*AR Remediation Plan – Area, Perimeter and Circumference*

# Banking Business

## STRAND: Measurement and Geometry

## STRAND CONCEPT: Area, Perimeter, and Circumference

## SOL 5.8ab

### Remediation Plan Summary

Students differentiate among perimeter, area, and volume and identify which concept is appropriate for a given situation.

### Common Errors and Misconceptions

Students confuse the difference between area, perimeter and volume. Students confuse the units used to measure the area, perimeter and volume. They have difficulty understanding the difference between a linear, square, and cubic unit.

### Materials

* Pattern Blocks or color tiles
* Grid paper
* Several small rectangular prisms- such as small boxes
* Inch cubes and centimeter cubes
* Copies of worksheets:
  + Banking Business,
  + Word Frames,
  + Matching Cards,
  + Perimeter, Area or Volume?
* Card stock
* Scissors
* A projector

### Introductory Activity

1. Perimeter: Demonstrate the concept of perimeter by tracing on grid paper the outline of a pattern block or a figure made of color tiles. Describe perimeter as the “distance around a figure,” and demonstrate this by tracing around the figure again. Have students sketch the resulting polygon and estimate the perimeter, given the units on the grid paper.
2. Area: Ask students to estimate in square grid-paper units the area of the same figure. Have them share their strategies and estimates. Ask which strategies work and how they can write the area in square units.
3. Volume: Hold up a small rectangular prism and put similar prisms on each table for students to manipulate. Ask students, “How many cubic units fill this solid?” Hand out several inch cubes and centimeter cubes for each prism. Ask “How would you record the volume of this prism in cubic units?”
4. Have students’ record definitions of *perimeter*, *area*, and *volume* in their math logs, and post these definitions on a chart or on the board.
5. Distribute copies of the attached “Banking Business” worksheet, and have students complete it. Have a few students share what they wrote.

### Plan for Instruction

1. Distribute copies of the attached “Word Frames” worksheet, and have students complete each frame according to the printed directions. Give assistance as necessary.
2. Copy the attached Matching Cards on card stock, and cut them out. Have students use the cards to play a Matching Game by the rules listed below to practice measurement concepts.
3. Rules: Turn all cards face down on the table in two rows—one row of situation cards and one row of word cards. Each player takes a turn simultaneously turning over two cards, one from each row, to see if they match. If they match, the player gets to keep them. If they do not match, they are returned face down to the table. Play continues until all cards are matched. The player with the most matches wins.

### Pulling It All Together (Reflection)

Have students complete the “Perimeter, Area, or Volume?” worksheet and/or the “Sketch” worksheet.

**Note: The following pages are intended for classroom use for students as a visual aid to learning.**

### MCj03195180000[1]Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### Banking Business

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BANK of WORDS** | | | | | |
| **paint** | **water** | **bed** | **dirt** | **roof** | **grass** |
| **carpeting** | **cover** | **table** | **boxes** | **chalk** | **tile** |
| **flower bed** | **jar** | **barrel** | **shingles** | **fill** | **string** |
| **wallpaper** | **room** | **kite** | **sidewalk** | **rope** | **bucket** |
| **swimming pool** | **bowl** | **wood** | **cat** | **tractor** | **lawn** |
| **fish tank** | **cup** | **fence** | **dog** | **mow** | **garden** |

1. Go to the Bank of Words above, and withdraw at least three words to use in a sentence about a perimeter-measurement situation. Scratch the words out of the bank to indicate they have been withdrawn. Write your sentence here:

2. Return to the bank for another withdrawal of three or more words to use in a sentence about an area-measurement situation. Scratch the words out of the bank to indicate they have been withdrawn. Write your sentence here:

3. Make a final withdrawal of three or more words to use in a sentence about a volume-measurement situation. Scratch the words out of the bank to indicate they have been withdrawn. Write your sentence here:

4. Now that you have spent at least nine words out of your bank account, prepare to show how you spent them by sharing your sentences with the class.

### Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### Word Frames

Complete the words frames below for the words *perimeter*, *area*, and *volume*.

1. Write an example of the term in the lower left corner of the frame.

2. Draw a sketch illustrating the term in the upper right corner.

3. Write a definition of the term in the upper left corner.

4. Write a sentence using the term in the lower right corner.

Compare your frames with those of a partner. How are they similar and different? Explain:

Definition Sketch

Example Non-example

Definition Sketch

Example Non-example

Definition Sketch

Example Non-example

#### Matching Cards

|  |  |  |
| --- | --- | --- |
| perimeter |  | How many yards of fencing will you need to fence your back yard? |
| perimeter |  | How many feet of string will you need to make an outline of where your vegetable garden will be planted? |
| perimeter |  | How many meters will you walk when you walk around the outside of your school? |
| perimeter |  | How many tiles do you need to frame your picture? |

|  |  |  |
| --- | --- | --- |
| perimeter |  | How many feet of fencing will you need to use to make a dog pen? |
| perimeter |  | Old MacDonald has 40 feet of fencing to build a pig pen. What are the dimensions of the pen that will give the pigs the most room? |
| perimeter |  | How many gallons of paint will it take to paint your bedroom walls? |
| perimeter and area |  | How many square feet of lawn do you have to mow? |

|  |  |  |
| --- | --- | --- |
| area |  | How much of the floor does the rug cover? |
| area |  | How large of a book cover do you need to cover your math book? |
| area |  | How many square feet of tile will you need to cover the new bathroom floor? |
| area |  | How much water does the swimming pool hold? |

|  |  |  |
| --- | --- | --- |
| area |  | Will that shipping crate hold the birthday present you bought to send to Grandma? |
| area |  | What is the distance of the dirt bike path around the park? |
| area |  | Will that tablecloth fit the table? |
| volume |  | How much trash will the trash can hold? |

|  |  |  |
| --- | --- | --- |
| volume |  | How much water will you need to fill your fish tank? |
| volume |  | How much room do you need on the sidewalk to play hopscotch or 4-square? |
| volume |  | Will you be able to pack all of your school books in that box? |
| volume |  | How far is it to run twice around my block? |

### Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### Perimeter, Area, or Volume?

Draw a line from each unit of measurement listed below to the name of the item it can measure.

1 inch 1 square inch 1 cubic inch

rug water in a fish tank border of a picture frame

The questions below ask for a measurement of *perimeter* (P), *area* (A), or *volume* (V). Fill in the blank by each question with a letter (P, A, or V) to identify what kind of measurement it is asking for.

1. How much fencing is needed to enclose a garden?

2. How much air will fill your bike tire?

3. How much wallpaper do you need to cover one bedroom wall?

4. How much rainwater can be collected in the barrel?

5. How long is the yellow police tape around the crime scene?

6. How much material do you need to make a quilt?

7. What is the length around the track?

8. Which jewelry box will hold the most?

9. How much wrapping paper do you need to cover the present?

10. How long is the border around that bulletin board?

### Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### Sketch

Draw a picture of a real-life scene that includes three examples each of perimeter, area, and volume. Record these objects or situations in the chart below your sketch. Add details and color to your sketch, and be prepared to share your examples of perimeter, area, and volume with a partner.

**Title:**

|  |  |
| --- | --- |
| **Object in My Picture** | **Perimeter, Area, or Volume?** |
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Explain how perimeter, area, and volume are different.