

**Standards-based Assessment Bank**  
**5<sup>th</sup> Grade Mathematics**  
**Geometry and Spatial Sense**

**Index to Questions**

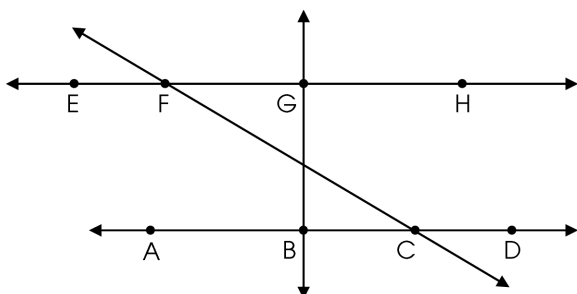
Question Number	Source	BM	GLI	Description
<a href="#">1</a>	OAT Mar 06	D		This <b>multiple-choice</b> question asks students to select the statement that appears to be true about two lines that intersect at a given point (G).
<a href="#">18</a>	OAT Mar 06	I		This <b>multiple-choice</b> question asks students to select the net for a rectangular prism.
<a href="#">27</a>	OAT Mar 06	B		This <b>multiple-choice</b> question asks students select the term that describes the length of a folded side of a circular tablecloth.
<a href="#">36</a>	OAT Mar 06	C		This <b>multiple-choice</b> question asks students to identify the point located at point (0, -3) on a coordinate grid.
<a href="#">39</a>	OAT Mar 06	I		This <b>multiple-choice</b> question asks students to determine which three-dimensional object can be made from the given net.
<a href="#">42</a>	OAT Mar 06	A		This <b>short-answer</b> question asks students to draw an obtuse angle and give the measure of that angle.
<a href="#">44</a>	OAT Mar 06	B		This <b>multiple-choice</b> question asks students to determine the diameter of a circle when given the radius of the circle.
<a href="#">4</a>	OAT May 07	A		This <b>multiple-choice</b> question asks students to determine the point that lies in the interior of an angle.
<a href="#">19</a>	OAT May 07	D		This <b>multiple-choice</b> question asks students to identify the street that is parallel to a given street shown on a map.
<a href="#">31</a>	OAT May 07	B		This <b>multiple-choice</b> question asks students to select a statement that is true about the relationships among the parts of the given circle.
<a href="#">38</a>	OAT May 07	J		This <b>short-answer</b> question asks students to determine the length and width of two new congruent rectangular fields based on the dimensions of a given rectangular field.

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Benchmark: D	Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.
GLI:	

**Multiple Choice Question:**

1. Four lines are drawn as shown.



Which statement appears to be true of the two lines that intersect at point G?

- A. They are rays.
- B. They are skew.
- C. They are parallel.
- D. They are perpendicular.

**Commentary:**

This multiple-choice question asks students to select the statement that appears to be true about two lines that intersect at a given point (G). Students need to locate point G and study the lines that intersect at point G. Line EH and line GB intersect at point G, forming right angles. Perpendicular lines are two lines that intersect and form right angles. Answer choice D is the correct answer. Answer choice A is incorrect because rays are not lines. Answer choice B is incorrect because lines that are skewed are not in the same plane. Parallel lines do not intersect; therefore, answer choice C is incorrect.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

**Performance Data:**

The percent of public school students selecting answer choice D for question 1 on the March 2006 Grade 5 Achievement Test was 59%.

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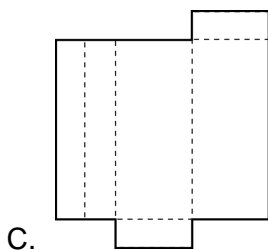
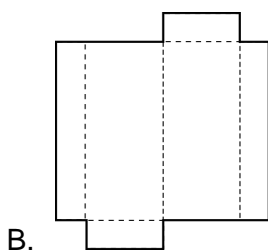
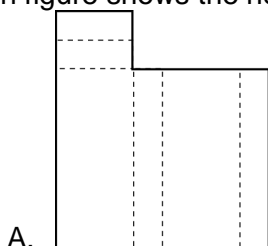
**Keywords:** geometry, perpendicular lines, intersecting lines

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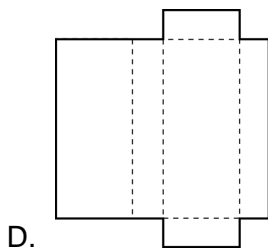
Benchmark: I	Identify and draw where-dimensional objects from different views (top, side, front and perspective).
GLI:	

**Multiple Choice Question:**

18. Which figure shows the net for a rectangular prism?



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**Commentary:**

This multiple-choice question asks students to select the net for a rectangular prism. Students should recall that a rectangular prism is in the shape of a box with the congruent parallel faces being rectangles. Students should visualize folding the net in each answer choice to determine if it forms a rectangular prism. The net in answer choice D forms a rectangular prism when folded. The nets in answer choices A, B and C do not form a rectangular prism when they are folded.

The complexity level of this question is Moderate Complexity. This question requires students to interpret a visual representation.

**Performance Data:**

The percent of public school students selecting answer choice D for question 18 on the March 2006 Grade 5 Achievement Test was 56%.

**Keywords:** geometry, rectangular prism, spatial sense

Benchmark: B	Draw circles, and identify and determine the relationships among the radius, diameter, center and circumference.
GLI:	

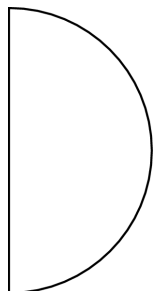
**Mathematical Processes**

Benchmark: B	Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.
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**Multiple Choice Question:**

27. Malcolm needed to measure the distance across a circular tablecloth. He folded the tablecloth in half as shown.

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Malcolm measured the length of a folded side.

Which part of the circular tablecloth did Malcolm measure?

- A. center
- B. circumference
- C. diameter
- D. radius

**Commentary:**

This multiple-choice question asks students to select the term that describes the length of a folded side of a circular tablecloth. Students need to study the picture and associate the length of the folded side with the diameter of a circle (a segment connecting two points on the circle and passing through the center). The correct answer is answer choice C. The terms in answer choices A, B and D do not represent the length of the folded side of a circular tablecloth.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

**Performance Data:**

The percent of public school students selecting answer choice C for question 27 on the March 2006 Grade 5 Achievement Test was 45%.

**Keywords:** measurement, circle, diameter

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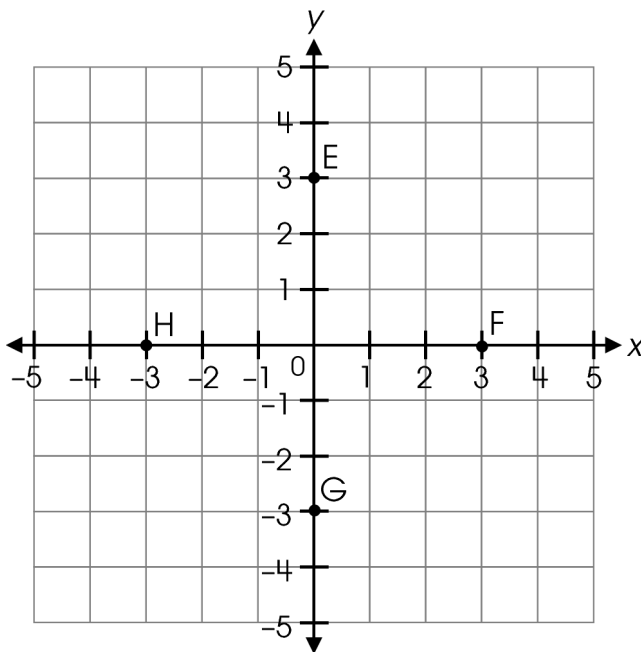
Benchmark: C	Specify locations and plot ordered pairs on a coordinate plane.
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GLI:	
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**Multiple Choice Question:**

36. Four points are shown on the coordinate plane.



Which point is located at (0, -3)?

- A. E
- B. F
- C. G
- D. H

**Commentary:**

This multiple-choice question asks students to identify the point located at point (0, -3) on a coordinate grid. Students need to recall that the first number in an ordered pair, the

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x-coordinate, moves horizontally to the left or right from the origin and the second number, the y-coordinate, moves vertically up or down from the first move. To identify the point located at (0, -3), students should begin at the origin (0, 0), but not move left or right since the x-coordinate is 0. Then, move 3 units down since the y-coordinate is negative. Point G is located at (0, -3). Answer choice C is the correct answer. Answer choices A, B and D are incorrect. Point E, answer choice A, is located at (0, 3); point F, answer choice B, is located at (3, 0); and point H is located at (-3, 0).

The complexity level of this question is Low Complexity. This question requires students to perform a specified procedure.

**Performance Data:**

The percent of public school students selecting answer choice C for question 36 on the March 2006 Grade 5 Achievement Test was 50%.

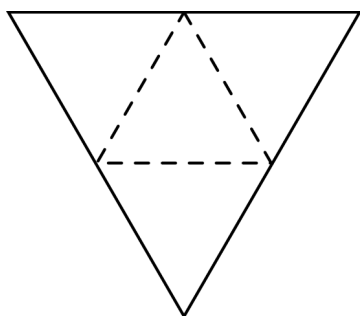
**Keywords:** geometry, ordered pair, coordinate grid

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Benchmark: I	Identify and draw where-dimensional objects from different views (top, side, front and perspective).
GLI:	

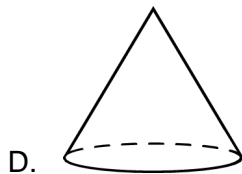
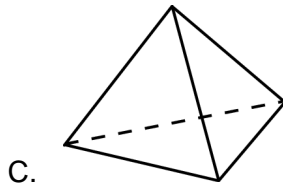
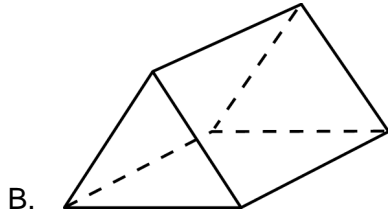
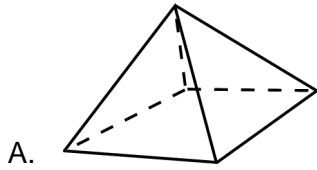
**Multiple Choice Question:**

39. A net of a three-dimensional shape is shown.



Which three-dimensional shape can be made from the net?

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**Commentary:**

This multiple-choice question asks students to determine which three-dimensional object can be made from the given net. Students should notice that the net is made of four triangular pieces. This would eliminate answer choices A, B and D. Although answer choices A and B have triangles as either a face or the base, they also have other shapes for the face or base. The shape in answer choice D is a cone with a circular base and a curved shape. The shape in answer choice C can be made from the given net.

The complexity level of this question is Low Complexity. This question requires students to recognize an equivalent representation.

**Performance Data:**

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The percent of public school students selecting answer choice C for question 39 on the March 2006 Grade 5 Achievement Test was 71%.

**Keywords:** geometry, net, spatial sense, three-dimensional shape

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Benchmark: A	Identify and label parts and the regions defined within the plane where the angle resides.
GLI:	

**Short Answer Question:**

42. In your **Answer Document**, draw an obtuse angle. Use your protractor to give the measure of the obtuse angle.

**Commentary:**

This short-answer question asks students to draw an obtuse angle and give the measure of that angle. The response earning the maximum number of points (2 points) provides the drawing of an obtuse angle and the measure of the angle drawn. Students need to draw an angle that is greater than  $90^\circ$ , but less than  $180^\circ$ .

The complexity level of this question is Low Complexity. This task requires students to draw and measure a simple geometric figure.

**Performance Data:**

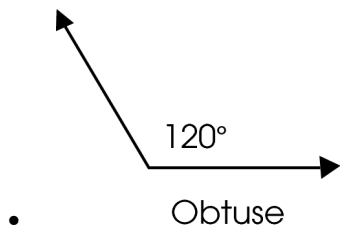
The percent of public school students earning each score point for question 42 on the March 2006 Grade 5 Achievement Test:

Percent at Each Score Point		
0	1	2
15%	30%	54%

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**Scoring Guidelines:**

Correct Sample Response(s):



Points	Student Response
2	<p>The focus of this task is drawing an angle and using a tool to measure the angle. The response shows the drawing of an obtuse angle with the appropriate measure of the angle drawn.</p> <p>NOTE: An appropriate angle measure must be within 5° of the actual angle measure and have a measurement from 91° to 179°.</p>
1	<p>The response provides partial evidence of drawing an angle and using a tool to measure the angle; however, the solution may be incomplete or slightly flawed.</p> <p>For example, the response may:</p> <ul style="list-style-type: none"> <li>• Provide a drawing of an angle that is obtuse, but fail to measure it or states that it is greater than 90°</li> <li>• Provide a drawing of an acute angle, but accurately measures and labels the angle.</li> <li>• Provide the drawing of an obtuse angle that is not accurately measured.</li> </ul>
0	<p>The response provides inadequate evidence of drawing an angle and using a tool to measure the angle. The response provides major flaws in angle construction or irrelevant information.</p> <p>For example, the response may:</p> <ul style="list-style-type: none"> <li>• Provide a drawing of an angle that is not obtuse and not measure it.</li> <li>• Provide a drawing of an angle that is not obtuse and give an angle measure that does not reflect the angle shown.</li> <li>• Be blank or provide unrelated statements.</li> <li>• Recopy information from the stem.</li> </ul>

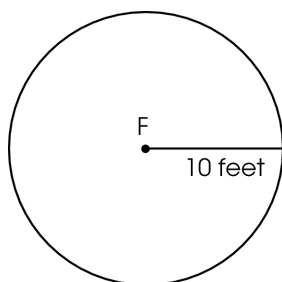
**Keywords:** geometry, obtuse angle

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Benchmark: B	Draw circles, and identify and determine relationships among the radius, diameter, center and circumference.
GLI:	

**Multiple Choice Question:**

44. Point F is the center of the circle shown.



What is the diameter of this circle?

- A. 10 feet
- B. 20 feet
- C. 30 feet
- D. 100 feet

**Commentary:**

This multiple-choice question asks students to determine the diameter of a circle when given the radius of the circle. Students need to recall that the diameter of a circle is twice the radius of the circle. The given radius of the circle is 10 feet; therefore, the diameter of this circle is 20 feet ( $10 \text{ feet} \times 2 = 20 \text{ feet}$ ), answer choice B. The measurement in answer choices A, C and D do not show the diameter as being twice the radius.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

**Performance Data:**

The percent of public school students selecting answer choice B for question 44 on the March 2006 Grade 5 Achievement Test was 72%.

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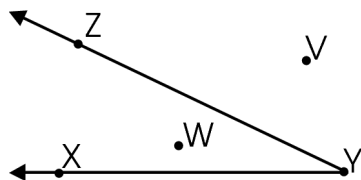
**Keywords:** geometry, circle, radius, diameter

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Benchmark: A	Identify and label parts and the regions defined within the plane where the angle resides.
GLI:	

**Multiple Choice Question:**

4. Angle XYZ is shown.



Which point lies in the interior of angle XYZ?

- A. point V
- B. point W
- C. point X
- D. point Y

**Commentary:**

This multiple-choice question asks students to determine the point that lies in the interior of an angle. Point W, answer choice B, lies in the interior of the angle XYZ because this point lies between rays YX and YZ. Therefore, answer choice B is correct.

The points in answer choices A, C and D do not lie in the interior of angle XYZ. Point V, answer choice A, is an exterior point outside of angle XYZ. Point X, answer choice C, lies on the ray XY. Point Y, answer choice D, is the vertex of angle XYZ.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

**Performance Data:**

The percent of public school students selecting answer choice B for question 4 on the May 2007 Grade 5 Achievement Test was 77%.

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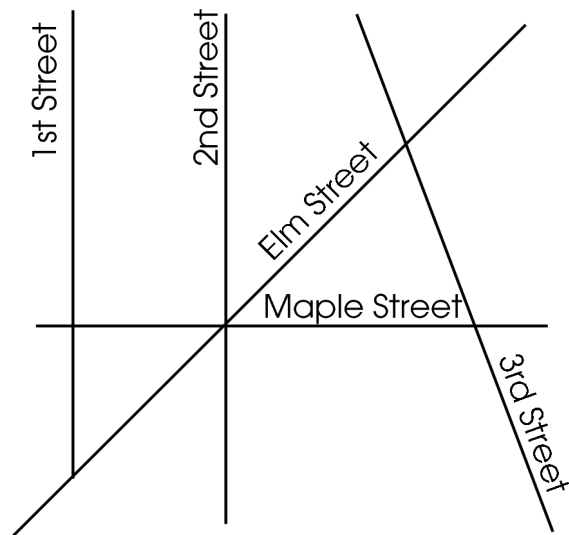
**Keywords:** geometry, interior of an angle, point

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Benchmark: D	Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.
GLI:	

**Multiple Choice Question:**

19. A street map is shown.



Susan lives on 1st Street. Her friend Allison lives on a street that is parallel to 1st Street.

On which street could Allison live?

- A. 3rd Street
- B. Elm Street
- C. 2nd Street
- D. Maple Street

**Commentary:**

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This multiple-choice question asks students to identify the street that is parallel to a given street shown on a map. Students need to look for streets on the map that will not intersect with 1<sup>st</sup> Street if they continued. On this map, 2<sup>nd</sup> Street is parallel to 1<sup>st</sup> Street because they do not intersect when continued. Answer choice C, 2<sup>nd</sup> Street, is correct.

The streets in answer choices A, B and D are incorrect since these streets are not parallel to 1<sup>st</sup> Street.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

**Performance Data:**

The percent of public school students selecting answer choice C for question 19 on the May 2007 Grade 5 Achievement Test was 89%.

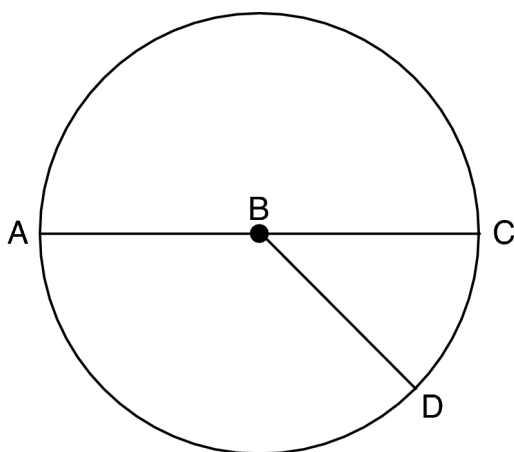
**Keywords:** geometry, parallel lines, intersecting lines

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Benchmark: B	Draw circles, and identify and determine the relationships among the radius, diameter, center and circumference.
GLI:	

**Multiple Choice Question:**

31. A circle is shown.



Which statement about the circle is true?

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- A. The diameter is  $\overline{AB}$ .
- B. The diameter is  $\overline{AC}$ .
- C. The only radius is  $\overline{BD}$ .
- D. The radius is two times the length of  $\overline{BC}$ .

**Commentary:**

This multiple-choice question asks students to select a statement that is true about the relationships among the parts of the given circle. Students need to be able to identify and determine the relationships among the parts of a circle. The statement in answer choice B is a true statement. Line segment AC ( $\overline{AC}$ ) is the diameter because it is a line segment that connects two points on the circle and passes through the center of the circle.

Answer choice A is incorrect since  $\overline{AB}$  is a radius. Answer choice C is incorrect since  $\overline{BD}$  is one of the three radii ( $\overline{AB}$ ,  $\overline{BC}$  and  $\overline{BD}$ ) shown in the circle. Answer choice D is incorrect since  $\overline{BC}$  is a radius. A diameter is two times a radius.

The complexity level of this question is Moderate Complexity. This question requires students to interpret a visual representation.

**Performance Data:**

The percent of public school students selecting answer choice B for question 31 on the May 2007 Grade 5 Achievement Test was 64%.

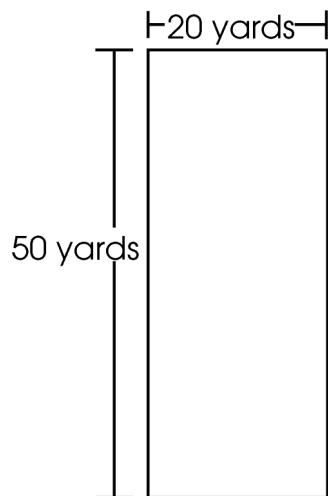
**Keywords:** geometry, circle, diameter, radius

Benchmark: J	Apply properties of equality and proportionality to solve problems involving congruent or similar figures; e.g., create a scale drawing.
GLI:	

**Short Answer Question:**

38. Joel's field is 20 yards wide and 50 yards long, as shown.

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He wants to divide his field into two congruent rectangular fields, one for corn and the other for strawberries.

In your **Answer Document**, determine the length and the width of the two new fields.

Explain how you know that the two new fields are congruent. (2 points)

**Commentary:**

This short-answer question asks students to determine the length and width of two new congruent rectangular fields based on the dimensions of a given rectangular field. Students are also asked to explain how they know the two new fields are congruent. The response earning the maximum number of points (2 points) provides the length and width of two fields that are congruent with an adequate explanation. Students need to divide the field in half to make two new rectangular fields that have the same length and the same width. For example, dividing the length (50 yards) in half will result in two congruent rectangular fields with the new length of 25 yards and the width of 20 yards. Dividing the width (20 yards) in half will result in two congruent rectangular fields with the new width of 10 yards and the length of 50 yards. The new fields are congruent because they are the same shape and the same size.

The complexity level of this question is Moderate Complexity. This question requires students to retrieve information from a figure and use it to solve a problem.

**Performance Data:**

The percent of public school students earning each score point for question 38 on the May 2007 Grade 5 Achievement Test:

Percent at Each Score Point		
0	1	2
38%	44%	18%

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**Scoring Guidelines:**

<b>Exemplar Response:</b>	
<b>Points</b>	<b>Student Response</b>
	<ul style="list-style-type: none"> <li>The two new fields will be 20 yards wide and 25 yards long because half of 50 is 25. They are congruent because they are both rectangles with the same length and same width.</li> <li>The two new fields will be 10 yards wide and 50 yards long because I cut the width in half. They are congruent because they are exactly the same size and same shape.</li> </ul>
2 point text	The focus of this task is using properties of congruent rectangles to solve a problem. The response provides a correct length and width for both of the congruent fields with an adequate explanation.
1 point text	<p>The response shows partial evidence of using properties of congruent rectangles to solve a problem; however, the solution may be incomplete or slightly flawed.</p> <p>1 point sample answer:</p> <p>For example, the response may:</p> <ul style="list-style-type: none"> <li>State that he should divide the length in half and keep the width the same but not provide the new measurements or an explanation.</li> <li>Provide an accurate length and width for the two congruent fields without an explanation.</li> <li>Provide a length of 25 yards and a width of 10 yards.</li> </ul>
0 point text	<p>The response provides inadequate evidence of using properties of congruent rectangles to solve a problem. The response provides major flaws in explanations or irrelevant information.</p> <p>0 point sample answer:</p> <p>For example, the response may:</p> <ul style="list-style-type: none"> <li>State that the new field will be 20 yards wide and 50 yards long.</li> <li>Restate the information provided in the item.</li> <li>Be blank or give irrelevant information.</li> </ul>

**Keywords:** geometry, congruent, rectangle