SAMPLE TEST
MATHEMATICS

2007 Oregon Content Standards
Grades 3 - 8

OFFICE OF ASSESSMENT
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INTRODUCTION TO MATHEMATICS KNOWLEDGE AND SKILLS
GRADE-LEVEL SAMPLE TESTS

BACKGROUND
The Oregon Department of Education provides sample tests to demonstrate the content and types of questions students in grades 3, 4, 5, 6, 7, 8, and High School might encounter on the Oregon Assessment of Knowledge and Skills (multiple-choice), which is administered each year.

ELIGIBLE CONTENT
These sample questions were taken from tests given in previous years. They were originally written to align to the 2002 Oregon Mathematics Grade-level Content Standards. A panel of content experts studied the items and selected the ones which best align to the 2007/2009 Mathematics Content Standards for grades 3-8 and high school. New for 2010-11, scores are reported out at three Score Reporting Categories each year. The titles of these SRCs changes from year to year, but describes the content for each year in general terms. The chart shows the SRCs for all grade levels.

<table>
<thead>
<tr>
<th>Score Reporting Category 1</th>
<th>Score Reporting Category 2</th>
<th>Score Reporting Category 3</th>
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<tbody>
<tr>
<td>3 3.1 : Number and Operations</td>
<td>3.2 : Number and Operations, Algebra, and Data Analysis</td>
<td>3.3 : Geometry and Measurement</td>
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<td>4 4.1 : Number and Operations</td>
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<td>7 7.1 : Number and Operations and Algebra</td>
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<td>8 8.1 : Algebra</td>
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<tr>
<td>HS H.A : Algebra and Numeracy</td>
<td>H.G : Geometry</td>
<td>H.S : Data Analysis</td>
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</table>

As in the operational assessment, students are strongly encouraged to use the calculator with which they are most familiar when taking the sample test.

The answer key provided at the end of the sample test booklet identifies which of these categories each question is designed to assess. Because the item calibrations (RIT) are not accurate for the new standards, we are not able to provide a Raw-to-RIT chart as we had in the past.
The same weighting across the three Score Reporting Categories of mathematics content is used in both sample and operational tests, as much as possible. This chart shows the approximate percent weighting of SRCs by grade level:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Reporting Category 1</th>
<th>Weight</th>
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<th>Weight</th>
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<td>Geometry, Algebra, and Measurement</td>
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<td>Geometry</td>
<td>30%</td>
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**WHY PROVIDE STUDENTS WITH A SAMPLE TEST?**
Most students feel some anxiety as they approach a test. It is important that students know what to expect when they take the OAKS tests. The sample tests are intended to help students approach the state tests with confidence – comfortable with the test format and familiar with test-taking strategies to help them achieve the best possible score.

**CONTENTS OF THE SAMPLE TEST:**
This overview of the purpose for sample tests is followed by a list of test-taking tips. The sample test formatting is similar to that of the operational OAKD Online mathematics test. A “fill-in-the-bubble” answer sheet for the students to use follows the actual sample test. The answer key identifies the correct answer, the score reporting category represented, and the code of the content standard to which the item aligns. The sample test has fewer items than the actual assessment, and may not be used in place of the operational assessment.
USING THE SAMPLE TEST:

**Teachers** often have their students take the test as a “practice” activity in preparation for the actual Statewide Assessment. The answer key could be removed prior to making copies of the sample test for student practice. Copies of the answer key could then be provided to students to check their work or to take home and share with parents.

It is important to remember that **students are encouraged to use their calculators and any mathematics manipulatives** on the test. Providing these tools in class and encouraging students to use them during the sample test may be very beneficial in encouraging students to take their time and use the appropriate tools to help them solve problems during the actual test administration. In fact, teachers may want to demonstrate how various tools could be used to solve the multiple-choice problems as part of the practice test activities.

Teachers may use the overall class results to target areas of instruction needing further attention.

**Parents** may find the sample test helpful in clarifying the types of questions their child will encounter on the multiple-choice test. Parents could also assist their child in preparing for the test by practicing at home. The list of test-taking tips gives parents suggestions on ways to reduce test anxiety and promote good study and health habits in preparation for testing.

**Students** may wish to use the test independently to practice before the actual test administration, checking their own responses against the answer key provided at the end of the booklet. Students may benefit from re-reading the problems and analyzing both the correct and incorrect answers to the multiple-choice questions they missed.

**Building principals, superintendents, district testing coordinators, curriculum leaders and others** may find the sample test useful in communicating with parents, school site councils, and other community members. Parts of the sample test could be included in a newsletter or shared at meetings of local community groups to help constituents better understand the state assessment system. Although the sample tests are not as comprehensive as the complete tests administered in the Statewide Assessment, they do provide a **sampling** of the subject area content and difficulty levels students may encounter as a part of Oregon’s high academic standards.

**Assessment Conditions**

If the practice test is to be administered in “test-like” conditions, the following steps need to be followed:

- post a “testing, do not disturb” sign on the window or door of the classroom
- go over any directions (e.g., students are to complete the entire test or only a portion of the test at one sitting)
- expect the students to work by themselves with no talking during the assessment
- monitor student activities during the assessment
- provide any of the appropriate accommodations or modifications students use during instruction and might need during testing
- expect all students to participate
TEST-TAKING TIPS

BEFORE THE TEST
- Develop a positive attitude. Tell yourself, “I will do my best on this test.”
- Get a good night’s sleep the night before the test.
- Get up early enough to avoid hurrying to get ready for school.
- Eat a good breakfast (and lunch, if your test is in the afternoon).

DURING THE TEST
- Stay calm.
- Listen carefully to directions.
- Read each test question and all the answer choices carefully.
- Eliminate any obvious wrong answers
- Solve the problem using paper and pencil, a calculator or by using manipulatives. See if your answer is similar to one of the choices given.
- Pace yourself. If you come to a difficult question, it may be better to skip it and go on. Then come back and focus on the difficult questions one at a time.
- Just like the Statewide Assessment, this is not a timed test. If you need more time to finish the test, notify your teacher.
- Remember the test questions are not necessarily arranged by difficulty. If you get to a question you think is too hard, that doesn’t mean the rest of the test questions will also be too hard.
- The teachers who write the test questions use “commonly made mistakes” to identify good distractors, so finding an answer like yours is not a guarantee that it is the correct answer.
- If you are not sure of an answer to a question, try these tips:
  ◊ Cross out the answers you know are not correct and choose among the rest.
  ◊ Read through all the answers very carefully, and then go back to the question. Sometimes you can pick up clues just by thinking about the different answers you have to choose from.
  ◊ If you get stuck on a question, skip it and come back later.
  ◊ It is OK to guess on this test. Try to make your best guess, but make sure you answer all questions.

AFTER THE TEST
- Before you turn your test in, check it over. Change an answer only if you have a good reason. Generally it is better to stick with your first choice.
- Make sure you have marked an answer for every question, even if you had to guess.

ADDITIONAL INFORMATION on mathematics assessment may be obtained by contacting James Leigh, Mathematics Assessment Specialist, email to: James.Leigh@state.or.us
**MEASUREMENTS**

1 meter = 100 centimeters  
1 kilometer = 1000 meters  
1 yard = 3 feet  
1 mile = 5280 feet  
1 hour = 60 minutes  
1 minute = 60 seconds  
1 gram = 1000 milligrams  
1 kilogram = 1000 grams  
1 pound = 16 ounces  
1 ton = 2000 pounds  
1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts

**AREA, (A)**

\[ A = \ell w \]  
\[ A = bh \]  
\[ A = \frac{1}{2} bh \]

\[ A = \pi r^2 \]  
\[ C = 2 \pi r = \pi d \]

\[ A = \frac{1}{2} h (b_1 + b_2) \]

**SURFACE AREA (SA) and VOLUME (V)**

\[ SA = 2 (\ell w + wh + \ell h) \]  
\[ V = \ell wh = Bh \]  
\[ V = \frac{1}{3} Bh \]

\[ V = \pi r^2 h = Bh \]  
\[ V = \left( \frac{1}{3} \pi r^2 \right)(h) = \frac{1}{3} Bh \]

\[ SA = 4 \pi r^2 \]  
\[ V = \frac{4}{3} \pi r^3 \]

\[ a^2 + b^2 = c^2 \]

\[ d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \]  
\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]
1. If ■ equals 1 and □ equals −1, what is the value of x?

\[
x = \begin{array}{c}
\text{■} \\
\text{■} \\
\text{■} \\
\end{array} + \begin{array}{c}
\text{□} \\
\end{array}
\]

A. −9
B. −1
C. 1
D. 9

2. There are 90 calories in six ounces of juice. How many calories are there in eight ounces of juice?

A. 110 calories
B. 120 calories
C. 130 calories
D. 140 calories

3. A group of ten people is going to play ball this weekend. Four will play basketball, half as many will play baseball, and the rest will play soccer. How many people will play soccer?

A. 2
B. 4
C. 6
D. 8
4. Evan is making a kite. Approximately how many square feet of fabric is the kite?

![Kite Diagram]

1 square foot of fabric

Evan's kite

A. Between 5 and 6
B. Between 11 and 14
C. Between 21 and 24
D. Between 45 and 46

5. Randy wants to use the map shown to get from his house, H, to his campsite, X. He knows it is around 40 miles, but wants to measure it more precisely. Which scale does the map most likely show?

![Map Diagram]

A. one inch = 0.1 miles
B. one inch = 1 mile
C. one inch = 10 miles
D. one inch = 100 miles
6. Find the circumference of a circle that has a diameter of 15 mm.
   A. 23.55 mm
   B. 47.10 mm
   C. 94.20 mm
   D. 176.63 mm

7. Mrs. Brown gave her class the following mental math problem: Find the product of \(-8\) and \(-7\), multiply your answer by 5, then divide you result by \(-5\).
   What is the final number?
   A. \(-56\)
   B. 56
   C. \(-280\)
   D. 280

8. Nathan and Spencer are in a race. They begin the race at the same time from the same place. Part way through the race Nathan falls and does not finish the race.
   Choose the graph that best describes what happened.
   A. 1
   B. 2
   C. 3
   D. 4
9. Solve the following equation.
\[(2x + 1) - 4 = 136\]

A. \(x = 67.5\)  
B. \(x = 69.5\)  
C. \(x = 70\)  
D. \(x = 137\)

10. Matt has 4 deciliters of milk.
Will the milk fill a 1-liter bottle?

A. Yes, it equals 40 liters.  
B. Yes, it equals 4 liters.  
C. No, it equals 0.4 liters.  
D. No, it equals 0.04 liters.

11. Tanisha built a rectangular prism out of 1-inch blocks.
How many blocks did she use to build this figure?

A. 15  
B. 39  
C. 45  
D. 78
12. A stereo store has a 25% off sale. Allen wants to find out how much a $300 stereo would cost. Which strategy could Allen use?
   A. $300 - 25$
   B. $300 - (300 \times \frac{1}{4})$
   C. $300 \times \frac{1}{4}$
   D. $300 - (300 - 25)$

13. A gumball machine contains 24 red, 60 blue, and 48 white gumballs. What is the probability that the next gumball sold will be white?
   A. 4 chances in 11
   B. 1 chance in 2
   C. 4 chances in 5
   D. 4 chances in 7

14. Find the total surface area of the cylinder in square cm. (Use 3.14 for $\pi$)

   A. 200.96
   B. 301.44
   C. 602.88
   D. 803.84
15. What is the approximate volume of the glass?

A. 1695 cm$^3$
B. 424 cm$^3$
C. 283 cm$^3$
D. 141 cm$^3$

16. Students were asked to explain the first step in solving the equation: $3y + 4 = 16$. Four students volunteered their answer. Susan says, “multiply by 3.” Ted says, “add 4 to both sides.” Greg says, “subtract 4 from both sides.” Tonya says, “add 16 to both sides.” Who is correct?

A. Susan
B. Ted
C. Greg
D. Tonya

17. A television screen with a 12-inch diagonal has a height of 9 inches. What is the diagonal of a similar television screen with a height of 24 inches?

A. 12 inches
B. 18 inches
C. 24 inches
D. 32 inches
18. Shawn and Mark want to save $225.00 together. Shawn has $16.00 and saves $10.00 each week. Mark has $22.00 and saves $7.00 each week. Which equation can be used to find the number of weeks it will take them?

A. $26x + 29x = 225$
B. $38x + 17 = 225$
C. $55x = 225$
D. $38 + 17x = 225$

19. If a generous man wants to share his wealth ($1,427,205) among 5,278 children, which of the following is the most accurate estimate of how much each child will receive?

A. $1,400 \div 5$
B. $1,500 \div 5$
C. $1,400 \div 6$
D. $1,000,000 \div 5,000$

20. Use the two cylinders in the diagram. How many times greater is the surface area of the large cylinder than the surface area of the small cylinder?

A. 3
B. 9
C. 18
D. 27
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We are not able to provide a Raw-to-RIT chart as we had in the past. Many of the items were initially calibrated under the old standards for different grades, and these items do not cover all of the new standards. Since the item calibrations (RIT) are not accurate for the new standards, any attempt to convert a raw score to a RIT score would not be valid.

<table>
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<tr>
<th>Item Number</th>
<th>Answer Key</th>
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<th>2007 Grade 7 Content Standard</th>
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