Ohio Achievement Test
Grade 8 Mathematics

May 2008

Answer Key
and
Scoring Guidelines

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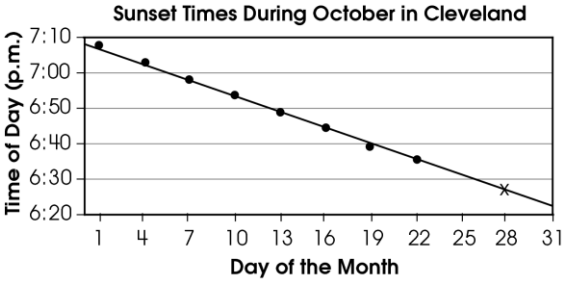
Item No.	Type	Content Standard	Content Standard Benchmark	Key
1	Multiple Choice	Number, Number Sense, and Operations	E	C
2	Multiple Choice	Measurement	B	A
3	Multiple Choice	Patterns, Functions, and Algebra	D	Not for Public Release
4	Multiple Choice	Data Analysis and Probability	B	Not for Public Release
5	Multiple Choice	Geometry and Spatial Sense	C	A
6	Short Answer	Data Analysis and Probability	A; F	2 pt rubric
7	Multiple Choice	Number, Number Sense, and Operations	G	D
8	Multiple Choice	Patterns, Functions, and Algebra	D	Not for Public Release
9	Multiple Choice	Geometry and Spatial Sense	A	C
10	Multiple Choice	Patterns, Functions, and Algebra	B	D
11	Short Answer	Measurement	B	2 pt rubric
12	Multiple Choice	Number, Number Sense, and Operations	B	Not for Public Release
13 – 18	**Field Test Items Not Used in Student Score**			
19	Multiple Choice	Geometry and Spatial Sense	B	B
20	Multiple Choice	Data Analysis and Probability	K	C
21	Short Answer	Patterns, Functions, and Algebra	A	Not for Public Release
22	Multiple Choice	Number, Number Sense, and Operations	F	B
23	Multiple Choice	Patterns, Functions, and Algebra	B	Not for Public Release
24	Multiple Choice	Measurement	D	C
25	Multiple Choice	Data Analysis and Probability	D	B
26	Extended Response	Geometry and Spatial Sense	D	Not for Public Release
27	Multiple Choice	Patterns, Functions, and Algebra	C	B
28	Multiple Choice	Number, Number Sense, and Operations	G	Not for Public Release
29	Multiple Choice	Measurement	A	Not for Public Release
30	Multiple Choice	Data Analysis and Probability	A	Not for Public Release
31	Short Answer	Number, Number Sense, and Operations	B	2 pt rubric
32	Multiple Choice	Geometry and Spatial Sense	D	Not for Public Release
33	Multiple Choice	Measurement	C	Not for Public Release
34	Multiple Choice	Patterns, Functions, and Algebra	H	D
35	Multiple Choice	Measurement	D	Not for Public Release
36	Short Answer	Data Analysis and Probability	A	Not for Public Release
37	Multiple Choice	Measurement	E	Not for Public Release
38	Multiple Choice	Data Analysis and Probability	D	C
39	Multiple Choice	Patterns, Functions, and Algebra	J	Not for Public Release
40	Multiple Choice	Data Analysis and Probability	F	Not for Public Release
41	Multiple Choice	Number, Number Sense, and Operations	H	C
42	Multiple Choice	Patterns, Functions, and Algebra	G	A
43	Multiple Choice	Number, Number Sense, and Operations	G	Not for Public Release
44	Multiple Choice	Patterns, Functions, and Algebra	C	D

Limited = 0-9; Basic = 10-15; Proficient = 16-28; Accelerated = 29-36; Advanced = 37-46
Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

6. In your **Answer Document**, use the graph to predict what time the sun will set on October 28. Explain the strategy you used to make your prediction. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	The focus of this task is to analyze the data in a scatterplot, approximate the line of best fit and make a prediction based on the analysis. The response provides an appropriate time that the sun will set and explains the strategy used to determine the time for the sunset. **Sample response**: It looks like the time decreases about 5 minutes every 3 days. The last data point is at about 6:36 on Oct. 22. Then Oct. 28 is 6 days later, so the sun will set at about 6:26. I think the sun will set at 6:27. The points in the graph are close to a straight line so I extended the line and it looked like the sunset time would be about 6:27 on the 28th.  **NOTE:** A response in the range of 6:24 to 6:30 is acceptable, with appropriate justification.
1 point	The response shows partial evidence of analyzing the data in a scatterplot, approximating the line of best fit and making a prediction based on the analysis; however, the response may be incomplete or slightly flawed. **Sample Response**: The response may: • give an acceptable time only, with a missing or unclear explanation of strategy used. • provide an appropriate explanation for determining the time but fail to state an appropriate time.
0 point	The response provides inadequate evidence of analyzing the data in a scatterplot, approximating the line of best fit and making a prediction based on the analysis. The response provides an explanation with major flaws and errors of reasoning. **Sample Response**: The response may: • state an inappropriate time only. • restate the information provided in the item. • be blank or give irrelevant information.

11. In your **Answer Document**, determine the dimensions of the rectangular box that meets these conditions. Show your work. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	**Sample Response**: • V(cylinder) = $\pi \times r^2 \times h$ V(cylinder) = 3.14 x 9 x 10 = 282.6 in^3 V(box) = l x w x h 282.6 in^3= l x w x10 in. 28.26 in^2= l x w Any length and width whose product is approximately 28.26 is acceptable. • V = $\pi \times r^2 \times h$ V = $\pi \cdot 9.10$ V = 282.7433 282.7 = l x w x 10 28.3 = l x w 28 = l x w 7 x 4 x 10 could be the dimensions of the box. The focus of this task is to use formulas to find the volume of cylinders and find the dimensions of a rectangular prism. A correct response will find the volume of a cylinder and determine the dimensions of a rectangular prism with a given volume and height. The response gives the approximate correct volume of the cylinder and shows the steps needed to determine an appropriate length and width for the 10-inch-tall box. **NOTE**: Leaving answers in terms of π is acceptable.
1 point	The response provides partial evidence of how to find the volume of a cylinder and to determine the length and width of a rectangular prism with a given volume and height; however, the solution may be incomplete or slightly flawed. **Sample Response**: The response may: • Use the correct formulas but make a calculation error that leads to an incorrect answer. • Use the correct formulas and calculations, but fail to provide a final answer; e.g., correctly finds the volume of the cylinder and attempts to find the length and width.
0 point	The response provides inadequate evidence of how to find the volume for a cylinder and a prism, or there is no response. **Sample Response**: The response may: • State erroneous formulas and arrive at an incorrect solution. • Simply state dimensions of a box. • State only the volume of the cylinder. • Be blank or give irrelevant information.

31. In your **Answer Document**, explain why each number is a rational number or an irrational number. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	The focus of this task is to identify numbers that are rational numbers and explain why they are rational numbers. The response provides an explanation for why each number listed belongs within the set of rational numbers. They are all rational numbers because each can be written as the ratio of two integers. $\frac{5}{12}$ is rational. You can write 247 as $\frac{247}{1}$, –0.45 as $-\frac{45}{100}$, and 0 as $\frac{0}{1}$. Rational numbers are fractions, decimals that end or repeat, whole numbers and integers. $\frac{5}{12}$ is a fraction, 0 is a whole number, 247 is a whole number, –0.45 is a decimal. All four numbers are rational. Rational numbers are fractions, ending or repeating decimals, whole numbers and integers. Each of these numbers is in one of these categories, so they are all rational.
1 point	The response shows partial evidence of identifying which numbers are rational numbers and explaining why the numbers are rational numbers; however, the solution is incomplete or slightly flawed. **Sample Response**: The response may: • Correctly explain why 2 or 3 of the numbers fit within the rational number set but define the other numbers incorrectly or not at all. • State all the numbers are rational but give an incomplete or partially inaccurate explanation.
0 point	The response provides inadequate evidence of identifying which numbers are rational numbers and explaining why the numbers are or are not rational numbers. The response has major flaws or errors in reasoning. **Sample Response**: The response may: • State all numbers are rational with no explanation. • State that only one of the numbers is rational, and give a correct explanation. • Describe only one of the numbers as belonging to a set; for example, state that 247 is a whole number. • Restate the information provided in the stem. • Be blank or give irrelevant information.