Assessment : End-of-Unit Assessment

Teacher Instructions

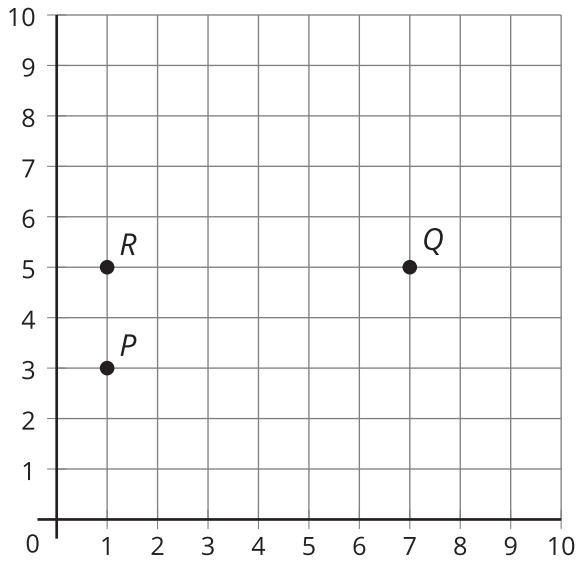
Give students access to straight edges.

Problem 1

Students analyze statements about the coordinates of points on the coordinate grid. Students may confuse the horizontal and vertical coordinates. If they do so consistently, then they will select the distractors B and E and will not select any of the correct responses. This is a simple misconception which can readily be addressed. A more subtle misconception could lead to choosing E and not choosing D, namely that points R and Q lie on the same horizontal line but that means that their vertical coordinates are the same.

Statement

Select **all** true statements about the points on the graph.



A. The coordinates of P are $(1, 3)$.

B. The coordinates of P are $(3, 1)$.

C. The coordinates of Q are $(7, 5)$.

D. The horizontal coordinate of P is the same as the horizontal coordinate of R.

E. The horizontal coordinate of Q is the same as the horizontal coordinate of R.

Solution

["A", "C", "D"]

Aligned Standards

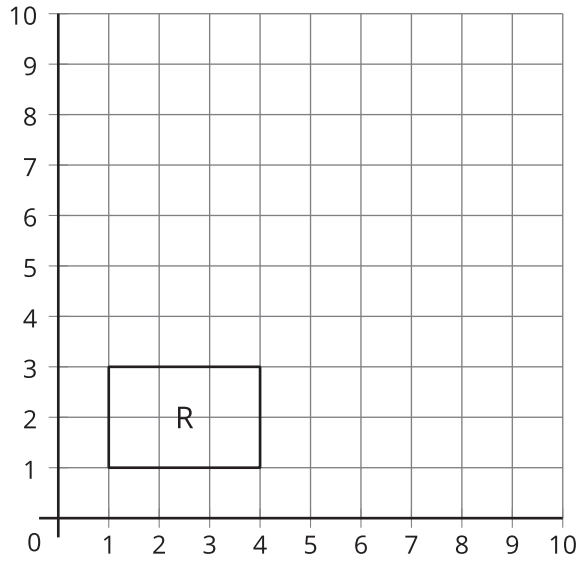
5.G.A.1

Problem 2

Students describe quadrilaterals in the coordinate plane. They use the fact that the gridlines are perpendicular in order to explain why a quadrilateral is a rectangle and they use their understanding of quadrilaterals and the coordinate grid to draw a rhombus that is not a square.

Statement

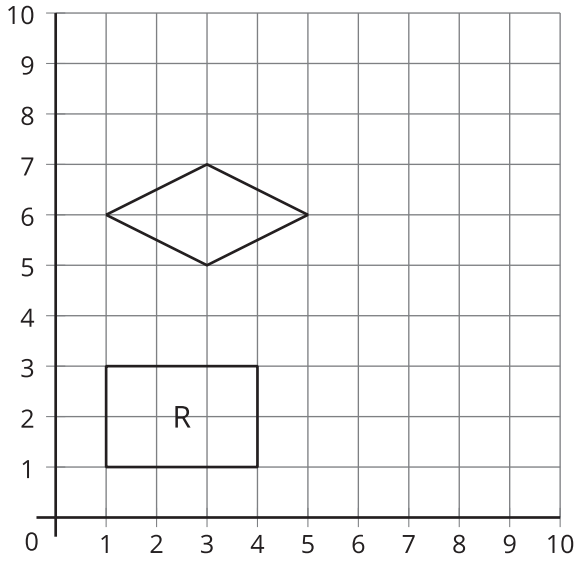
1. Explain why quadrilateral R is a rectangle.



2. Draw a rhombus in the coordinate plane that is not a square. Explain why it is a rhombus and why it is not a square.

Solution

1. The grid lines on the coordinate grid are perpendicular so this means that the 4 angles in R are all right angles.
2. Sample response. The shape is a rhombus because each side goes over 2 and up or down 1 on the grid. It is not a square because it does not have any right angles.



Aligned Standards

5.G.A.1, 5.G.B.4

Problem 3

Students show understanding of the taxonomy of quadrilaterals by relating different types of quadrilaterals. Students who do not perform well on this task might profit from studying the classroom chart for quadrilaterals. Ask them to look at the chart and see how it helps answer the questions. Then ask them to think more about the chart and why each relationship it shows is true.

Statement

Fill in each blank with the correct word, "sometimes," "always," or "never."

1. A parallelogram is _____ a rhombus.
2. A rhombus is _____ a parallelogram.
3. A rectangle is _____ a rhombus.
4. A quadrilateral with a 35 degree angle is _____ a rectangle.

Solution

1. sometimes
2. always
3. sometimes
4. never

Aligned Standards

5.G.B.3, 5.G.B.4

Problem 4

Students decide if a quadrilateral belongs to different categories based on properties of the quadrilateral.

All four sides being equal is the defining property of a rhombus and is also a defining property of a square so this rules out these two categories. Trapezoids, parallelograms, and rectangles can all have two pairs of different equal sides. If a class decides on the exclusive definition of a trapezoid, then a trapezoid cannot have two pairs of equal sides.

Statement

For a quadrilateral:

- one pair of sides have the same length
- the other pair of sides also have the same length
- the sides are not all the same length

What could the quadrilateral be? Select **all** that apply.

A. trapezoid

B. parallelogram

C. rhombus

D. rectangle

E. square

Solution

["A", "B", "D"]

Aligned Standards

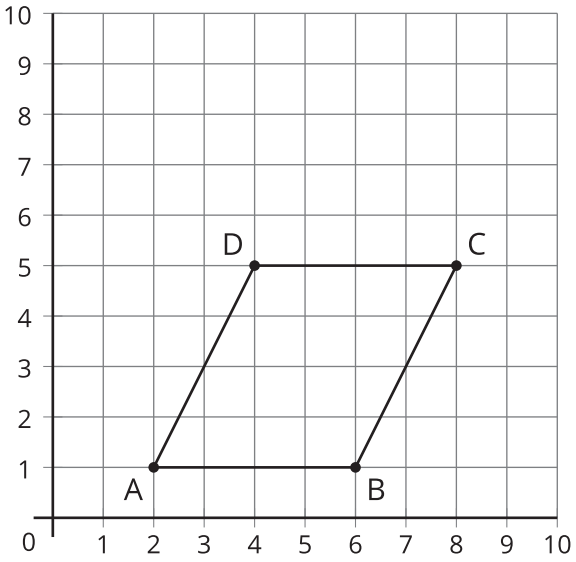
5.G.B.4

Problem 5

Students classify a quadrilateral given on a coordinate grid. They will need to understand the defining properties of parallelograms, rhombuses, and rectangles in order to appropriately classify the given quadrilateral. In order to justify that the slanted opposite sides AD and BC are parallel, students may extend the lines and say that they do not appear to meet or they can give an argument based on the structure of the coordinate grid.

Statement

1. Is quadrilateral $ABCD$ a parallelogram? Explain or show your reasoning.



2. Is quadrilateral $ABCD$ a rhombus? Explain or show your reasoning.
3. Is quadrilateral $ABCD$ a rectangle? Explain or show your reasoning.

Solution

1. Yes. Sides AB and CD are on horizontal lines which are parallel. Sides AD and BC each go 2 squares over and 4 squares up. They go in the same direction so they won't meet and they are parallel.
2. No. Side BC is longer than side AB.
3. No. None of the angles is a right angle.

Aligned Standards

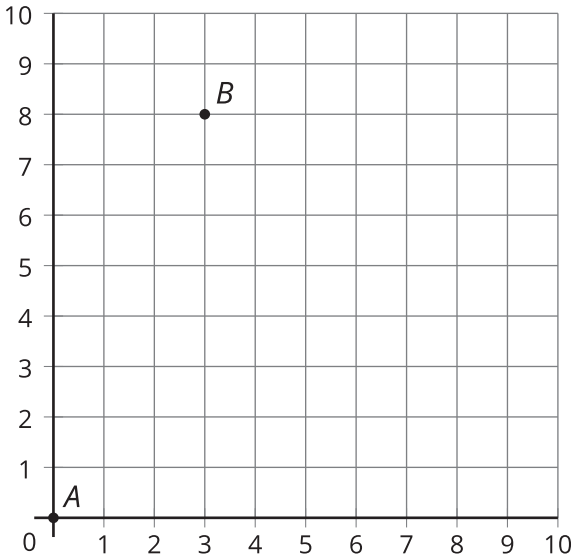
5.G.B

Problem 6

Students explain the meaning of the coordinates of two points in terms of the distance from the axes. Of particular interest is the origin which lies both on the horizontal axis and on the vertical axis. This means that its coordinates are $(0, 0)$. Students may occasionally or systematically confuse the vertical axis and horizontal axis right now and will get better distinguishing them with practice.

Statement

1. What are the coordinates of the point labeled A?
   Explain or show your reasoning.



2. What are the coordinates of the point labeled B? Explain or show your reasoning.

Solution

1. $A = (0, 0)$ because it is on the horizontal and vertical axes.
2. $B = (3, 8)$ because it is 3 units from the vertical axis and 8 units from the horizontal axis.

Aligned Standards

5.G.A.1

Problem 7

Students generate patterns, given two rules, and identify relationships between corresponding terms in the two patterns. Students may select A if they confuse the two patterns. Students may select D if they commit an arithmetic error. Students who do not select B may be trying to continue the patterns and make an error as opposed to seeing the structure in the patterns. If students do not select E they may need more work with fraction multiplication.

Statement

Here are two rules and the beginning of their patterns.

- Jada's rule: Start with 0 and keep adding 25.

0	25	50	75	100

- Priya's rule: Start with 0 and keep adding 5.

0	5	10	15	20

Select **all** true statements about the patterns.

A. All of the numbers in Priya's pattern are in Jada's pattern.

B. When Priya's pattern has 200, Jada's pattern has 1,000.

C. Each number in Jada's pattern is 5 times the corresponding number in Priya's pattern.

D. The number 220 is in Jada's pattern and in Priya's pattern.

E. Each number in Priya's pattern is $\frac{1}{5}$ the corresponding number in Jada's pattern.

Solution

["B", "C", "E"]

Aligned Standards

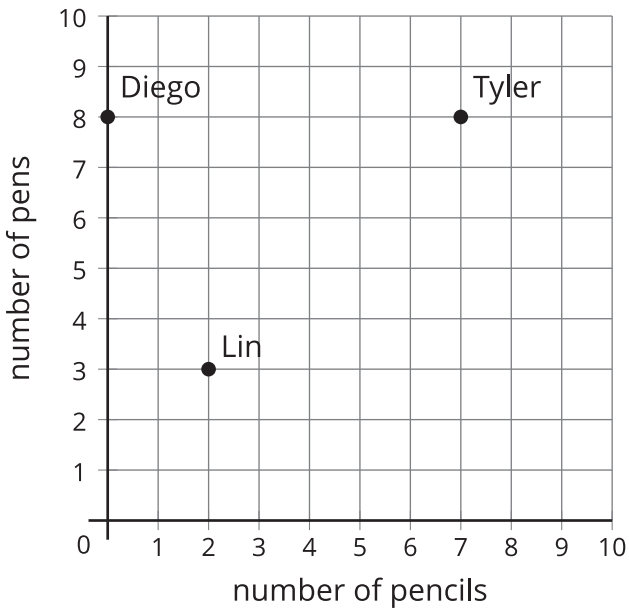
5.OA.B.3

Problem 8

Students interpret the meaning of points in the coordinate plane in context and plot a point demonstrating understanding of the coordinate plane in context. To decide if any of the plotted points represent having the same number of pens as pencils, students can interpret the meaning of each point. Students who do not find the right number of pens or pencils for Mai or who do not plot her point accurately may need more practice interpreting and plotting points in context.

Statement

1. How many pencils does Diego have? How many pens?

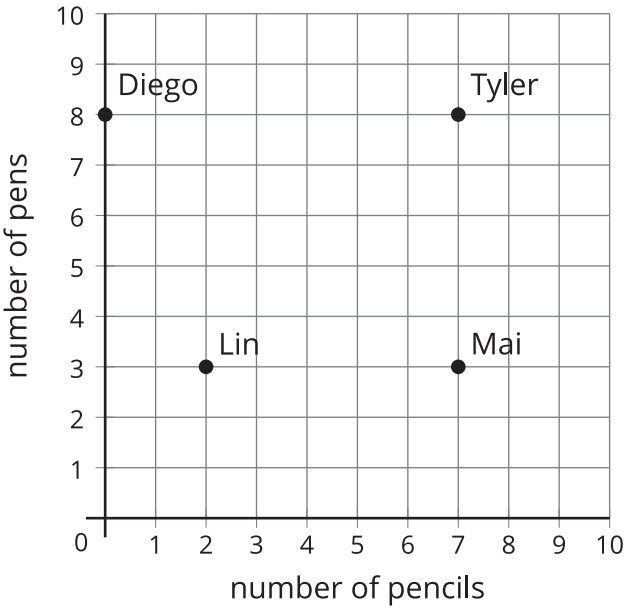


2. Do any of the students have the same number of pens as pencils? Explain or show your reasoning.
3. Mai has the same number of pencils as Tyler and the same number of pens as Lin. What are the

coordinates of the point that represents Mai? Explain or show your reasoning. Label this point on the graph.

Solution

1. Diego has no pencils and 8 pens.
2. No, they all have more pens than pencils.
3. Tyler has 7 pencils and Lin has 3 pens. So the coordinates for Mai's point are (7,3).



Aligned Standards

5.G.A.2