Ohio Achievement Assessment
Grade 6 Mathematics

Spring 2011

Answer Key
and
Scoring Guidelines

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Answer Key
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Item No.	Type	Content Standard	Content Standard Benchmark	Key
1	Multiple Choice	Number, Number Sense and Operations	D	D
2	Multiple Choice	Patterns, Functions, and Algebra	C	Not for public release
3	Multiple Choice	Number, Number Sense and Operations	G	C
4	Multiple Choice	Geometry and Spatial Sense	A	C
5	Multiple Choice	Data Analysis and Probability	A	B
6	Short Answer	Geometry and Spatial Sense	D	2 pt rubric
7	Multiple Choice	Number, Number Sense and Operations	I	B
8	Multiple Choice	Measurement	C	Not for public release
9	Multiple Choice	Number, Number Sense and Operations	C	Not for public release
10	Multiple Choice	Patterns, Functions, and Algebra	A	D
11	Extended Response	Measurement	F	Not for public release
12-17	**Field Test questions not used for student score**			
18	Multiple Choice	Patterns, Functions, and Algebra	C	Not for public release
19	Multiple Choice	Data Analysis and Probability	E	Not for public release
20	Multiple Choice	Number, Number Sense and Operations	I	Not for public release
21	Short Answer	Geometry and Spatial Sense	J	Not for public release
22	Multiple Choice	Patterns, Functions, and Algebra	A	Not for public release
23	Multiple Choice	Data Analysis and Probability	A	Not for public release
24	Multiple Choice	Patterns, Functions, and Algebra	C	Not for public release
25	Multiple Choice	Measurement	C	Not for public release
26	Short Answer	Patterns, Functions, and Algebra	A	2 pt rubric
27	Multiple Choice	Number, Number Sense and Operations	I	Not for public release
28	Multiple Choice	Geometry and Spatial Sense	G	Not for public release
29	Multiple Choice	Patterns, Functions, and Algebra	D	Not for public release
30	Multiple Choice	Data Analysis and Probability	D	A
31	Short Answer	Number, Number Sense and Operations	G	2 pt rubric
32	Multiple Choice	Measurement	G	D
33	Multiple Choice	Patterns, Functions, and Algebra	H	Not for public release
34	Multiple Choice	Number, Number Sense and Operations	D	Not for public release
35	Multiple Choice	Geometry and Spatial Sense	I	Not for public release
36	Extended Response	Data Analysis and Probability	G	4 pt rubric
37	Multiple Choice	Number, Number Sense and Operations	I	B
38	Multiple Choice	Geometry and Spatial Sense	F	Not for public release
39	Multiple Choice	Measurement	F	Not for public release
40	Multiple Choice	Data Analysis and Probability	B	Not for public release
41	Short Answer	Number, Number Sense and Operations	H	Not for public release
42	Multiple Choice	Geometry and Spatial Sense	H	B
43	Multiple Choice	Patterns, Functions, and Algebra	L	B
44	Multiple Choice	Number, Number Sense and Operations	E	C
45	Multiple Choice	Patterns, Functions, and Algebra	G	B

Limited = 0-14; Basic = 15-19; Proficient = 20-28; Accelerated = 29-33; Advanced = 34-50
Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

6. In your **Answer Document**, state one property that squares and rhombuses share. Then state one property that one of these shapes has but the other shape does not necessarily have. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Sample Response:** • The lengths of the sides are equal for both figures. They are different because a square has all right angles. • Same: Opposite angles are equal. Different: All angles are congruent for squares. The focus of this task is describing similarities and differences of squares and rhombuses using their properties. The response provides one correct similarity and one correct difference.
1 point	The response shows partial evidence of describing similarities and differences of squares and rhombuses using their properties; however, the solution may be incomplete or slightly flawed. **Sample Response:** • Only provide how the figures are different but not address a similarity. • Only provide one correct similarity. • Only provide that a square is a rhombus without specific characteristics.
0 point	The response provides inadequate evidence of describing similarities and differences of squares and rhombuses using their properties. The response provides major flaws in explanations or irrelevant information. **Sample Response:** • State that the shapes are the same. • Restate the information provided in the item. • Be blank or give irrelevant information.

26. Steve found a piece of paper with the numbers of a pattern written on it as shown.

The paper was ripped, and the first two numbers in the pattern were missing.

In your **Answer Document** state a rule for the pattern.

Then, show how to use your rule to find the first two numbers in the pattern. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Sample Response:** • Beginning with 7, the rule is to multiply the current number by 2, then add 1 to get the next number. The first two numbers in the pattern are 1, 3. I know this because 3 x 2 +1 = 7, and 1 x 2 +1 = 3. • The first number is 1 and the second number is 3. The rule to find the previous number is subtract 1, then divide by 2. $(7-1)\div 2=3$ $(3-1)\div 2=1$ The focus of this task is analyzing a pattern to determine the rule and to find the missing terms in the pattern. The response provides a rule for the pattern and the first two numbers in the pattern using that rule with supporting work.
1 point	The response shows partial evidence of analyzing a pattern to determine the rule and to find the missing terms in the pattern; however, the solution may be incomplete or slightly flawed. **Sample Response:** • Only provide the first two terms in the pattern. • Correctly state a rule for the pattern but fail to correctly determine the first two terms in the pattern. • Provide the next two terms in the pattern.
0 point	The response provides inadequate evidence of analyzing a pattern to determine the rule and to find the missing terms in the pattern. The response provides major flaws in explanations or irrelevant information. **Sample Response:** • Correctly determine only one of the missing terms and provide no or an incorrect rule. • Restate the information provided in the item. • Be blank or give irrelevant information.

31. Ms. Mason is packaging science supplies for groups of students. She has 40 hand lenses, 32 pairs of tweezers and 28 pens. She wants to package the supplies so that every group has the same number of hand lenses, tweezers and pens.

Use prime factorization to determine the greatest number of packages she can make without having leftover items.

Then, determine the number of lenses, tweezers and pens that will be in each package.

In your **Answer Document** show how you determined your answer. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Sample Response:** Four bags could be made because each number has 2 x 2 as a factor. Hand lenses: 40 = 2 x 2 x 2 x 5 Tweezers: 32 = 2 x 2 x 2 x 2 x 2 Pens: 28 = 2 x 2 x 7In each bag there would be 10 hand lenses, 8 tweezers and 7 pens. Each of the original numbers has 4 as the greatest common factor (GCF), so I divided each number by 4 to get the number of each item to go into the bags. The focus of this task is using the prime factorization of composite numbers to recognize the greatest common factor (GCF). The response provides adequate evidence of using prime factorization to find the greatest number of packages needed and the number of each item in the packages with supporting work.
1 point	The response provides partial evidence of using the prime factorization of composite numbers to recognize the greatest common factor (GCF); however, the solution is incomplete and/or contains flaws. **Sample Response:** • Only provide the correct number of items in each package. • Provide the correct number of packages but fail to state the number of each item in the packages.
0 point	The response provides inadequate evidence of using the prime factorization of composite numbers to recognize the greatest common factor (GCF). The response provides major flaws in explanations or irrelevant information. **Sample Response:** • Provide incorrect prime factorization that leads to an incorrect answer. • Only provide an incorrect number of bags or items in each bag. • Restate the information provided in the item. • Be blank or give irrelevant information.

36. The number of Jeff's Diners from 2000 to 2003 is shown. In your **Answer Document** create an appropriate graph of these data to predict the number of restaurant locations for 2007. Be sure to give your graph a title and labels.

Explain how you predicted the number of restaurants in 2007. (**2 points**)

Scoring Guidelines

Points	Student Response
4 point	**Sample Response:** • It looked like it increased about 110 restaurants each year, so I added 110 restaurants each year up to 2007, and the answer was 879 (439 + 110 + 110 + 110 + 110 = 879). • It goes up by about 100 restaurants a year. So, I extended my graph by adding 100 restaurants each year. So, 439 + 100 + 100 + 100 + 100 = 839 restaurants. The focus of this task is creating an appropriate graph and using it to make logical inferences. The response provides an appropriate graph with title and labels **AND** an adequate prediction with explanation. **NOTE**: Line graphs, scatter plots and bar graphs are all acceptable types of graphs. Also, an acceptable range for the prediction of restaurants in 2007 should be from 839 to 900 restaurants depending on the mathematics involved in the explanation.
3 point	The response provides evidence of creating an appropriate graph and using it to make logical inferences; however, the solution may contain a slight error, a flaw or a vague explanation. **Sample Response:** • Provide an accurate graph without titles or labels and provide an adequate prediction with supporting work or an adequate explanation. • Provide an accurate graph with labels, title, and an accurate prediction but fail to provide an adequate explanation or work for the prediction. • Provide an appropriate graph with minor flaws, but extend the graph to show an appropriate prediction with an adequate explanation.
2 point	The response provides partial evidence of creating an appropriate graph and using it to make logical inferences; however, the solution is incomplete and/or contains minor flaws. **Sample Response:** • Only provide a correct graph of the given data with title and labels. • Only provide an accurate prediction with supporting work or explanation.

1 point	The response provides minimal evidence of creating an appropriate graph and using it to make logical inferences. The response contains major flaws and the explanation is incomplete or missing. **Sample Response:** • Only provide an explanation (e.g., there will be 110 more locations each year). • Provide an accurate graph of the given data without title and/or labels.
0 point	The response provides inadequate evidence of creating an appropriate graph and using it to make logical inferences. The response provides major flaws in explanations or irrelevant information. **Sample Response:** • Provide a circle graph and fail to adequately address the prediction component. • Restate the information provided in the item. • Be blank or give irrelevant information.