UNBRIDLED LEARNING
THE VISION FOR KENTUCKY'S FUTURE

GRADE

6

KENTUCKY

K-PREP
Kentucky Performance Rating For Educational Progress

EVERY CHILD

PROFICIENT & PREPARED FOR
S U C C E S S
KENTUCKY DEPARTMENT OF EDUCATION

MATH
SAMPLE
ITEMS

Spring 2012

The following are the general guides that will be used to evaluate your responses to short-answer and extended-response questions in this test.

Kentucky Short-Answer Questions General Scoring Guide

Score Point 2
- You complete all components of the question and communicate ideas clearly.
- You demonstrate an understanding of the concepts and/or processes.
- You provide a correct answer using an accurate explanation as support.

Score Point 1
- You provide a partially correct answer to the question and/or address only a portion of the question.
- You demonstrate a partial understanding of the concepts and/or processes.

Score Point 0
- Your answer is totally incorrect or irrelevant.

Blank
- You did not give any answer at all.

Kentucky Extended-Response Questions General Scoring Guide

Score Point 4
- You complete all important components of the question and communicate ideas clearly.
- You demonstrate in-depth understanding of the relevant concepts and/or processes.
- Where appropriate, you choose more efficient and/or sophisticated processes.
- Where appropriate, you offer insightful interpretations or extensions (generalizations, applications, analogies).

Score Point 3
- You complete most important components of the question and communicate clearly.
- You demonstrate an understanding of major concepts even though you overlook or misunderstand some less-important ideas or details.

Score Point 2
- You complete some important components of the question and communicate those components clearly.
- You demonstrate that there are gaps in your conceptual understanding.

Score Point 1
- You show minimal understanding of the question.
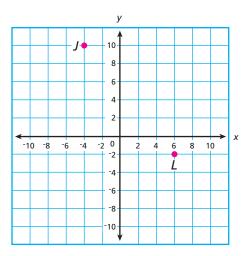- You address only a small portion of the question.

Score Point 0
- Your answer is totally incorrect or irrelevant.

Blank
- You did not give any answer at all.

1

Jamal wants to draw a right triangle and label it *JKL*. He has already plotted points *J* and *L*.

The location of point *K* is:

- 10 units away from point *J*
- 12 units away from point *L*

Which coordinate pair could be the location of point *K*?

A $(-2, -4)$

B $(-4, -2)$

C $(10, 6)$

D $(6, 10)$

2

Mr. Lee has a small apple orchard. There are 7 rows of trees with *n* trees in each row. Which two expressions show different ways to find the total number of trees in Mr. Lee's apple orchard?
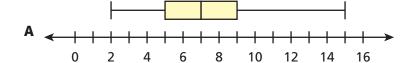
A $n + n + n + n + n + n + n$ and $7 + n$

B $n + n + n + n + n + n + n$ and $7 \cdot n$

C $n \cdot n \cdot n \cdot n \cdot n \cdot n \cdot n$ and $7 + n$

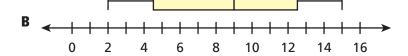**D** $n \cdot n \cdot n \cdot n \cdot n \cdot n \cdot n$ and $7 \cdot n$
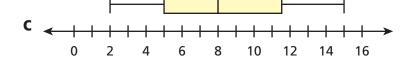
3

A newspaper editor monitored the number of visits to his Web site for 13 consecutive hours. The list below shows the number of visits for each of the 13 hours.
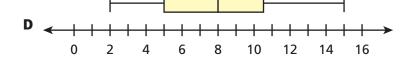
$$\left[3,\ 2,\ 8,\ 5,\ 9,\ 12,\ 15,\ 8,\ 5,\ 13,\ 11,\ 9,\ 7\right]$$

Which box plot correctly displays the data about the number of visits to the editor's Web site?

A

B

C

D

4

A worker will install carpet on the shaded part of the rectangular floor pictured below.

Floor Space

What is the total amount of carpet, in square yards, the worker needs?

A 40

B 25

C 22

D 20

5

If only the values within the brackets are substituted for d, which list contains only values that would make the inequality $d + 2\frac{3}{4} < 15$ true?

$$\left\{6.5,\ 10,\ 12\frac{1}{2},\ 16.5,\ 17\frac{3}{4}\right\}$$

A 6.5 and 10

B 6.5, 10, and $12\frac{1}{2}$

C $12\frac{1}{2}$, 16.5, and $17\frac{3}{4}$

D 16.5 and $17\frac{3}{4}$

6

Coach Wendell recorded the number of football players at training camp each day for several days on the dot plot below.

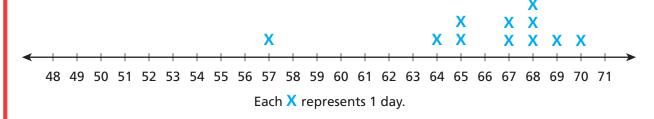**Number of Football Players Each Training Camp Day**

Each **X** represents 1 day.

Part A What is the difference between the interquartile range and the range of the data? Show your work or explain your thinking.

Part B Explain how the answer you gave in **part A** would be affected if you deleted the lowest data point.

RUBRIC	
Score Point 2	• You complete all components of the question and communicate ideas clearly. • You demonstrate an understanding of the concepts and/or processes. • You provide a correct answer using an accurate explanation as support.
Score Point 1	• You provide a partially correct answer to the question and/or address only a portion of the question. • You demonstrate a partial understanding of the concepts and/or processes.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.
Note: No part can be incomplete or incorrect and receive full credit.	

Correct Answer:

Part A The range is 13, 70 − 57 = 13, the interquartile range is 3, 68 − 65 = 3. The difference is 10, 13 − 3 = 10.

Part B The range would be 6, 70 − 64 = 6, the interquartile range would be 3, 68 − 85 = 3. The difference would be 3, 6 − 3 = 3. So my answer in **part B** would be reduced by 7 since 10 − 3 = 7.

Annotated Student Response

SAMPLE 2-POINT RESPONSE

NOTE: This is not a student response.


```
1. A  11 data points (odd #)
      median is 67
   lq 65  uq 68   IQ range  68-65=3
   range 60
        57
         13                Difference is 13-3=10

   B  remove lowest point and get 10 data points (even #)
      median is 67.5
   lq 65  uq 68   IQ range still 3
   range 70                Difference is 6-3=3
        -64                so the difference went down 7
         6
```

ANNOTATION – 2-POINT RESPONSE

The student finds the correct values for the range and interquartile range. The student finds the correct difference between these two values.

The student finds the new range, uses the interquartile range to find the difference, and explains how the answer in part A was affected.

Overall, the student earns 2 points.

Annotated Student Response

SAMPLE 1-POINT RESPONSE

1.
A.)The range is 13
  6 7 0
   5 7
   13

B) Then we would subtract the next lowest number.

ANNOTATION – 1-POINT RESPONSE

The student demonstrates partial understanding.

The student finds the correct range but makes no attempt to find the interquartile range.

The student describes the process used after removing the lowest value from the range.

Overall, the student earns 1 point.

Annotated Student Response

SAMPLE 0-POINT RESPONSE

> A) The difference is... that, 57 only has 1 x, 64 only has 1 x, and 69 = 1 x, and 70 = 1x, 65 = 2 x's, 67 = 2 x's, 68 = 3 x's. Some only have 1 x and some have 2 x's, and some even have 3 x's.
>
> B) My answer in part A would be reflected because, i deleted the lowest data point, so if i deleted the lowest = 1 x. So then I would only have numbers with 2 x's or 3 x's.

ANNOTATION – 0-POINT RESPONSE

The student counts the number of instances each value occurred but makes no attempt to find the range.

The student counts the number of instances each value occurred when the lowest value was removed but makes no attempt to find the range.

Overall, the student earns 0 points.

7

A package of six construction toys costs $14.94, not including tax. If purchased separately, each truck is $2.99, not including tax. What is the difference in the unit rate and the individual rate? Show your work or explain your thinking.

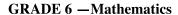| RUBRIC	
Score Point 2	• You complete all components of the question and communicate ideas clearly. • You demonstrate an understanding of the concepts and/or processes. • You provide a correct answer using an accurate explanation as support.
Score Point 1	• You provide a partially correct answer to the question and/or address only a portion of the question. • You demonstrate a partial understanding of the concepts and/or processes.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.
Note: No part can be incomplete or incorrect and receive full credit.	

Correct Answer:

The cost for 6 trucks is $14.94 which results in each truck costing $2.49.
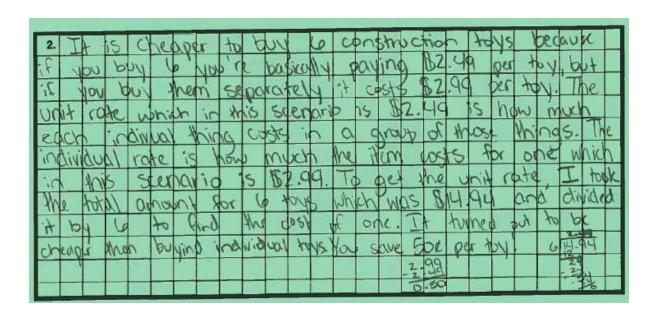
$14.49 \div 6 = 2.49$

Individually the trucks are $2.99 so the difference between buying the trucks individually or in bulk is $0.50.

$2.99 - 2.49 = 0.50$

Annotated Student Response

SAMPLE 2-POINT RESPONSE

> 2. It is cheaper to buy 6 construction toys because if you buy 6 you're basically paying $2.49 per toy, but if you buy them separately it costs $2.99 per toy. The unit rate which in this scenario is $2.49 is how much each individual thing costs in a group of those things. The individual rate is how much the item costs for one which in this scenario is $2.99. To get the unit rate, I took the total amount for 6 toys which was $14.94 and divided it by 6 to find the cost of one. It turned out to be cheaper than buying individual toys. You save 50¢ per toy.
>
> 2.99
> − 2.49
> 0.50
>
> 2.49
> 6)14.94
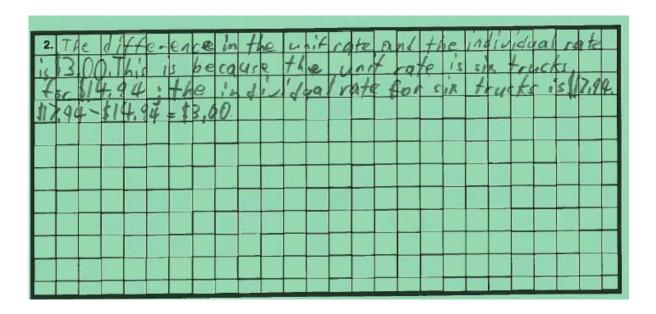
ANNOTATION – 2-POINT RESPONSE

The student finds the difference between the unit rate and the individual rate and explains why this is correct.

Overall, the student earns 2 points.

Annotated Student Response

SAMPLE 1-POINT RESPONSE

> 2. The difference in the unit rate and the individual rate is 3.00. This is because the unit rate is six trucks, for $14.94 ; the individual rate for six trucks is $17.94. $17.94 - $14.94 = $3.00.
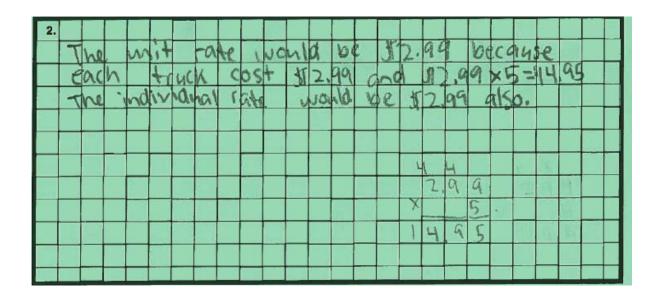
ANNOTATION – 1-POINT RESPONSE

The student finds the difference between the total cost if the toys are bought individually and if the toys are bought by the unit but does not compare the price of the individual toys.

Overall, the student earns 1 point.

Annotated Student Response

SAMPLE 0-POINT RESPONSE
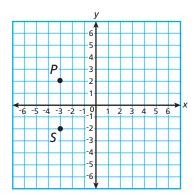

ANNOTATION – 0-POINT RESPONSE

The student finds an incorrect total cost when the toys are bought individually.

Overall, the student earns 0 points.

8

A coordinate plane with points *P* and *S* is shown below.

Part A Plot point *Q* so that it is a reflection of point *P* across the *y*-axis. What are the coordinates of point *Q*? Explain your thinking.

Part B The coordinates of point *S* are (⁻3, ⁻2). Explain how point *S* is related to point *P*.

Part C Point *R* is plotted on the coordinate graph so that line segments *SR* and *PQ* are a reflection of each other. What would have to be the coordinates of point *R*? Explain your thinking.

RUBRIC	
Score Point 4	Student scores 4 points.
Score Point 3	Student scores 3 – 3.5 points.
Score Point 2	Student scores 2 – 2.5 points.
Score Point 1	Student scores 0.5 – 1.5 points. OR Student demonstrates minimal understanding of representing points with negative number coordinates on a coordinate plane.
Score Point 0	Student's response is totally incorrect or irrelevant.
Blank	No student response.
Note: No part can be incomplete or incorrect and receive full credit.	

Score Points

Part a: score 1.5 points correct answer with correct and complete work or explanation
OR
score 1 point   correct answer with incomplete work or explanation
OR
score point 0.5 correct answer with no work shown
OR
incorrect answer due to a calculation error (work must be shown)
OR
some correct procedure
OR
vague explanation

Part b: score 1.5 points correct answer with correct and complete work or explanation
OR
score 1 point   correct answer with incomplete work or explanation
OR
score point 0.5 correct answer with no work shown
OR
incorrect answer due to a calculation error (work must be shown)
OR
some correct procedure
OR
vague explanation only

Part c: score 1 point   correct answer with correct and complete work or explanation
OR
score 0.5 point correct answer with incomplete work or explanation
OR
some correct procedure
OR
vague explanation only

Correct Answer:

Part A: Point *Q* should be plotted at (3, 2).

Part B: Point *S* is the reflection of point *P* across the *x*-axis.

OR

The *x*-coordinate in both points is the same number.

OR

Each point is equal distance from the *x*-axis.

OR
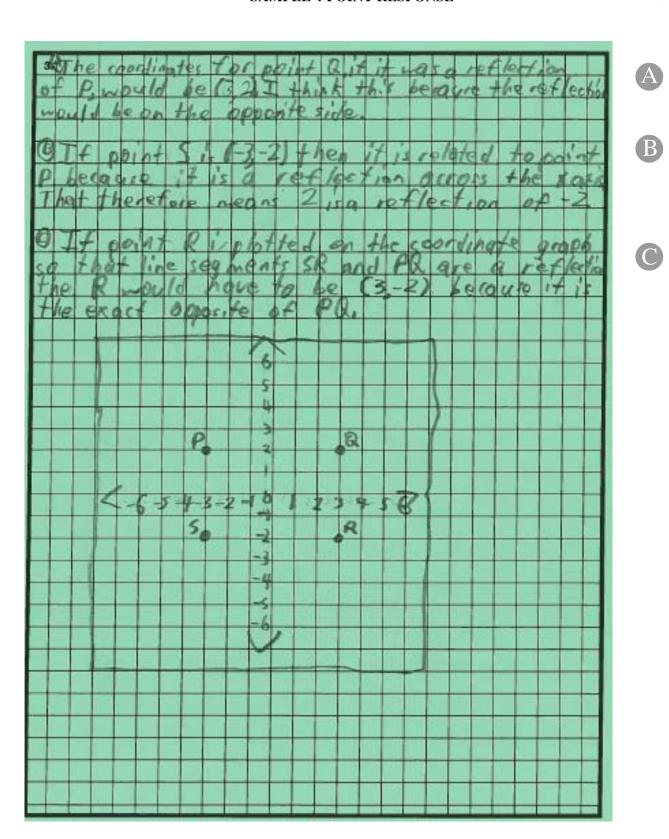
The points are opposite of each other.

Part C: Point *R* must be plotted at $(3, {}^-2)$ so that line segments *SR* and *PQ* are a reflection of each other.

Annotated Student Response

SAMPLE 4-POINT RESPONSE

NOTES

(A) 1.5

(B) 1.5

(C) 1.0

ANNOTATION - 4-POINT RESPONSE

A The student correctly plots the given point, gives its coordinates, and explains why this is correct. (1.5 points)

B The student correctly describes the relationship between points S and P. (1.5 points)

C The student correctly plots point R, gives its coordinates, and explains why this is correct (1 point)

Overall, the student earns 4 points.

Annotated Student Response

SAMPLE 3-POINT RESPONSE

NOTES

3.

Ⓐ

The coordnats of Q are (3,2). I know this because if P is (-3,2) and Q is a reflaction of P at the Y axis it will be on the same line just not (3,2) it will be (3,2

Ⓑ S is related to point P because S is a reflection of P from the X-axis so its on the same line as P just across from the X-axis.

Ⓒ the coordnuts for point R will be (3,-2) so it will make the points a square if conected because they are all reflection of one another. You can see this on the graph above. That they are all reflections of one another

A 1.5

B 1.5

C 0.5

ANNOTATION - 3-POINT RESPONSE

A The student correctly plots the given point, gives its coordinates, and explains why this is correct. (1.5 points)

B The student correctly describes the relationship between points S and P. (1.5 points)
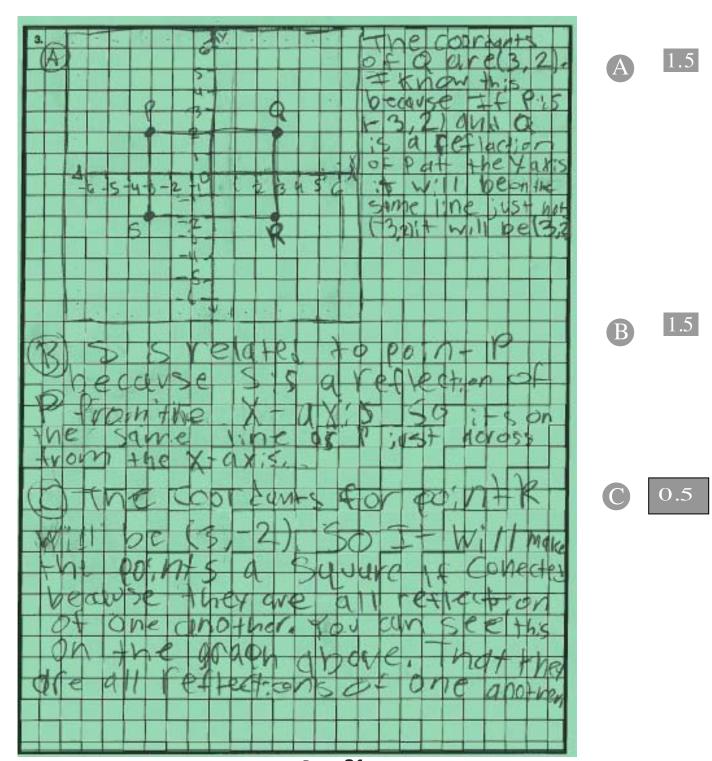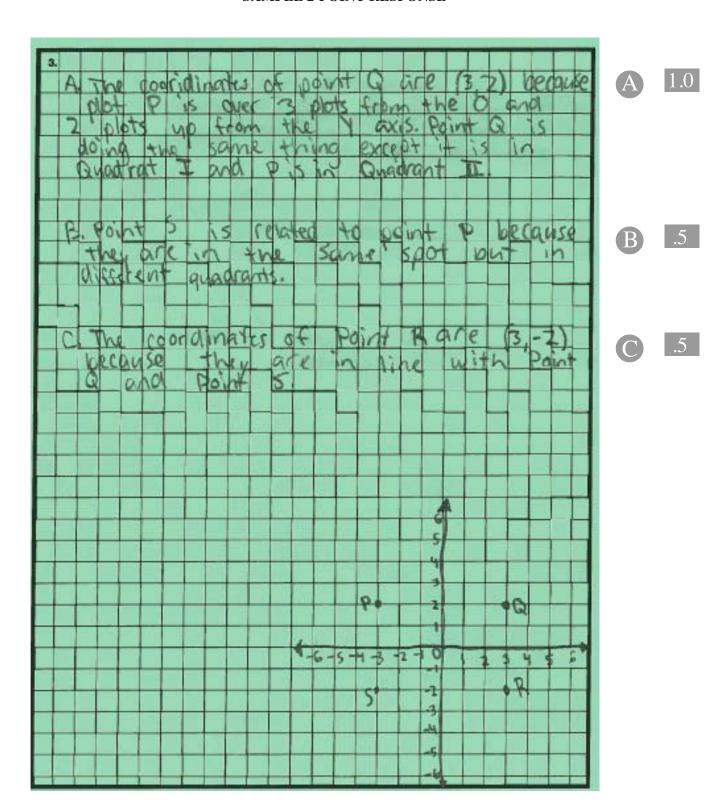
C The student correctly plots point R and gives its coordinates, but gives an imprecise explanation ("square" is incorrect) of why this is correct. (0.5 points)

Overall, the student earns 3.5 points.

Annotated Student Response

SAMPLE 2-POINT RESPONSE

3.

A. The coordinates of point Q are (3,2) because plot P is over 3 plots from the O and 2 plots up from the Y axis. Point Q is doing the same thing except it is in Quadrat I and P is in Quadrant II.

B. Point S is related to point P because they are in the same spot but in different quadrants.

C. The coordinates of Point R are (3,-2) because they are in line with Point Q and Point S.

(A) 1.0

(B) .5

(C) .5

ANNOTATION - 2-POINT RESPONSE

A The student correctly plots the given point and gives its coordinates, but gives a vague explanation of why this is correct. (1 point)

B The student gives a vague description of the relationship between points S and P. (0.5 points)

C The student correctly plots point R and gives its coordinates, but gives a vague explanation of why this is correct. (0.5 points)
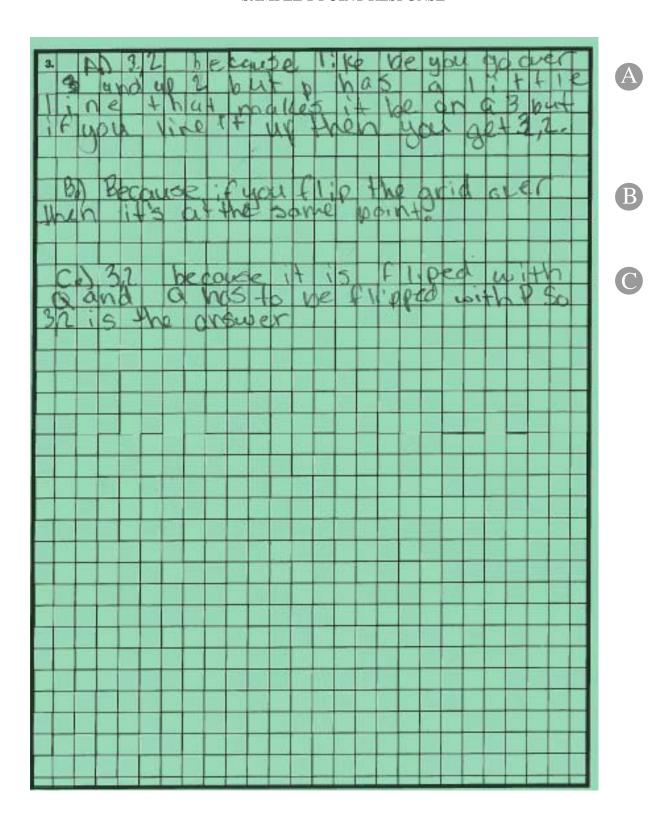
Overall, the student earns 2 points.

Annotated Student Response

SAMPLE 1-POINT RESPONSE   NOTES

2. A) 3,2 because like be you go over 3 and up 2 but p has a little line that makes it be on a 3 but if you line it up then you get 3,2.

B) Because if you flip the grid over then it's at the same point.

C) 3,2 because it is fliped with Q and Q has to be fliped with P so 3,2 is the answer

A   .5

B   .5

C   0.0

ANNOTATION - 1-POINT RESPONSE

A The student gives the correct coordinates, but does not plot them and gives no explanation of why the coordinates are correct. (0.5 points)

B The student gives a vague description of the relationship between points S and P. (0.5 points)
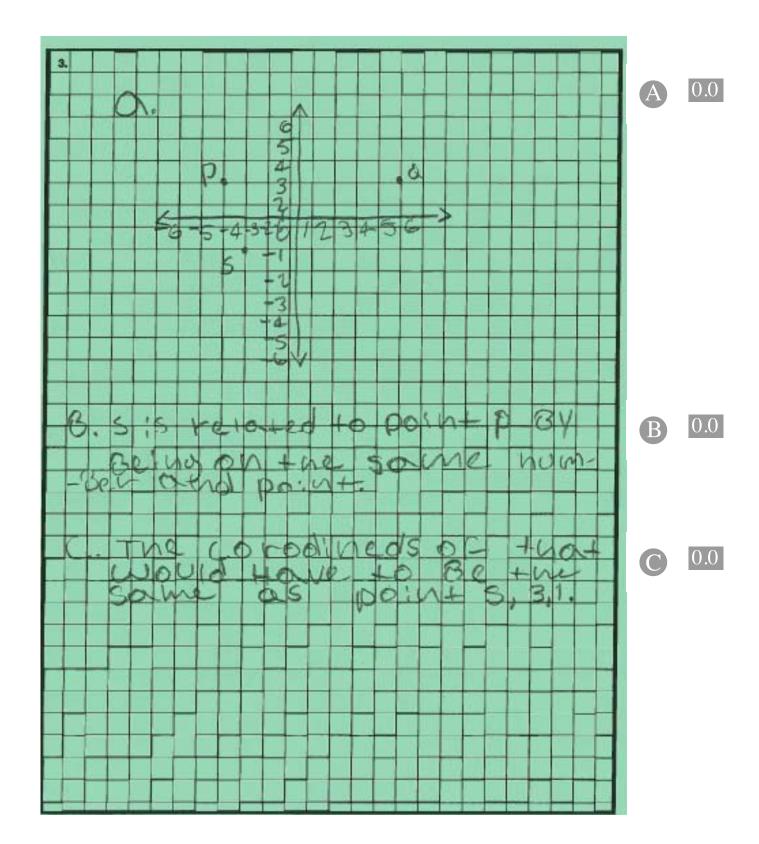
C The student gives incorrect coordinates for point R. (0 points)

Overall, the student earns 1 point.

Annotated Student Response

SAMPLE 0-POINT RESPONSE

a.

A 0.0

B. S is related to point P BY Being on the same num- -ber and point.

B 0.0

C. The corodineds of that would Have to Be the same as point S, 3,1.

C 0.0

ANNOTATION - 0-POINT RESPONSE

A The student does not give the correct coordinates. (0 points)

B The student does not describe the relationship between the two points. (0 points)

C The student does not give the correct coordinates for point R. (0 points)

Overall, the student earns 0 points.

Item Information

Question Number	Key	DOK*	KCAS Primary Standard**
1	D	2	6.G.3
2	B	2	6.EE.4
3	C	2	6.SP.4
4	B	2	6.G.1
5	A	2	6.EE.5
6	NA	3	6.SP.5c
7	NA	2	6.RP.3b
8	NA	2	6.NS.6b

*DOK is the abbreviation for Depth of Knowledge. Please note that DOK is associated to the complexity level of an assessment item and is not aligned to the standard. Further information regarding DOK can be accessed on the Kentucky Department of Education website: http://www.education.ky.gov/kde/instructional+resources/curriculum+documents+and+resources/core+content+for+assessment/core+content+for+assessment+4.1/content+specific+core+content+for+assessment+dok+support+materials.htm.

**Further information regarding Common Core Standards can be accessed on the Common Core website: http://www.corestandards.org.