Area and Perimeter

Day 1
Problem of the Day

Oscar bought 15 apples. Shuhana had 4 times as many apples as Oscar. How many more apples did Shuhana have than Oscar?
Perimeter

Perimeter measures the outside edges of a polygon. In order to find the perimeter of a shape, you need to add the lengths of each side of the shape.
Perimeter

Watch this video to learn more about perimeter:
https://www.khanacademy.org/math/pre-algebra/pre-algebra-measurement/prealgebra-perimeter/v/introduction-to-perimeter
Perimeter

Rectangles have opposite sides that are equal. What are the measurements of the missing sides of this rectangle?

How can we find the perimeter of this rectangle?
Perimeter

Work with your team to find the perimeters of these shapes:
Perimeter

What are some times in your life that you might need to find the perimeter of a shape?
Area With Tiles

Area measures the inside of a polygon. Today, we are going to focus on finding the areas of rectangles.

Area is measured in square units. A tile is an example of a square unit.
Area With Tiles

If a shape has a length of 5 units and a width of 4 units, you would create a shape that has 5 columns and 4 rows.

Use your tiles to create this shape.
Area With Tiles

How many total tiles are there? This is the area of this shape.
Area With Tiles

Because we measure in square units, this shape as an area of 20 square centimeters.

Now how can we find the perimeter of this shape?
Area With Tiles

With your team, use tiles to find the areas and perimeters of these shapes:
Area With Graph Paper

We can also use graph paper to find the area of a shape.
Area With Graph Paper

If we have a shape with a length of 9 inches and a width of 5 inches, you would draw across 9 boxes and down 5 boxes.

How many units did we box in? That’s our area!
Area With Graph Paper

Now how can we find the perimeter of the shape we just created?
Area With Graph Paper

Using the grid side of your whiteboard, find the areas and perimeters of these shapes:

1. Rectangle with dimensions 3 ft x 4 ft
2. Rectangle with dimensions 2 in x 5 in
3. Rectangle with dimensions 5 cm x 8 cm
Area

Does this seem similar to anything we have done in math before?

When might it be helpful to find the area of a shape in your everyday life?
Exit Ticket

What does area measure?

What does perimeter measure?
Independent Practice/Centers

Complete the area and perimeter worksheet for independent practice. When you are finished, go to your center for the day.

Computer: Khan Academy 3rd grade mission

I Can: Area and Perimeter

I-pods: Multiplication Fluency

Partner Work: Create a shape with given side lengths. Switch with your partner and find the area and perimeter.
Area and Perimeter

Day 2
Problem of the Day

The Solve It detective agency has a goal to solve 75 mysteries each year. The Solve It detective agency solves an average of 9 mysteries each month. How many more mysteries does the Solve It detective agency need to solve to reach their goal if it has only been 7 months?
Area Introduction and Perimeter Review

So that we can get our brains thinking about area and perimeter, stand up, push your chair in and let’s move and groove to the sounds of area and perimeter.

https://www.youtube.com/watch?v=LSEwtjZk6qk
Monday’s Vocabulary Review

Yesterday we learned about the following words...

- **Area** (finding the space within an object)
- **Perimeter** (Finding the sum of all the sides of a shape)
- **Length** (how long a shape is)
- **Width** (how wide a shape is)
What Vocabulary Words Will We Discuss Today?

Today we are going to discuss and learn about the following vocabulary words...

- Square Units
- Side Length
- Missing Side Length
What is a Square Unit

A **square unit** is...

- a square with all sides measuring one unit

For example, if we look at the figure below, we can see that it is made up of small squares. Each of the small squares are known as square units.
What is Side Length?

**Side length** is...

- The measurement of any side of a shape
  - Measurements can be any of the following...
    - Centimeters (cm)
    - Feet (ft)
    - Inches (in)
    - Meters (m)
    - Millimeters (mm)
    - Kilometers (km)
    - Yards (yd), etc.
- What are two measurements you see for **side length** on the shapes above?
What is a Missing Side Length?

A **missing side length** is...

- Any side of a shape that does not have a measurement listed

For example, on this irregular polygon (polygon that does not have all sides equal), there is one **missing side length** shown by the “?.”

Another example of a **missing side length** is this regular polygon (polygon with all sides equal.)
Let’s Calculate Some Missing Side Lengths

Since we know that part of the definition of a rectangle states that opposite sides are equal, we can easily find the **missing side lengths** by looking at the **side lengths** we are already given.

- What is the missing width (how wide a shape is) of each of the shapes below?
- What is the missing length (how long a shape is) of each of the shapes below?
How do you Calculate Area?

To calculate area, we use a simple formula...

- Area = length x width, or \( A = l \times w \)

***Please note that when finding area, our labeled unit of measurement will always be squared, or raised to the second power.

For example, the area for the rectangle to the right would be written as...

- 12 in\(^2\)

Remember that if the shape you are trying to find the area for is made up of square units, you may also count the square units inside the shape to find the area.
“I do” Calculation of Area

Savannah wants to tile the floor of her bathroom using square foot tiles. The floor of her bathroom is 8 feet by 5 feet. What will be the area of Savannah’s bathroom?

- $A = l \times w$
- $A = 8 \times 5$
- $A = 40 \text{ ft}^2$
- Area equals 40 square feet (sq. ft.)
Jillian is trying to display her family photo on the wall in the living room. The photo measures 10 inches by 6 inches. Figure out the area of the photo so Jillian knows how much space it will take up on the wall.

- \[ A = l \times w \]
Jillian is trying to display her family photo on the wall in the living room. The photo measures 10 inches by 6 inches. Figure out the area of the photo so Jillian knows how much space it will take up on the wall.

- **$A = l \times w$**
- **$A = 10 \times 6$**
- **$A = 60 \text{ in}^2$**
- **Area equals 60 square inches (sq. in.)**
Manuela’s dad wants to build a pool in his backyard for Manuela and her sister to learn how to swim. He wants the pool to be long enough for them to complete swim laps, but only wide enough that it does not take up too much of the backyard. He decides to build a pool that is 9 feet by 4 feet. How many square feet will Manuela’s dad’s pool be?

- \( A = l \times w \)
Manuela’s dad wants to build a pool in his backyard for Manuela and her sister to learn how to swim. He wants the pool to be long enough for them to complete swim laps, but only wide enough that it does not take up too much of the backyard. He decides to build a pool that is 9 feet by 4 feet. How many square feet will Manuela’s dad’s pool be?

- \[ A = l \times w \]
- \[ A = 9 \times 4 \]
- \[ A = 36 \text{ ft}^2 \]
- Area equals 36 square feet (sq. ft.)
Exit Ticket

Find the area of the rectangle below.

Length = __________
Width = __________
Area = ______ sq. units
Independent Practice/Centers

Complete the “Which Has More Area” and the “Grid Paper” activity sheets for independent practice. When you are finished, go to your center for the day.

Computer: Khan Academy 3rd grade mission

I Can: Area and Perimeter

I-pods: Multiplication Fluency

Partner Work: Create a shape with given side lengths. Switch with your partner and find the area and perimeter.
Centers For Tuesday, November 6, 2016

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<tr>
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<th>Pink Group</th>
<th>Purple Group</th>
<th>Red Group</th>
<th>Weekly Rotation</th>
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KA - Khan Academy
MF - Multiplication Fluency
GM - Guided Math (w/ Ms. Eaton)
DF - Division Fluency
APP - Area/Perimeter Practice

Hinton’s Class
## Centers For Tuesday, November 6, 2016

### Eaton’s Class

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Problem of the Day

Christian installed a pool in his backyard. The shallow end was 15 feet wide and 20 feet long. The deep end was 15 feet wide and 40 feet long. Draw a shape to represent his pool, and find the total area.
Area and the Distributive Property

Think back to using the area model with the distributive property. We split up shapes to make them easier to multiply.

We can use the same strategy when we are finding the area of a rectangle.
Area and the Distributive Property

If you have a shape with a long side that is difficult to multiply, you can separate the shape into smaller pieces and find the area of each piece.

\[
\begin{array}{c}
3 \\
19
\end{array}
\]
Area and the Distributive Property

How can we split up our shape to make it easier to multiply?

What equation can we write to represent the shape?

\[
\begin{array}{cc}
19 \\
3 \\
\end{array}
\]
Area and the Distributive Property

With your team, use this method to find the areas of these shapes:
Rectilinear Figures- Graph Paper

A rectilinear figure is a polygon with all square corners, but it is not a rectangle.
Rectilinear Figures - Graph Paper

How do you think we could find the area of a rectilinear figure?
Rectilinear Figures- Graph Paper

There are two main ways we can find the area of a rectilinear figure. The first is to use graph paper. Just draw the figure on graph paper and count the squares.
Rectilinear Figures- Graph Paper

There are two main ways we can find the area of a rectilinear figure. The first is to use graph paper. Just draw the figure on graph paper and count the squares.
Rectilinear Figures - Graph Paper

When you solve this way, be careful that you are copying each side length correctly!
Rectilinear Figures - Graph Paper
Rectilinear Figures- Graph Paper

Use the grid side of your whiteboard to find the area of these two figures:
Rectilinear Figures- Create Rectangles

We can also find the area by splitting the shape into rectangles and finding the area of each rectangle. After we find the area of each rectangle, we need to add the areas together to find the total area.
Rectilinear Figures- Create Rectangles

Where should we split this rectilinear figure?

How can we figure out how long the missing sides are?

Make sure you are using correct side lengths! If you split one of the sides when you create rectangles, you need to determine what the new side lengths are.
Rectilinear Figures - Create Rectangles

What equation can you use to represent the total area of this figure?

What is the total area?
Rectilinear Figures - Create Rectangles

Work with your team to find the areas of these figures by creating rectangles.

- Figure 1: 9 cm x 6 cm x 10 cm x 2 cm
- Figure 2: 4 m x 10 m x 3 m x 12 m
Exit Ticket

What are two strategies you can use to find the area of a rectilinear figure?
Independent Practice/Centers

Complete the area and perimeter worksheet for independent practice. When you are finished, go to your center for the day.

Computer: Khan Academy 3rd grade mission

I Can: Area and Perimeter

I-pods: Multiplication Fluency

Partner Work: Create a shape with given side lengths. Switch with your partner and find the area and perimeter.
Zollie bought 30 apples. He had 5 times as many apples as Malik. How many apples did they have altogether?
Learning Activity 1
Perimeter Word Problem Practice

Model the following word problem together: Mr. Dodson wants to fence an area that is 8 feet by 10 feet. How much fence will he need?

- How do we know that this is a perimeter problem?
Learning Activity 1
Perimeter Word Problem Practice

Model the following word problem together: Mr. Dodson wants to fence an area that is 8 feet by 10 feet. How much fence will he need?

● What shape is this going to be?
● Draw the shape and label the sides on your paper.
Learning Activity 1
Perimeter Word Problem Practice

Model the following word problem together: Mr. Dodson wants to fence an area that is 8 feet by 10 feet. How much fence will he need?

● Find the perimeter. Be prepared to share out on how you got your answer.
Model the following word problem together: A farmer needs to buy fertilizer to spread on his garden. The garden is a 20’ by 15’ rectangle. How many square feet is the garden?

● How do we know that this is an area problem?
Learning Activity 2
Area Word Problem Practice

Model the following word problem together: A farmer needs to buy fertilizer to spread on his garden. The garden is a 20’ by 15’ rectangle. How many square feet is the garden?
● What shape is this going to be?
● Draw the shape and label the sides on your paper.
Learning Activity 2
Area Word Problem Practice

Model the following word problem together: A farmer needs to buy fertilizer to spread on his garden. The garden is a 20’ by 15’ rectangle. How many square feet is the garden?

- Find the area. Be prepared to share out on how you got your answer.
Learning Activity 3
Part A: Mixed Practice

- The Leckworth family wants to put tile on their bathroom floor. Each tile is 1 foot square. Their bathroom is 4 feet by 6 feet. How many tiles will be needed?
Learning Activity 3
Part A: Mixed Practice

- A certain wall is 13’ by 9’. A can of paint will cover 50 square feet. Will it be enough? Explain on the back of this paper.
Sara wants to buy wood to make a frame for her picture. Her picture is a 12” by 10” rectangle. What is the total length of the wood strips she will need for her project?
Mrs. Thomas bought a blanket shaped like an equilateral triangle that measures 3 feet on each side. She wants to put a ribbon around the edge. How long should the ribbon be?
Learning Activity 3
Part B: Create your own word problems using perimeter and area.

• Create a perimeter word problem.
Learning Activity 3
Part B: Create your own word problems using perimeter and area.

● Create an area word problem.
Independent Practice

Complete the Perimeter and Area Word Problem Sheet.
Exit Ticket

What is the difference between perimeter and area?