End-of-Unit Assessment

Teacher Instructions

Give students access to rulers.

1

Standards

Addressing **3.G.A.1**

Narrative

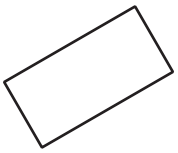
Students identify common and distinguishing properties of two quadrilaterals belonging to different categories. For common properties they may identify the number of sides or the way the shapes are positioned. For distinguishing properties they may refer to angles or side lengths. A wide variety of responses should be expected and accepted.

Student Task Statement

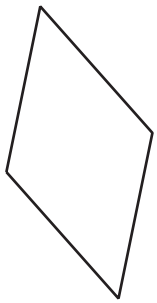
How are the two shapes the same?

How are the two shapes different?

A



B



Solution

Sample responses: They are both quadrilaterals. They do not have any horizontal or vertical sides. Shape A has 4 right angles and two pairs of opposite sides that are the same length. Shape B has no right angles and all of the sides are the same length.

2

Standards

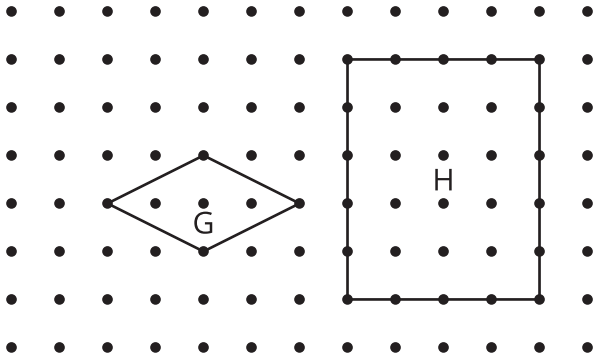
Addressing **3.G.A.1**

Narrative

Students decide if a shape on a grid is a rhombus, rectangle, or square. Students who do not select A may not recognize the sides are equal length or attempted to measure each side and found different lengths. They can use the structure of the grid or use patty paper and fold it to see that the side lengths are the same. Students who select B or C may not yet recognize that rectangles must have 4 right angles. Students who select D may need additional practice identifying examples and attributes of a rhombus.

Student Task Statement

Select **all** true statements.



A. Figure G is a rhombus.

B. Figure G is a rectangle.

C. Figure G is a square.

D. Figure H is a rhombus.

E. Figure H is a rectangle.

F. Figure H is a square.

Solution

A, E

3

Standards

Addressing **3.G.A.1, 3.MD.D.8**

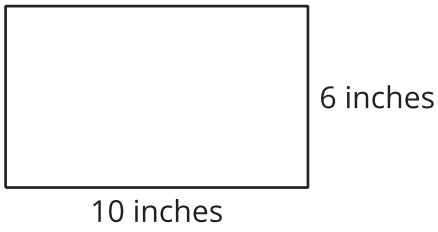
Narrative

Students find the perimeter of a rectangle. Only two side lengths have been labeled, and the rectangle does not lie on a grid, so students will rely on their knowledge that opposite sides of a rectangle have the same length. The

numbers are intentionally selected to help students focus on applying their understanding of the attributes of shapes without concern for more challenging arithmetic.

Student Task Statement

Find the perimeter of the rectangle. Explain or show your reasoning.



Solution

32 inches. Sample response: The rectangle has 2 sides of 10 inches and 2 sides of 6 inches. $10 + 6 + 10 + 6 = 32$

4

Standards

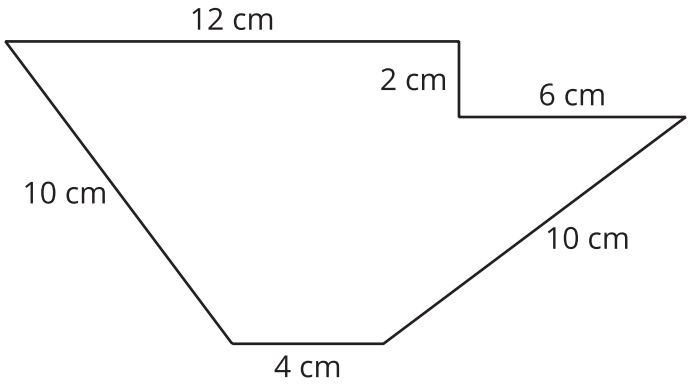
Addressing **3.MD.D.8**

Narrative

Students find the perimeter of a polygon with all side lengths provided. Other items assess student understanding of perimeter. The main focus of this item is on adding the side lengths efficiently and using friendly numbers for addition. The first response, 24, is visibly too small and is the sum of the horizontal and vertical side lengths. If a student selects this answer, they do not understand the meaning of perimeter. Students may select response B if they do not count the two side lengths (2 cm and 6 cm) that go toward the middle of the shape. Students may select C if they make an arithmetic error or if they do not include the small side of length 2 inches.

Student Task Statement

What is the perimeter of the shape?



A. 24 cm

B. 36 cm

C. 42 cm

D. 44 cm

Solution

D

5

Standards

Addressing **3.G.A.1, 3.MD.C.7, 3.MD.D.8**

Narrative

Students use the properties of quadrilaterals to decide if they have enough information to determine the perimeter or area of a shape. Students who do not select A, C, or E have either made an arithmetic error or do not understand the definition of a square or rhombus. Students may select responses B or D if they are thinking of a particular rectangle, namely a square or a rhombus, but are not thinking of all of the other possible rectangles with one side length of 8 centimeters. Students who do not perform well on this item should be encouraged to draw different quadrilaterals, with or without the support of a grid.

Student Task Statement

A quadrilateral has one side length that is 8 centimeters. Select **all** statements that must be true about the quadrilateral.

A. If the quadrilateral is a rhombus, then the perimeter is 32 centimeters.

B. If the quadrilateral is a rectangle, then the perimeter is 32 centimeters.

C. If the quadrilateral is a square, then the perimeter is 32 centimeters.

D. If the quadrilateral is a rectangle, then the area is 64 square centimeters.

E. If the quadrilateral is a square, then the area is 64 square centimeters.

Solution

A, C, E

6 Standards

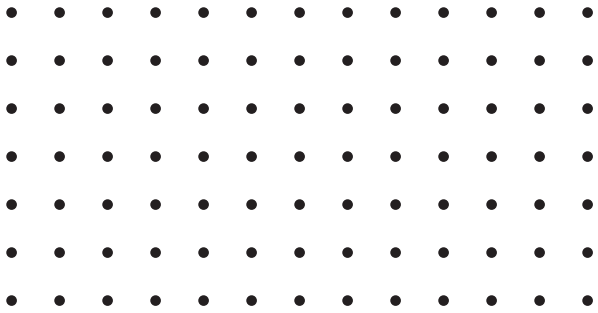
Addressing **3.MD.C.7, 3.MD.D.8**

Narrative

Students find rectangles with the same area and different perimeter. They can find the rectangles by experimenting or by writing 12 as a product in three ways, 1×12, 2×6, and 3×4. If students draw rectangles that do not have an area of 12 square units they may still accurately find the perimeter of those rectangles in the second question.

Student Task Statement

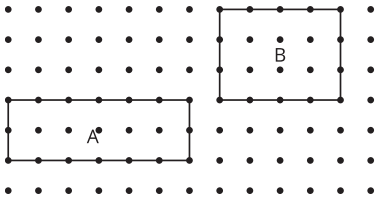
a. Draw two rectangles with an area of 12 square units that have different perimeters.



b. Find the perimeter of each rectangle.

Solution

a. Sample responses:



b. Rectangle A has a perimeter of 16 units. Rectangle B has a perimeter of 14 units.

7

Standards

Addressing **3.MD.C.7, 3.MD.D.8**

Narrative

Students find rectangles with a specified perimeter and different areas in context. They calculate the area of the rectangles and then choose one of them. Students may offer many justifications for their choices. For example, they may choose the rectangle with the larger area and indicate that they want the dog to have more space. Or they may argue as in the given response that having a longer side gives the dog more space to run in a straight line.

Student Task Statement

Priya wants to make a rectangular playpen for her dog. She has 18 meters of fencing material.

a. Andre suggests that Priya make a playpen that is 10 meters long and 8 meters wide. Explain why Priya does not have enough fencing to make this playpen.

b. What are 2 possible pairs of side lengths Priya could use for the playpen that would give different areas? Explain or show your reasoning.

c. Which playpen do you think Priya should make? Explain or show your reasoning.

Solution

Sample responses:

a. The rectangular pen will have 2 sides of length 10 meters and 2 sides of length 8 meters. So, the pen will be a lot more than 18 meters.

b. 5 meters by 4 meters or 6 meters by 3 meters. There are 2 sides of each length and that means the sides need to add up to 9 since $2 \times 9 = 18$. I chose 5 meters and 4 meters and 6 meters and 3 meters. The area is different because the 5 meter by 4 meter playpen has an area of 5×4 or 20 square meters and the 6 meter by 3 meter playpen has an area of 18 square meters.

c. I like the 6 meter by 3 meter playpen. It has a little bit less area than the other playpen but the longer side

gives the dog more room to run.

End-of-Unit Assessment Guidance

Grade 3, Unit 7

Observation	Next-Unit Supports	Standard (assessment item(s))
Students do not yet describe the ways shapes are the same or different using what they know about the categories of quadrilaterals or defining attributes (1).	During CenterChoice Time of Unit 9, consider inviting selected students to play *How Are They the Same*, Stage 3 using only the quadrilateral cards. Display words and sentence frames such as: ___ sides, ___ equal sides, ___ corners, ___ square corners. Invite students to use the words as they describe how the shapes are the same and different.	3.G.A.1 (1, 2, 3, 5)
Students do not yet show they understand a rectangle may have pairs of sides with different lengths (2, 3, 5). Students show they may not yet distinguish between a rectangle, rhombus, or square (2, 5).	As students work with area and perimeter in Unit 9, invite selected students to play *Can You Draw It*, Stage 4 during Center Choice Time. Encourage students to draw a rectangle and give their partner the length of one side length and either the perimeter or area. In the next round, prompt students to draw a rectangle and give their partner two side lengths and the perimeter or area. Ask students to reflect on which round was easier to match the shape. As needed, review the definitions of rectangle, rhombus, and square before each round. Repeat these rounds as needed by asking students to draw a rhombus.	
Students show they understand the meaning of perimeter, but may leave out some side lengths or make calculation errors (4).	Before students work with area and perimeter in Unit 9, consider inviting students to work with their partner to revisit their work for Problem 4. Prompt students to share the different errors they found and how they corrected them. As needed, encourage students to share the different ways they calculated perimeter.	3.MD.D.8 (3, 4, 5, 6, 7)

Students show they understand the attributes of quadrilaterals out of measurement contexts (1, 2), but do not yet apply what they understand to solve area or perimeter problems when each side length is not given (3, 5).	Before students work with area and perimeter in Unit 9, consider inviting them to draw each shape in Problem 5. After each shape, ask students if it is always, sometimes, or never possible to draw the shape if you know one side length and the area or perimeter. As students answer questions about the area and perimeter, encourage them to ask and answer questions that provide some, but not all of a rectangle's side lengths.	
Students show they may reason about and solve area and perimeter in context (7), but not out of context (6) or vice versa.	As students work with area and perimeter in real-world contexts in Unit 9, invite students to generate example questions about floor plans of tiny houses together. As students answer questions, encourage them to show how they used the floor plans to make sense of and answer the questions.	
Students show they may not interpret an area as a product of two side lengths. For example, they create rectangles and identify the correct perimeter, but the rectangles do not match the area constraints given in the problem.	As students work with area and perimeter in Unit 9, invite selected students to play *Can You Draw It*, Stage 4 during Center Choice Time. Prompt students who are drawing to describe the clue their partner gave them (area or perimeter). Ask them to describe their strategy for matching the clue to the definition of area or perimeter. As needed, revisit the definitions of area and perimeter between each round. Consider using the centimeter grid paper as a support for connecting area to square units.	3.MD.C.7 (5, 6, 7)