Ohio Achievement Test
Grade 4 Mathematics

May 2007

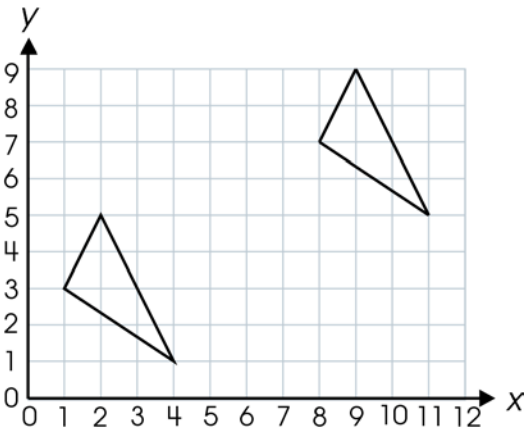
Answer Key
&
Scoring Guidelines

GRADE 4 MATHEMATICS
ANSWER KEY
May 2007

Item No.	Type	Content Standard	Content Standard Benchmark(s)	Key
1 – 3	**Not for Public Release**			
4	Multiple Choice	Measurement	A	A
5	Short Answer	Geometry and Spatial Sense	J	S
6	Multiple Choice	Number, Number Sense and Operations	K	B
7	**Not for Public Release**			
8	Multiple Choice	Data Analysis and Probability	E	D
9	Multiple Choice	Geometry and Spatial Sense	A	C
10	Short Answer	Number, Number Sense and Operations	B	S
11 – 14	**Not for Public Release**			
15	Short Answer	Data Analysis and Probability	G	S
16	Multiple Choice	Number, Number Sense and Operations	E	C
17	**Not for Public Release**			
18	Multiple Choice	Measurement	A	C
19	**Not for Public Release**			
20	Extended Response	Patterns, Functions, and Algebra	A	E
21 – 26	**Field test questions not used in student score**			
27	**Not for Public Release**			
28	Multiple Choice	Data Analysis and Probability	B	B
29	**Not for Public Release**			
30	Multiple Choice	Measurement	B	C
31	Multiple Choice	Number, Number Sense and Operations	F	D
32 – 33	**Not for Public Release**			
34	Multiple Choice	Geometry and Spatial Sense	F	A
35	Multiple Choice	Data Analysis and Probability	C	D
36	Multiple Choice	Number, Number Sense and Operations	J	C
37	Multiple Choice	Patterns, Functions, and Algebra	D	D
38 – 39	**Not for Public Release**			
40	Multiple Choice	Number, Number Sense and Operations	A	B
41 – 44	**Not for Public Release**			
45	Multiple Choice	Patterns, Functions, and Algebra	F	B
46	Multiple Choice	Number, Number Sense and Operations	L	D

Limited = 0-18; Basic = 19-25; Proficient = 26-35; Accelerated = 36-40; Advanced = 41-52
Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

5. Two triangles are drawn on the grid.



Which transformation — reflection (flip), translation (slide) or rotation (turn) — can Bill use to determine whether the two triangles are congruent? _____

Explain how this transformation shows Bill that the two triangles are congruent.

Scoring Guidelines

Points	Student Response
2	The focus of this task is to determining whether two shapes are congruent using transformations. The response provides the correct transformation and an adequate explanation of why the transformation can show congruency. **NOTE**: Acceptable responses may correctly state and explain how a combination of transformations can be used to show that the triangles are congruent.
1	The response shows partial evidence of determining whether two shapes are congruent using transformations; however, the response may be incomplete or slightly flawed.
	1 point sample answer: For example, the response may: • Provide the correct answer of translation without an adequate explanation of the transformation showing congruency. • Provide an adequate explanation of the transformation showing congruency but not identify the correct transformation.
0	The response provides inadequate evidence of determining whether two shapes are congruent using transformations. The response provides an explanation with major flaws and errors of reasoning.
	0 point sample answer: For example, the response may: • State reflection. • Restate the information provided in the item. • Be blank or give irrelevant information.

10. Eight students are shown.

Write a fraction and a decimal that represents the number of students wearing hats.

Scoring Guidelines

Points	Student Response
2	The focus of this task is generating equivalent forms of fractions and decimals. The response provides a fraction and a decimal that represent the number of students wearing hats. $\frac{6}{8}$, 0.75 $\frac{3}{4}$, 0.75
1	The response shows evidence of generating equivalent forms of fractions and decimals; however, the response may be incomplete or slightly flawed.
	1 point sample answer: For example, the response may: • Provide a correct fraction but fail to provide an appropriate decimal. • Provide a correct decimal but fail to provide an appropriate fraction.
0	The response provides inadequate evidence of generating equivalent forms of fractions and decimals. The response may have major flaws or errors in reasoning.
	0 point sample answer: For example, the response may: • State that 0.6 of the students are wearing hats and fail to provide an appropriate fraction. • Be blank or give irrelevant information. • Restate information given in the stem.

15. Raymond has these notebooks and pens in his backpack.

Raymond's Backpack

Notebook	Pens
Science	blue
Reading	green
Writing	red

List all the possible combinations of one notebook and one pen that Raymond could take from his backpack.

Scoring Guidelines

Points	Student Response
2	The focus of this task is to show all possible outcomes using one member from each of two sets; each set contains three members. The response includes a list of all 9 combinations of one notebook and one pen with no incorrect combinations. Science and blue, Science and green, Science and red, Reading and blue, Reading and green, Reading and red, Writing and blue, Writing and green, Writing and red **Note** – Letters or symbols may be used to represent colors, i.e., b – blue. Tables with outcomes are also acceptable.
1	The response provides partial evidence of understanding how to list all possible combinations using one member from each of two sets; however, the response is incomplete or slightly flawed.
	1 point sample answer: For example, the response may: • Include 5, 6, 7 or 8 correct combinations and may include additional incorrect combinations. • Include at least five correct combinations.
0	The response provides evidence of inadequate understanding of listing possible outcomes. The response will provide major flaws in explanations or irrelevant information.
	0 point sample answer: For example, the response may: • Include 4 or fewer correct combinations. • Only list the combinations shown adjacent on the chart. • Be blank or state unrelated statements. • Recopy information from the stem.

20. Anthony's family plants 15 trees each weekend.

Construct a table showing the total number of trees Anthony's family planted after 1, 2, 3, 4, and 5 weekends.

Describe the pattern that tells the number of trees that the family has planted.

If *t* is the total number of trees planted and *w* is the number of weeks, write an expression for the total number of trees, *t*, that are planted after *w* weeks.

If the pattern continues, how many trees will have been planted after 9 weeks? _____

Show or explain how you found your answer.

Scoring Guidelines

Points	Student Response
4	**Example Correct Response**: **OR** **AND** Each week, there are 15 more trees planted, so multiply the week number by 15 to get the total number of trees planted. **AND** *t* = 15 *w* or *t* = 15 × *w* or t = *w* × 15 **AND** If the pattern continues, there will be 135 trees planted after 9 weeks. Because each week, 15 more trees are planted, I just multiplied 9 weeks by 15 trees per week. That gave me 135. The focus of this task is completing a pattern, creating a table and an expression to represent the pattern and then using the pattern to predict. The response includes a correct table for the first five weeks and a correct description of the patterns and a correct expression for *t* in terms of *w*, and a correct prediction.

Week	1	2	3	4	5
Total Trees Planted	15	30	45	60	75

Week	Total Number of Trees
1	15
2	30
3	45
4	60
5	75

3	The response clearly addresses extending and analyzing a pattern. However, the response may include minor errors in calculation or minimal flaws in reasoning. The response may not address all aspects of the questions. For example, the response may: • Correctly construct the table, explain the pattern, and write an expression. • Give all of the correct answers with no explanations. • Include the table, explain the pattern and determine how many after 9 weeks but not state the expression or state an incorrect expression.
2	The response provides evidence of a partial interpretation and solution of extending and describing a pattern. The response may address parts but not the entire problem appropriately. For example, the response may: • State the pattern and construct the table correctly, but fail to give an accurate expression and description after 9 weeks. • State the pattern and what happens after 9 weeks correctly. • Show the table and the expression.
1	The response provides minimal evidence of understanding patterns. The response omits significant aspects of extending and analyzing patterns. However, there is slight evidence of the process needed to yield the correct answer. The response may only address one aspect of the problem correctly. For example, the response may: • Draw a complete and correct table. • State the expression. • Explain the pattern. • State the amount of trees after 9 weeks.
0	The response indicates inadequate evidence of understanding, analyzing and extending patterns. The response may be highly flawed or completely incorrect. For example, the response may: • State that after the first week there are 15 trees and 30 after the second week. • Recopy information given in the stem. • Be blank or make unrelated statements.