SAMPLE TEST

MATHEMATICS

2007 Oregon Content Standards
Grades 3 - 8

OFFICE OF
ASSESSMENT & INFORMATION SERVICES
THE OREGON DEPARTMENT OF EDUCATION

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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.

	Score Reporting Category 1	Score Reporting Category 2	Score Reporting Category 3
3	**3.1 : Number and Operations**	**3.2 : Number and Operations, Algebra, and Data Analysis**	**3.3 : Geometry and Measurement**
4	**4.1 : Number and Operations**	**4.2 : umber and Operations and Algebra**	**4.3 : Measurement**
5	**5.1 : Number and Operations and Data Analysis**	**5.2 : Number and Operations and Algebra**	**5.3 : Geometry, Measurement, and Algebra**
6	**6.1 : Number and Operations**	**6.2 : Number and Operations and Probability**	**6.3 : Algebra**
7	**7.1 : Number and Operations and Algebra**	**7.2 : Number and Operations, Algebra and Geometry**	**7.3 : Measurement and Geometry**
8	**8.1 : Algebra**	**8.2 : Data Analysis and Algebra**	**8.3 : Geometry and Measurement**
HS	**H.A : Algebra and Numeracy**	**H.G : Geometry**	**H.S : Data Analysis**

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.

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:

Grade	Score Reporting Category 1	Weight	Score Reporting Category 2	Weight	Score Reporting Category 3	Weight
3	Number and Operations	**35%**	Number and Operations, Algebra, and Data Analysis	**35%**	Geometry and Measurement	**30%**
4	Number and Operations	**35%**	Number and Operations and Algebra	**35%**	Measurement	**30%**
5	Number and Operations and Data Analysis	**35%**	Number and Operations and Algebra	**35%**	Geometry, Algebra, and Measurement	**30%**
6	Number and Operations	**35%**	Number and Operations and Probability	**35%**	Algebra	**30%**
7	Number and Operations and Algebra	**35%**	Number and Operations, Algebra and Geometry	**35%**	Measurement and Geometry	**30%**
8	Algebra	**40%**	Data Analysis and Algebra	**30%**	Geometry and Measurement	**30%**
HS	Algebra	**50%**	Geometry	**30%**	Statistics	**20%**

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.

MEASUREMENTS

1 meter = 100 centimeters
1 kilometer = 1000 meters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

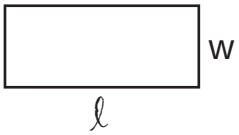
1 liter = 1000 cubic centimeters

1 yard = 3 feet
1 mile = 5280 feet
1 hour = 60 minutes
1 minute = 60 seconds

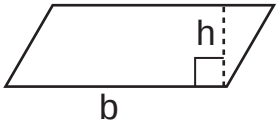
1 pound = 16 ounces
1 ton - 2000 pounds

1 cup - 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

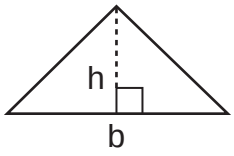
AREA (A)



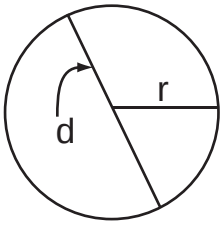
$A = \ell w$



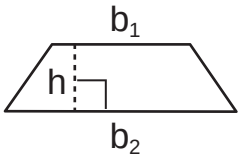
$A = bh$



$A = \frac{1}{2} bh$

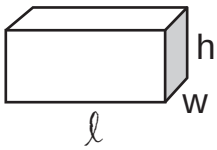


$A = \pi r^2$
$C = 2 \pi r = \pi d$

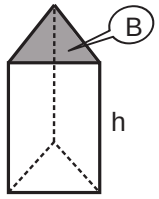


$A = \frac{1}{2} h (b_1 + b_2)$

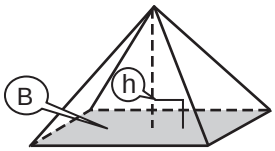
SURFACE AREA (SA) and VOLUME (V)



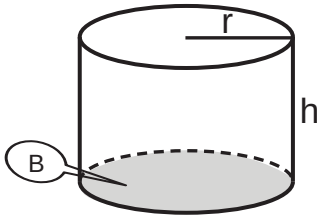
$SA = 2 (\ell w + wh + \ell h)$
$V = \ell wh = Bh$
B = Area of Base



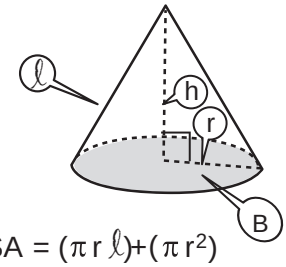
SA = Sum of Areas of all faces
$V = Bh$
B = Area of Base



SA = Sum of Areas of all faces
$V = \frac{1}{3} Bh$
B = Area of Base

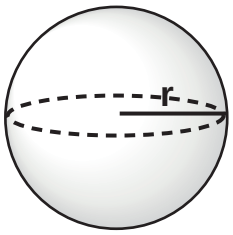


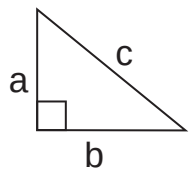
$SA = 2 \pi rh + 2 \pi r^2$
$V = \pi r^2 h = Bh$
B = Area of Base



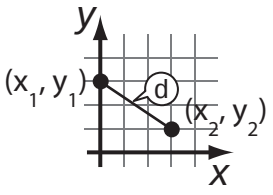
$SA = (\pi r \ell) + (\pi r^2)$
$V = (\frac{1}{3} \pi r^2)(h) = \frac{1}{3} Bh$
B = Area of Base

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

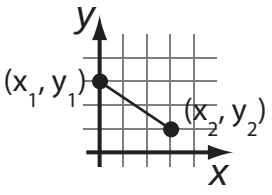




$a^2 + b^2 = c^2$



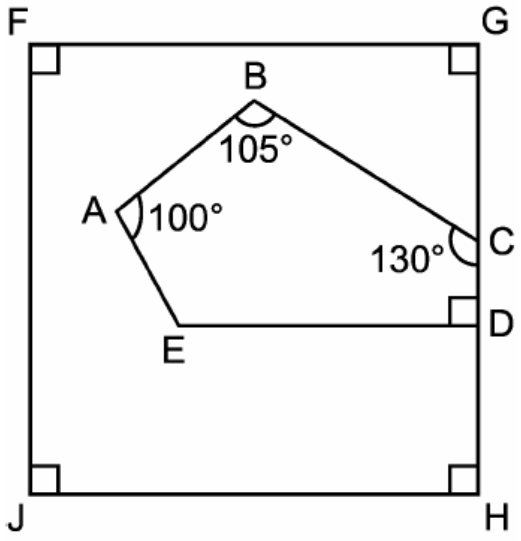
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$



Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

2010-2013 Mathematics Sample Test – Grade 8

1. What is the measure of angle E?



A. 25°
B. 115°
C. 205°
D. 425°

2. Which of the cities listed had the highest low temperature on Sunday?

Cities	Saturday		Sunday	
	High	Low	High	Low
Abilene	61°	36°	70°	48°
Akron	49°	23°	46°	29°
Albany	42°	28°	45°	33°
Albuquerque	63°	34°	67°	41°
Amarillo	60°	27°	64°	39°
Anchorage	37°	25°	36°	27°
Asheville	64°	32°	55°	34°
Aspen	59°	26°	46°	17°
Atlanta	74°	48°	64°	39°
Atlantic City	53°	27°	49°	38°

A. Aspen
B. Atlanta
C. Amarillo
D. Abilene

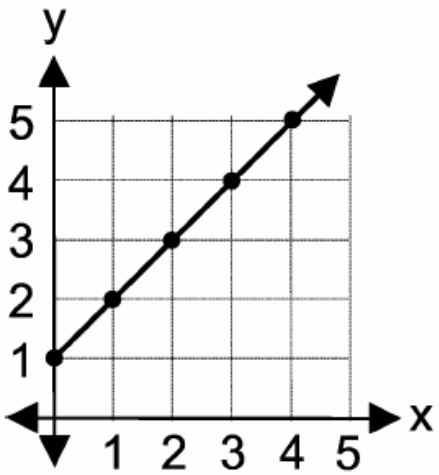
3. Hal wants to ride his bike 200 miles this month. So far, he has ridden 65 miles. There are 15 days left.
   On average, how many miles does Hal need to ride each day?

   A. 14
   B. 9
   C. 8
   D. 4

4. Malik was given a bag of blue, green, red, and white marbles for an experiment. Without looking, he randomly pulled out a marble, wrote down its color and replaced it. After ten tries he had these results: six blue, three red, and one white.
   Using this information, which color marble is most likely to be pulled out next?

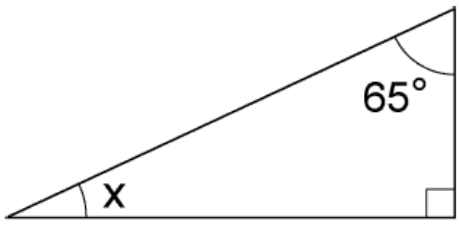
   A. Blue
   B. Green
   C. Red
   D. White

5. Which equation best describes the relationship shown in the graph?



   A. $y = x + 1$
   B. $y = x - 1$
   C. $y = 2x$
   D. $y = \frac{x}{2}$

6. Alex is building a sandbox for his son, who wants it to be in the shape of a triangle. What should the third angle (x) measure?



A. $x = 25°$
B. $x = 30°$
C. $x = 65°$
D. $x = 155°$

7. Our team played five basketball games against a rival school. Which is closest to our team's average score?

	Our School	Rival School
Monday	**57**	**71**
Tuesday	**62**	**55**
Wednesday	**81**	**80**
Thursday	**51**	**66**
Friday	**66**	**45**

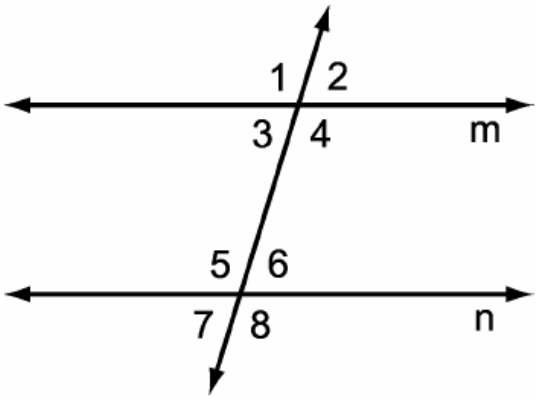
A. 371
B. 81
C. 63
D. 60

8. Sal pays $30 to join the Golf Club. Each time he golfs, it costs $8. What is the TOTAL cost for Sal to golf 20 times at his Golf Club?

A. $240
B. $220
C. $190
D. $160

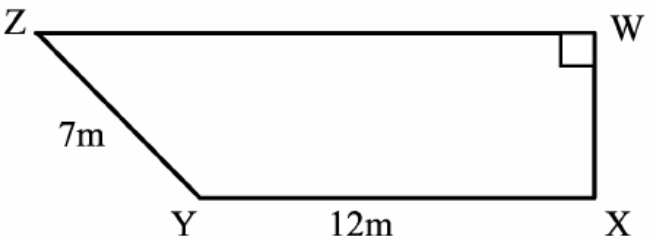
2010-2013 Mathematics Sample Test – Grade 8

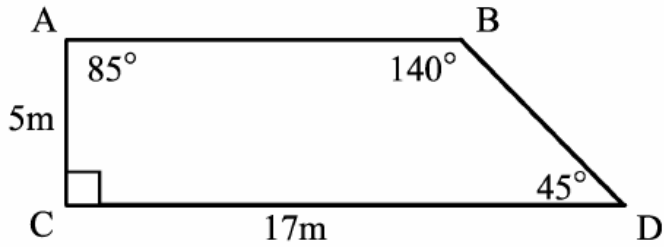
9. In the figure below, lines m and n are parallel. If m $\angle 1 = 100°$, then find m $\angle 5$.



A. 80°
B. 100°
C. 110°
D. 140°

10. Using the congruent quadrilaterals, what is the measure of $\angle XYZ$?





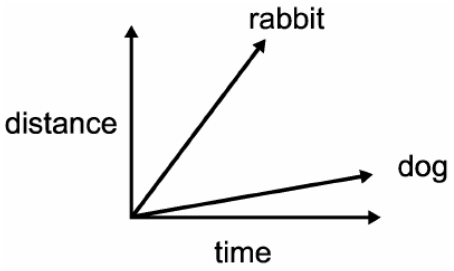
A. 85°
B. 130°
C. 140°
D. 220°

11. What is the median of the following numbers?

5, 8, 4, 6, 4, 3, 2, 8

A. 4
B. 4.5
C. 5
D. 6.5

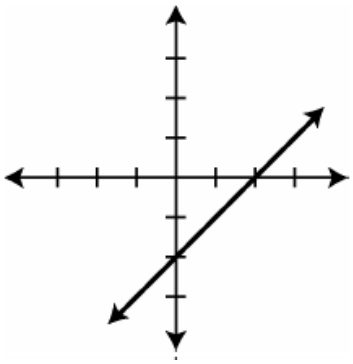
12. Based on the graph, which of the following must be true.



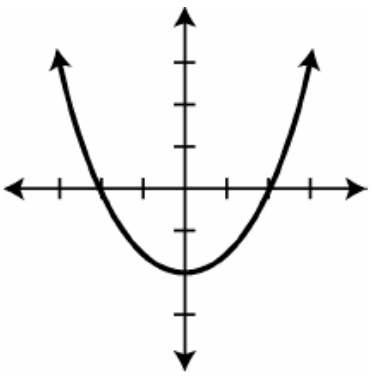
A. The rabbit and the dog are running in opposite directions.
B. The dog is running faster than the rabbit.
C. The rabbit is running faster than the dog.
D. At the current rate, the dog will catch the rabbit.

13. Which graph represents the equation $y = x - 2$?

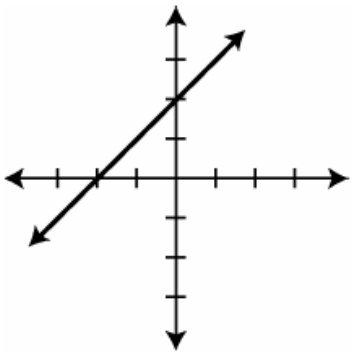
A.



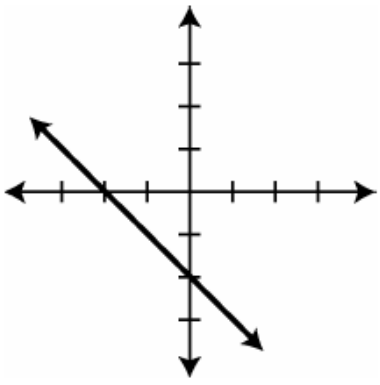
C.



B.



D.

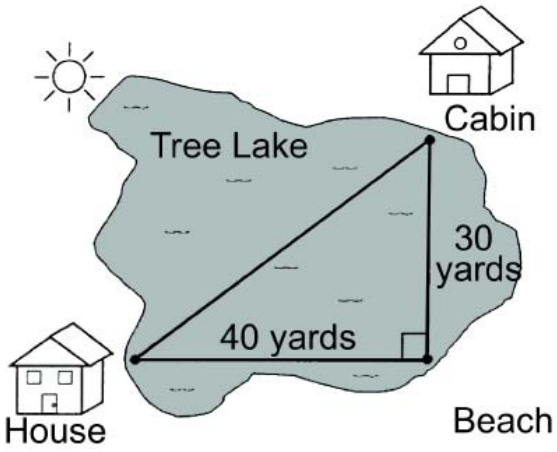


14. Four friends were shooting free throws with a basketball.
The results are in the table. If Cindy and Jenny each take one more free throw, who has the highest probability of making her shot?

	Made	Total shots
Steven	1	3
Cindy	2	6
Jenny	3	9
José	4	12

A. They both have the same chance.
B. Cindy
C. Jenny
D. There is not enough information.

15. Mrs. Kovack likes to swim in Tree Lake for exercise. She swims from the cabin to the beach, over to the house, then back to the cabin.
If she does this four times, how many yards will she swim?



A. 280 yards
B. 480 yards
C. 560 yards
D. 1,200 yards

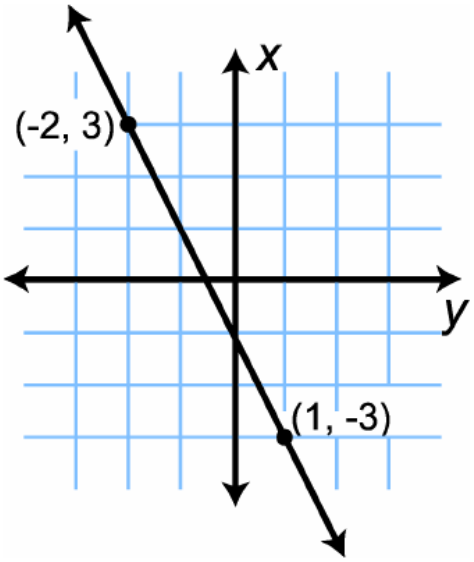
16. Cathy's test scores are:

75, 81, 85, 85, 85, 90, 95, 100

If her teacher decides to drop the lowest score, which of these would be affected the most?

A. Mean
B. Median
C. Mode
D. Range

17. Find the slope of this line.



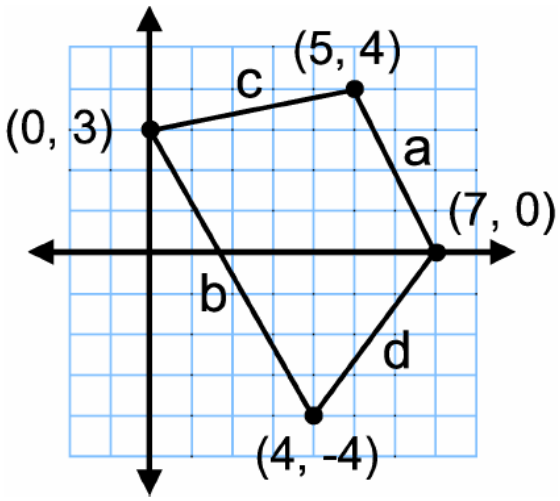
A. -2

B. $-\frac{1}{2}$

C. $-\frac{1}{3}$

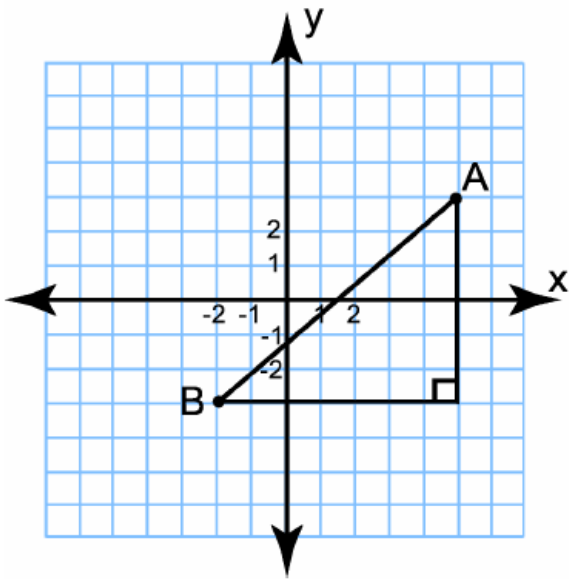
D. -3

18. Which name best describes the figure?



A. Parallelogram
B. Quadrilateral
C. Rhombus
D. Trapezoid

19. To the nearest whole number, what is the distance between points A and B?



A. 7
B. 8
C. 9
D. 10

20. What is the equation of the straight line through these 3 points?
(2,2), (4,5), (6,8)

A. $y=\frac{3}{2}x-1$

B. $y=\frac{2}{3}x+\frac{2}{3}$

C. $y=\frac{3}{2}x-3$

D. $y=\frac{2}{3}x-1$

Oregon Mathematics Sample Test

Use number 2 pencil.
Do NOT use ink or ball point pen.
Make heavy dark marks that completely fill the circle.
Erase completely any marks you wish to change.

Name of Student _____

Name of Teacher _____

Name of School _____

1	A	B	C	D		11	A	B	C	D
2	A	B	C	D		12	A	B	C	D
3	A	B	C	D		13	A	B	C	D
4	A	B	C	D		14	A	B	C	D
5	A	B	C	D		15	A	B	C	D
6	A	B	C	D		16	A	B	C	D
7	A	B	C	D		17	A	B	C	D
8	A	B	C	D		18	A	B	C	D
9	A	B	C	D		19	A	B	C	D
10	A	B	C	D		20	A	B	C	D

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.

Item Number	Answer Key	Score Reporting Category	2007 Grade 8 Content Standard
1	B	8.3 : Geometry and Measurement	8.3.3
2	D	8.2 : Data Analysis and Algebra	8.2.1
3	B	8.1 : Algebra	8.1.4
4	A	8.2 : Data Analysis and Algebra	8.2.8
5	A	8.1 : Algebra	8.1.1
6	A	8.3 : Geometry and Measurement	8.3.2
7	C	8.2 : Data Analysis and Algebra	8.2.3
8	C	8.1 : Algebra	8.1.4
9	B	8.3 : Geometry and Measurement	8.3.1
10	C	8.3 : Geometry and Measurement	8.3.1
11	B	8.2 : Data Analysis and Algebra	8.2.2
12	C	8.1 : Algebra	8.1.3
13	A	8.1 : Algebra	8.1.1
14	A	8.2 : Data Analysis and Algebra	8.2.6
15	B	8.3 : Geometry and Measurement	8.3.4
16	D	8.2 : Data Analysis and Algebra	8.2.4
17	A	8.1 : Algebra	8.1.2
18	B	8.1 : Algebra	8.1.5
19	C	8.3 : Geometry and Measurement	8.3.5
20	A	8.1 : Algebra	8.1.2

Oregon Department of Education

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