Grade 3 Math

Unit 4: Connecting Length, Perimeter, and Area

Dear Families,

We want to make sure that you understand the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit 4.

Each standard is in bold print, and below each one is an explanation with examples. Please let your teacher know if you have any questions. We appreciate your partnership and support.

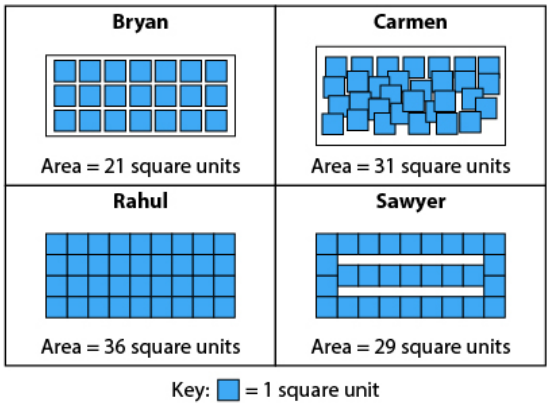
3.GSR.7.1: Investigate area by covering the space of rectangles presented in realistic situations using multiple copies of the same unit, with no gaps or overlaps, and determine the total area (total number of units that covered the space).

Students should be able to…

- determining the area of several objects by covering it using non-standard units, such as index cards, sticky notes, tiles, etc.

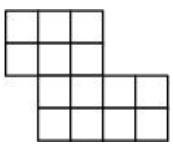
Examples:

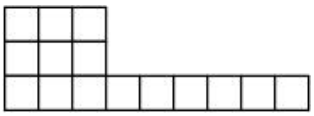
1. Four students were asked to find the area of the same rectangular piece of construction paper. The students placed unit squares on the construction paper to find its area, as shown.

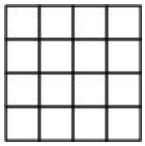


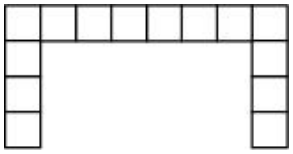
   Which student found the correct area of the piece of construction paper?

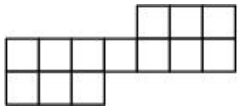
2. Look at the shape below. Which shape has the same area as the shape shown?



A. 

B. 

C. 

D. 

Answers:

1. Rahul
2. C.

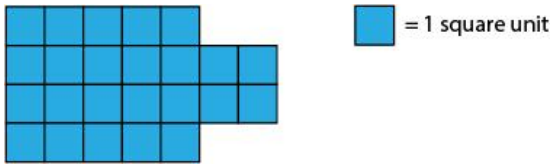
3.GSR.7.2: Determine the area of rectangles (or shapes composed of rectangles) presented in relevant problems by tilling and counting.

Students should be able to…

- explore areas of rectangles by tiling and counting to develop the concept of area as the space (number of tiles) needed to cover the shape.

Examples:

1. A laptop cover is made with square vinyl stickers. There are four rows of stickers. There are 9 stickers in each row. How many square stickers were used to create the laptop cover?
2. What is the area of this figure?



A. 20 square units

B. 22 square units

C. 23 square units

D. 24 square units

Answers:

1. 9x4= 36 stickers
2. D.

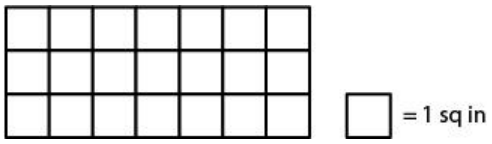
3.GSR.7.3: Discover and explain how area can be found by multiplying the dimensions of a rectangle.

Students should be able to…

- determine the area by multiplying the length and the width of a rectangle.

Examples:

1. Kayla made a rectangle out of square-inch tiles, as shown.



Kayla counted the square tiles to find the area of the shape. Which number sentence can also be used to find the area of Kayla's shape?

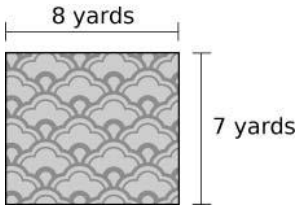
A. 7+7=?

B. 7+3=?

C. 7×3=?

D. 7×7=?

2. Julie's dad is putting a new carpet in the family room. The length and the width of the floor are shown below.



What is the area of the floor in the family room?

A. 56 square yards

B. 30 square yards

C. 64 square yards

D. 15 square yards

Answers:

1. C.
2. A.

3.GSR.8.1: Determine the perimeter of a polygon and explain that the perimeter represents the distance around a polygon. Solve problems involving perimeters of polygons.

Students should be able to…

- find the perimeter of polygons with up to ten sides.
- find the perimeter given the side lengths.

Examples:

1. A square pizza box has a perimeter of 32 inches. What are the side lengths of the box?
2. Hannah is making picture frames out of strips of glitter paper. Each frame is a rectangle, and each frame is a different size. All of the frames have a perimeter of 36 inches.

   Which could be the length and width of any of Hannah's frames? Choose the THREE answers that are correct.

   a. length: 15 inches & width: 3 inches
   b. length: 9 inches & width: 9 inches
   c. length: 12 inches & width: 3 inches
   d. length: 10 inches & width: 8 inches
   e. length: 30 inches & width: 6 inches

Answers:

1. Each side length is 8 inches because it is a square and all the sides are equal.

   8+8+8+8= 32 inches

2. a, b, & d

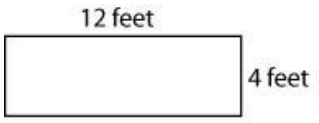
3.GSR.8.2: Investigate and describe how rectangles with the same perimeter can have different areas or how rectangles with the same areas can have different perimeters.

Students should be able to…

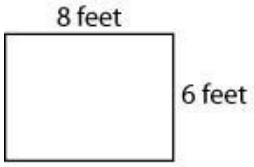
- solve authentic, mathematical problems involving perimeter and area of rectangles.
- explain why shapes can have the same perimeter and different areas (this is limited to rectangles only).

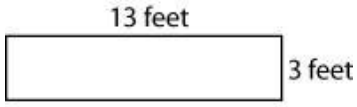
Example:

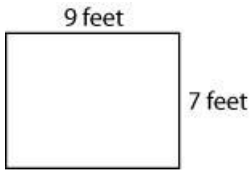
1. Spencer is making two different gardens. The size of the first garden is shown.

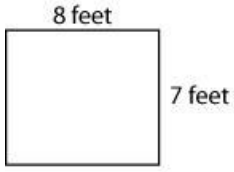


   His second garden has the same area but a different perimeter than his first garden. Which rectangle can be his second garden?

a. 

b. 

c. 

d. 

2. I have eighteen 1-foot panels to build a raised garden bed. How many different ways can I put these eighteen panels together to build a rectangular raised garden bed? Which rectangle will have the greatest perimeter?

Answer:

1. a.
2. Possible garden beds:
    - 6 by 3, 9 by 2, 18 by 1
    - The 18 by 1 garden bed would have the biggest perimeter (18 + 18 + 1 + 1 = 38)

3.PAR.3.3: Apply properties of operations (i.e., commutative property, associative property, distributive property) to multiply and divide within 100.

Students should be able to…

- understand the various properties and use them in multiplication and division problems.

Note: Students at this grade level are *not* expected to identify the specific properties.

- 7 x 3 is known, then 3 x 7 is also know (Commutative property)
- 3 x 5 x 2 can be found by 3 x 5 = 15 x 2= 30 OR 5 x 2 = 10 x 3 = 30 (Associate property)
- Knowing 8 x 5 = 40 and 8 x 2 = 16
- 8 x 7 can be found as the sum of these partial products: 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56 (Distributive property)

Example:

Three friends want to find out how many fingers they have altogether. Each friend has two hands and five fingers on each hand. They write this number sentence to help them find out how many fingers they have altogether:

$$3\times2\times5=?$$

Which of these can help them find the correct number of fingers? Choose three correct answers.

a. 3 x 2 = 6 and 6 +5 =?
b. 3 x 2 = 6 and 6 x 5=?
c. 3 + (2 x 5) =?
d. 3 x 5 = 15 and 15 x 2 =?
e. 5 x 2 = 10 and 10 x 3 =?
f. 3 x (2 + 5) =?

Answer:

b, d, & e

3.PAR.3.6: Solve practical, relevant problems involving multiplication and division within 100 using part-whole strategies, visual representations, and/or concrete models.

Students should be able to…

- solve multiplication and division problems within 100 which means multiplication and division of two whole numbers with whole number answers, and with product or dividend in the range of 0-100 (ex. 39 ÷ 3 = 13).

Examples:

1. Which shows 24 ÷ 3?
    a. 3 plates and 8 cookies
    b. 3 plates with 24 cookies each
    c. 3 plates and 24 cookies
    d. 3 plates with 8 cookies each

2. Mrs. Turner uses 3 eggs to make 1 cake. How many eggs does she need to make 9 cakes?
    a. 3 eggs
    b. 9 eggs
    c. 27 eggs
    d. 24 eggs

Answers:

1. d
2. c

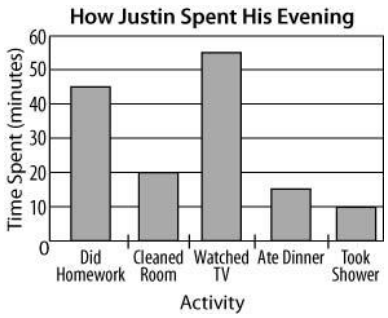
3.MDR.5.1: Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.

Students should be able to…

- review and analyze data to solve relevant problems which can include word problems that are meaningful to a student's real environment.

Example:

1. Justin made a bar graph showing what he did last night and how long it took him. His graph is shown below.



How much more time did Justin spend watching TV than cleaning his room and showering?

a. 25 minutes
b. 30 minutes
c. 35 minutes
d. 45 minutes

Answer:

1. a

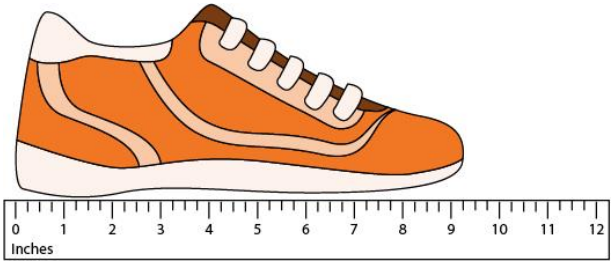
3.MDR.5.4: Use rulers to measure lengths in halves and fourths (quarters) of an inch and a whole inch.

Students should be able to…

- use rulers marked with halves and fourths (quarters) of an inch to measure.

Examples:

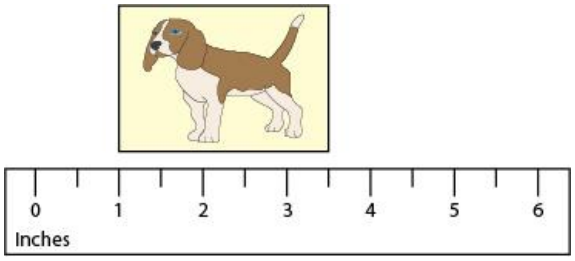
1. Xiomara measured the length of her shoe in inches.



What is the length of Xiomara's shoe?

a. 8 ¼ inches
b. 9 inches
c. 9 ¼ inches

2. Rylie is measuring the length of her sticker in inches.



What is the length of Rylie's sticker?

a. 1 inch
b. 2 inches
c. 2 ½ inches
d. 3 ½ inches

Answers:

1. c
2. c