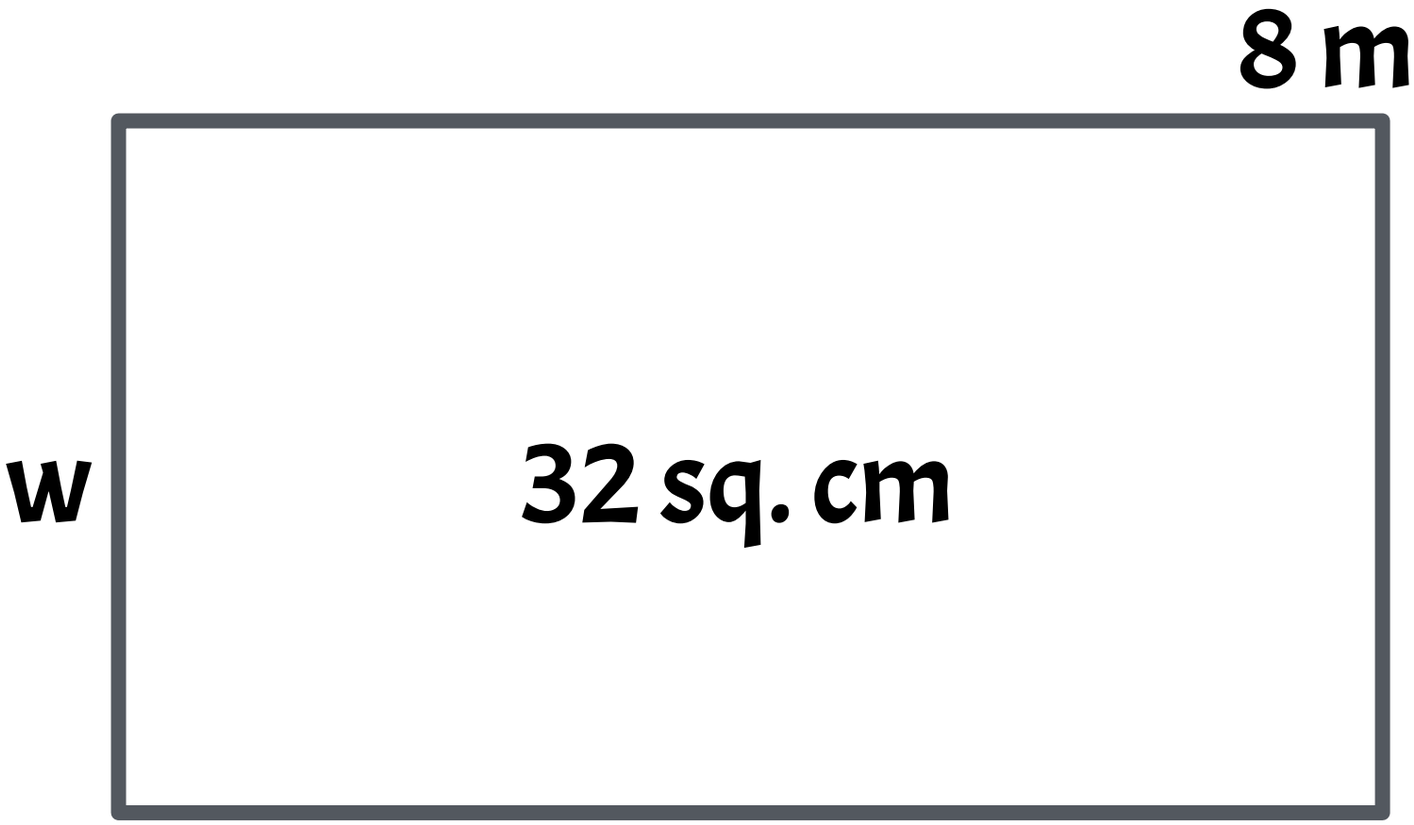
$$A = l \times w$$

# Concept Development



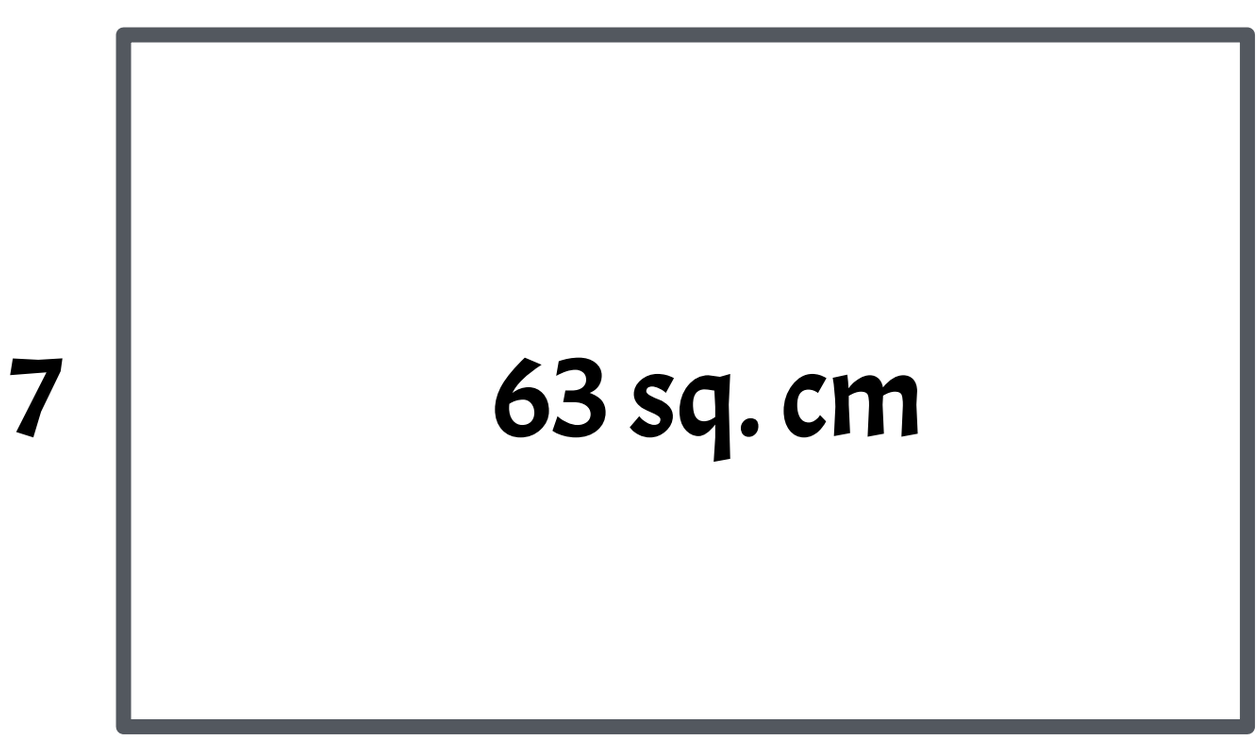

If we know that the area of a rectangle 50 square centimeters and that the length of a rectangle is 10 cm, how can we determine the measurement of the width of the rectangle?

# Concept Development




**Find the width of the rectangle.**

# Concept Development




**Find the length of the rectangle.**

# Concept Development

**If a rectangle has an area of 24 square units, what whole numbers could be the length and width of the rectangle?**

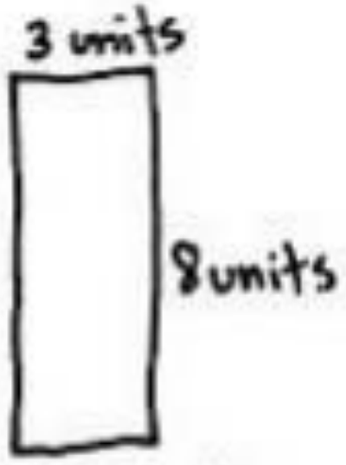
**Discuss this with your partner.**

# Concept Development

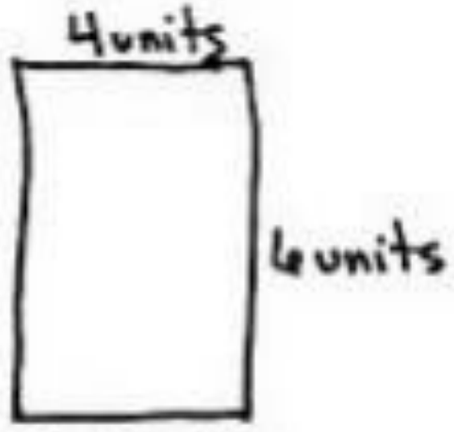
**With your partner, draw and complete a table similar to mine until you have found all the possible whole number combinations of length and width to make a rectangle with an area of 24 square units.**

Possible Dimensions of Rectangles With an Area of 24 square Units

| Length | Width |
|---|---|
| 3 units | 8 units |
| 4 units | 6 units |
| 6 units | 4 units |
| | |
| | |
| | |
| | |
| | |




P= 2x(3+8)
P= 2x11
P= 22 units



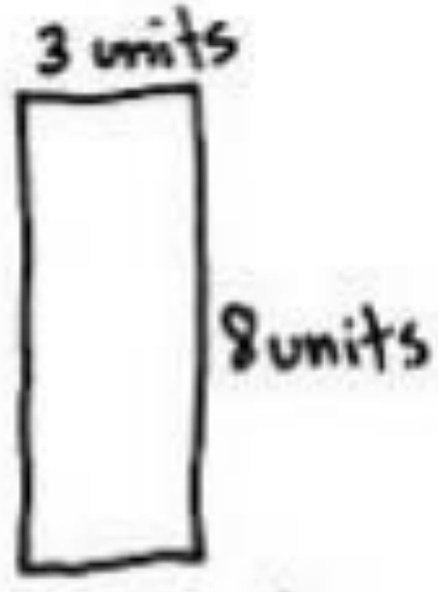

P= 2x (4+6)
P= 20 units

# Concept Development

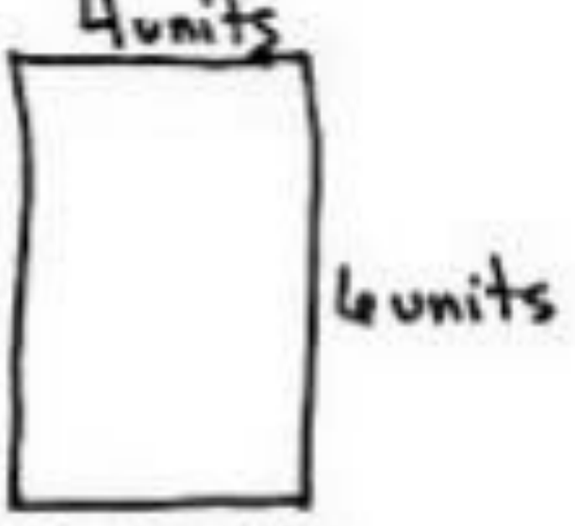
**Now, sketch each rectangle, and solve for the perimeter using the perimeter formula.** $P = 2 \times (l + w)$

Possible Dimensions of Rectangles With an Area of 24 square Units

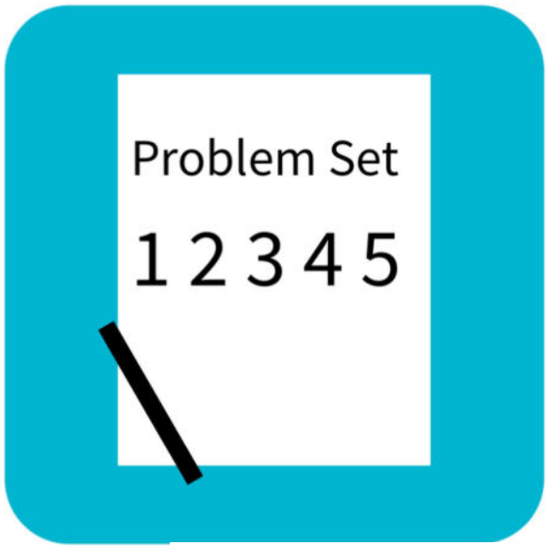
| Length | Width |
|---|---|
| 3 units | 8 units |
| 4 units | 6 units |
| 6 units | 4 units |
| | |
| | |
| | |
| | |
| | |




P= 2x(3+8)
P= 2x11
P= 22 units




P= 2x (4+6)
P= 20 units

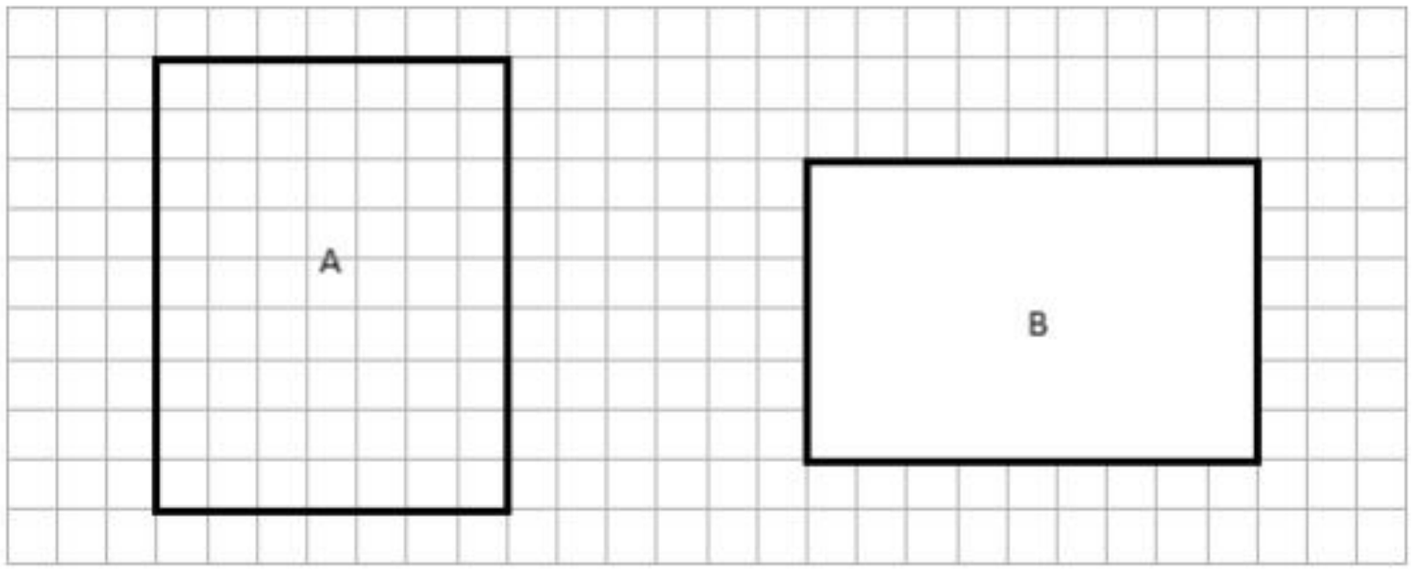



# Problem Set



Name _____ Date _____

1. Determine the perimeter and area of rectangles A and B.




a. A = _____ A = _____

b. P = _____ P = _____

# Debrief

- **What is the formula for solving for perimeter?**
- **What formula is most efficient?**
- **Compare the units used to measure perimeter and the units used to measure area (length units and square units).**
- **What was challenging about solving Problems 6(a) and 6(b)? How did the process of solving Problems 4 and 5 help you to figure out how to solve Problems 6(a) and 6(b)?**

# Debrief

- **The perimeter of the rectangles in Problems 2(a) and 2(b) are the same. Why are the areas different?**

- **The areas of the rectangles in Problems 6(a) and 6(b) are the same. Why are the perimeters different?**

- **How did you find the answer for the length of the unknowns side, x, in problems 5(a) and 5(b)? Discuss with your partner.**

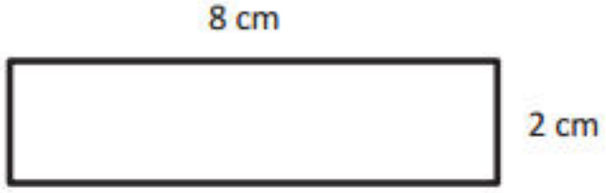
- **What significant math vocabulary did we use today to communicate precisely?**

# Exit Ticket



Name _____ Date _____

1. Determine the area and perimeter of the rectangle.




2. Determine the perimeter of the rectangle.