

# **Ohio Grade 8 Mathematics Achievement Test**

**March 2006**

**Answer Key  
&  
Scoring Guidelines**

**GRADE 8 MATHEMATICS  
ANSWER KEY  
MARCH 2006**

Question No.	Type	Content Standard	Content Standard Benchmark(s)	Key
1	Multiple Choice	Number, Number Sense and Operations	E	B
2	Not for Public Release			
3	Multiple Choice	Patterns, Functions and Algebra	B	C
4	Not for Public Release			
5	Multiple Choice	Number, Number Sense and Operations	B	A
6	Not for Public Release			
7	Multiple Choice	Number, Number Sense and Operations	C	A
8 – 9	Not for Public Release			
10 – 15	Field test questions not used in student score			
16	Short Answer	Data Analysis and Probability	E	S
17	Not for Public Release			
18	Multiple Choice	Measurement	D	A
19	Multiple Choice	Data Analysis and Probability	F	B
20 – 24	Not for Public Release			
25	Multiple Choice	Patterns, Functions and Algebra	J	A
26	Short Answer	Number, Number Sense and Operations	G	S
27 – 29	Not for Public Release			
30	Multiple Choice	Data Analysis and Probability	C	B
31	Short Answer	Geometry and Spatial Sense	B	S
32	Multiple Choice	Patterns, Functions and Algebra	E	D
33	Not for Public Release			
34	Multiple Choice	Measurement	E	C
35	Multiple Choice	Data Analysis and Probability	K	B
36	Not for Public Release			
37	Multiple Choice	Measurement	B	B
38	Not for Public Release			
39	Multiple Choice	Geometry and Spatial Sense	C	C
40	Multiple Choice	Geometry and Spatial Sense	D	B
41	Not for Public Release			
42	Multiple Choice	Patterns, Functions and Algebra	E	A
43	Multiple Choice	Measurement	B	B
44	Not for Public Release			

Limited = 0-9; Basic = 10-15; Proficient = 16-27; Accelerated = 29-37; Advanced = 38-46  
 Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

16. There are 1000 students in grades 6, 7 and 8 at the Oak Lake Middle School. To determine which after-school activities are preferred by the students at the school, the student council decided to survey 20 eighth graders in a first period French class.

In your **Answer Document**, explain whether or not this is an appropriate sampling technique.

### Scoring Guidelines

Points	Student Response
2 point text	<p>The focus of this task is to correctly apply representative sampling methods. A correct response will indicate that a random sampling of all students was not used in the survey.</p> <p>Sample Correct Responses:</p> <ul style="list-style-type: none"> <li>• Selecting only 8<sup>th</sup> graders in a French class does not represent the student population.</li> <li>• A sample of students in grades 6 and 7 also needs to be surveyed.</li> <li>• Most students do not take French so you need to ask some students taking other classes.</li> </ul>
1	<p>The response provides partial evidence of applying representative sampling methods; however, the explanation may be incomplete or slightly flawed. For example, the response may:</p> <ul style="list-style-type: none"> <li>• State that the sample was not appropriate because it should have asked 6th graders.</li> <li>• State that 20 students is too small.</li> </ul>
0	<p>The response provides inadequate evidence of an understanding of sample sizes and sampling methods. The response has major flaws or irrelevant information. For example, the response may:</p> <ul style="list-style-type: none"> <li>• State that this is an appropriate sampling method.</li> <li>• Restate the information provided in the item.</li> <li>• Be blank or provide irrelevant information.</li> </ul>

26. A store is having a clearance sale on pianos that regularly sell for \$3,900 each. Beginning on July 5th, the price of these pianos will be reduced by 20%. Each morning after July 5th, the remaining pianos will be reduced by an additional 20%. This price reduction will continue until all the pianos are sold.

Mr. Thomas can only spend \$2,200 for a piano.

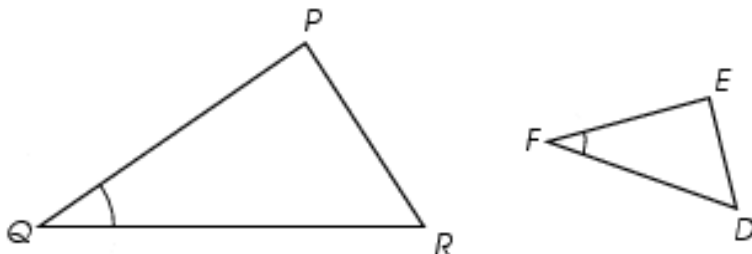
In your **Answer Document**, determine the first day that Mr. Thomas can buy one of the pianos with the money he has and determine the price he paid for the piano. Show your work or explain how you determined your answer.

### Scoring Guidelines

Points	Student Response
2	<p>The focus of this task is to provide evidence of determining the sale price of a discounted item after additional discounts and determining the number of days required to reach a sale price below \$2,200. The response correctly calculates the sale price(s) and provides a correct date or number of days required to be below \$2,200.</p> <p>Sample Correct Response:</p> <ul style="list-style-type: none"> <li>• July 5: <math>3,900 \times .8 = 3,120</math></li> <li>• July 6: <math>3,120 \times .8 = 2,496</math></li> <li>• July 7: <math>2,496 \times .8 = 1996.8</math></li> </ul> <p>The first day Mr. Thomas can buy a piano for \$2,200 or less is July 7, when it will cost \$1996.80.</p> <ul style="list-style-type: none"> <li>• Day 1– <math>3900 \times .20 = 780</math> <math>3900 - 780 = 3120</math></li> <li>• Day 2 – <math>3120 \times .20 = 624</math> <math>3120 - 624 = 2496</math></li> <li>• Day 3– <math>2496 \times .20 = 499.20</math> <math>2496 - 499.20 = 1996.80</math></li> </ul> <p>After three days, Mr. Thomas can buy a piano for \$2200 or less, when it will cost \$1996.80.</p>
1	<p>The response provides partial evidence of determining the sale price of a discounted item after additional discounts and determining the number of days required to reach a sale price below \$2,200; 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 minor miscalculation in determining the sale price that leads to an incorrect date based on these values.</li> <li>• Show correct calculations but omits or incorrectly identifies the date.</li> <li>• Provide a correct date with vague or incomplete work supporting the date.</li> <li>• Provides a correct discount (\$780) for the first day and applies the same discount (\$780) for each day after.</li> </ul>

0	<p>The response provides inadequate evidence of determining the sale price of a discounted item after additional discounts and determining the number of days required to reach a sale price below \$2,200.</p> <p>For example, the response may:</p> <ul style="list-style-type: none"><li>• Show irrelevant computations.</li><li>• Provide a date with no supporting work.</li><li>• Recopy information from the item.</li><li>• Be blank or state unrelated statements.</li></ul>
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31. In the figures,  $m\angle PQR = m\angle EFD$ .



In your **Answer Document**, identify what else must be true about the sides or the angles of the triangle in order for  $\triangle PQR$  and  $\triangle EFD$  to be similar triangles. Provide specific examples for these two triangles.

### Scoring Guidelines

Points	Student Response
2	<p>Sample Correct Responses:</p> <ul style="list-style-type: none"> <li>• <math>\frac{PQ}{EF} = \frac{QR}{FD}</math> must be true</li> <li>• <math>\frac{PQ}{QR} = \frac{EF}{FD}</math> must be true</li> <li>• <math>\frac{PQ}{EF} = \frac{QR}{FD} = \frac{PR}{ED}</math> must be true</li> <li>• <math>m\angle P = m\angle E</math> or <math>m\angle QPR = m\angle FED</math></li> <li>• <math>m\angle R = m\angle D</math> or <math>m\angle QRP = m\angle EDF</math></li> </ul> <p>The focus of this task is to make and test conjectures about characteristics and properties of two-dimensional figures. The response correctly identifies what else must be true about the sides or the angles of the triangles in order for <math>\triangle PQR</math> and <math>\triangle EFD</math> to be similar triangles. The response also provides specific examples for these two triangles.</p> <p>Note: <math>\angle P = \angle E</math> is acceptable or <math>P = E</math> is acceptable.</p>
1	<p>The response provides partial evidence of making and testing conjectures about characteristics and properties of two-dimensional figures; however, the solution is incomplete or slightly flawed.</p> <p>For example, the response may:</p> <ul style="list-style-type: none"> <li>• Provide a proportional statement but reverses the ratios; e.g., <math>\frac{PQ}{EF} = \frac{DF}{QR}</math>.</li> <li>• Provide the definition of similar triangles; e.g., states that sides are proportional and angles are equal.</li> </ul>

0	<p>The response provides inadequate evidence of making and testing conjectures about characteristics and properties of two-dimensional figures. The response has major flaws in reasoning or irrelevant information.</p> <p>For example, the response may:</p> <ul style="list-style-type: none"><li>• State that if one pair of angles is congruent then all the angles are congruent. So, the triangles are similar.</li><li>• Be blank or state unrelated statements.</li><li>• Recopy information from the item.</li></ul>
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