SAMPLE TEST

MATHEMATICS

2009 Oregon Content Standards
High School

OFFICE OF
ASSESSMENT & INFORMATION SERVICES
THE OREGON DEPARTMENT OF EDUCATION

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

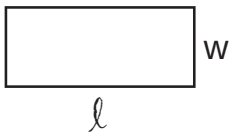
1 gram = 1000 milligrams
1 kilogram = 1000 grams

1 pound = 16 ounces
1 ton - 2000 pounds

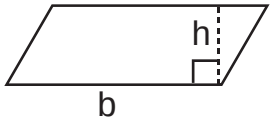
1 liter = 1000 cubic centimeters

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

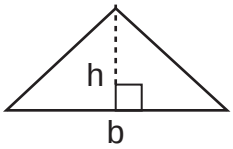
AREA (A)



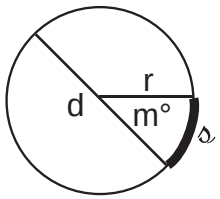
$A = \ell w$



$A = bh$



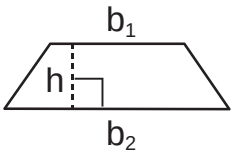
$A = \frac{1}{2} bh$



$A = \pi r^2$

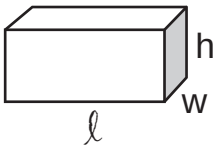
$C = 2\pi r = \pi d$

Arc Length: $s = \left(\frac{m}{360}\right) 2\pi r$



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

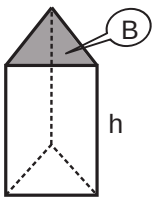
SURFACE AREA (SA) and VOLUME (V)



$SA = 2(\ell w + wh + \ell h)$

$V = \ell wh = Bh$

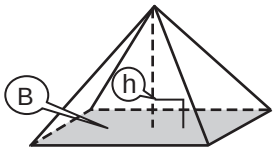
B = Area of Base



SA = Sum of Areas of all faces

$V = Bh$

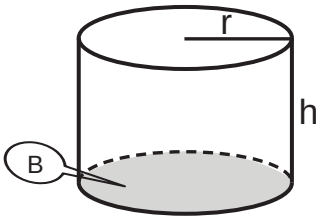
B = Area of Base



SA = Sum of Areas of all faces

$V = \frac{1}{3} Bh$

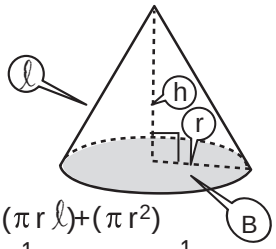
B = Area of Base



$SA = 2\pi rh + 2\pi r^2$

$V = \pi r^2 h = Bh$

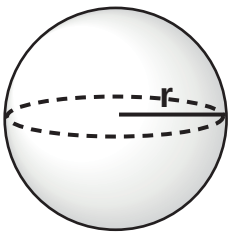
B = Area of Base



$SA = (\pi r \ell) + (\pi r^2)$

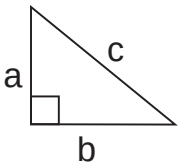
$V = (\frac{1}{3} \pi r^2)(h) = \frac{1}{3} Bh$

B = Area of Base

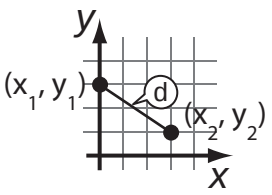


$SA = 4\pi r^2$

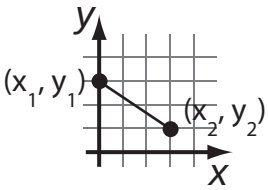
$V = \frac{4}{3} \pi r^3$



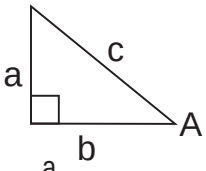
$a^2 + b^2 = c^2$



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

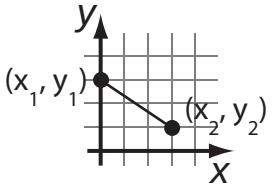


$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$



$\sin A = \frac{a}{c}$ $\tan A = \frac{a}{b}$

$\cos A = \frac{b}{c}$



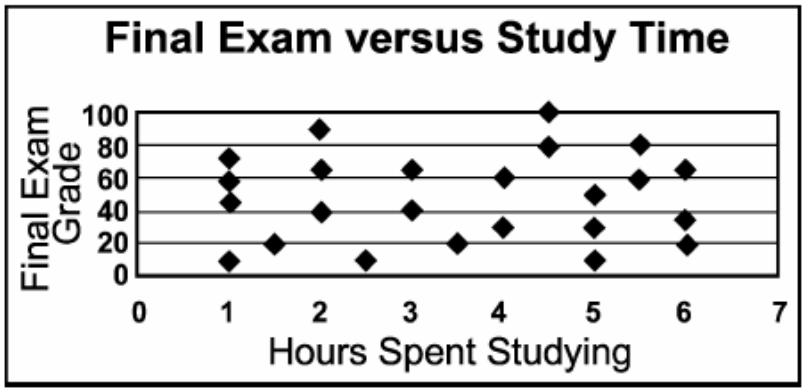
Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

2010-2013 Mathematics Sample Test – High School

1. Which number has the greatest value?

   A. 3.1^5
   B. 4.2×10^2
   C. 3100
   D. 200^2

2. From the scatter plot you can conclude the following for the group of students that studied only the night before the final exam.



   A. More time studying, the better the grade.
   B. Less time studying, the better the grade.
   C. Less time studying, the lower the grade.
   D. Time studying did not relate to the grade.

3. There are 6 snakes in a certain valley. The population of snakes doubles every year. In how many years will there be 96 snakes?

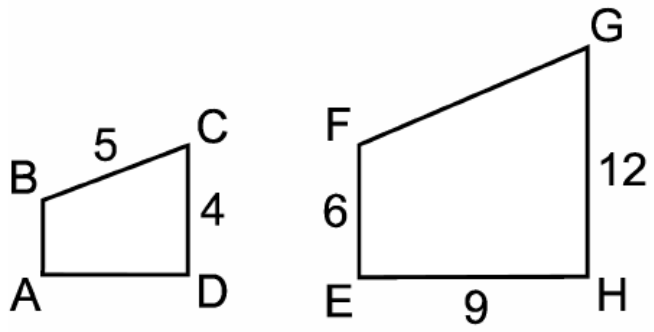
   A. 2
   B. 3
   C. 4
   D. 8

4. Simplify:

   $-13x+(-7x)+5x$

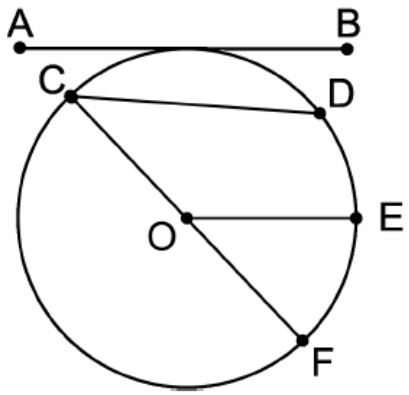
   A. $-25x$
   B. $-15x$
   C. $15x$
   D. $25x$

5. Quadrilateral ABCD is similar to quadrilateral EFGH.
   Find the length of side AB.



A. 1
B. 2
C. 3
D. 6

6. Which of the following line segments is tangent to the circle?

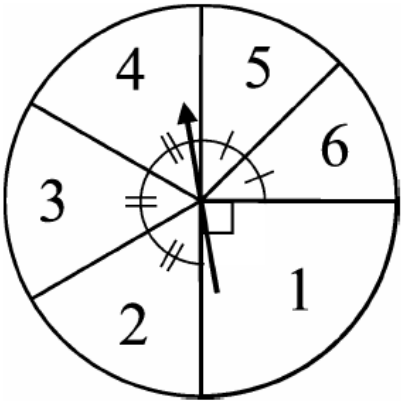


A. $\overline{AB}$
B. $\overline{CD}$
C. $\overline{DE}$
D. $\overline{OE}$

7. A basketball team has 10 players. Five of the players are guards, three are forwards, and two are centers.
   If the coach must choose two guards, two forwards, and one center to start the game, how many possible combinations are there?

A. 60
B. 252
C. 1440
D. 30,240

8. If the spinner shown is spun, what is the probability it would NOT land on 3?



A. $\frac{1}{6}$

B. $\frac{1}{3}$

C. $\frac{5}{6}$

D. $\frac{7}{8}$

9. Which number has the greatest value?

A. $\left(\frac{1}{2}\right)^4$

B. $\sqrt{5}$

C. $\frac{7}{3}$

D. 2.324

10. Find the solution to the following system of two linear equations:

$$y=9x-3$$

$$4x+2y=5$$

A. $\left(\frac{4}{11},\frac{3}{11}\right)$

B. $\left(\frac{1}{2},\frac{3}{2}\right)$

C. $\left(\frac{8}{13},2\frac{7}{13}\right)$

D. $\left(\frac{11}{13},4\frac{7}{13}\right)$

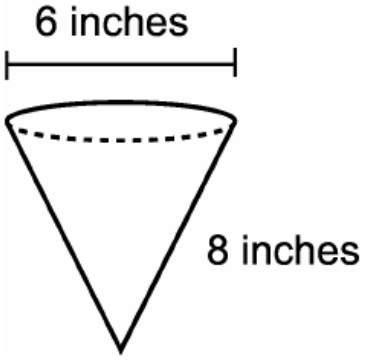
11. A ball is tossed into the air. The height of the ball as a function of time can be described by the equation $h=-16t^2+72t$. In this equation h is the height of the ball in feet and t is time in seconds.
After how many seconds will the ball hit the ground?

A. 4 seconds
B. 4.5 seconds
C. 9 seconds
D. 56 seconds

12. The coordinates of point A are (-5, 3).
If A is reflected over the y-axis, then translated 3 units right and 4 units down, the new coordinates of A are:

A. (5, 3)
B. (8, -1)
C. (-2, -1)
D. (-2, -7)

13. Jamie's Ice Cream Store is making chocolate covered cones to sell for Easter. About how much chocolate will be required to cover the outside of each cone?

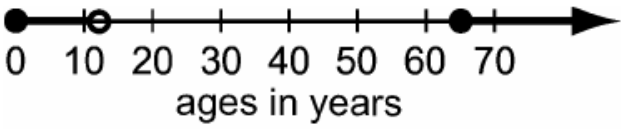


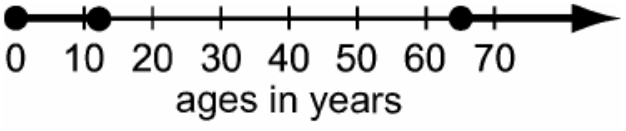
A. 37.7 square inches
B. 75.4 square inches
C. 150.7 square inches
D. 226.1 square inches

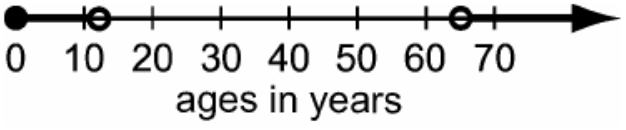
14. Express 3.02×10^{-1} as a percent.

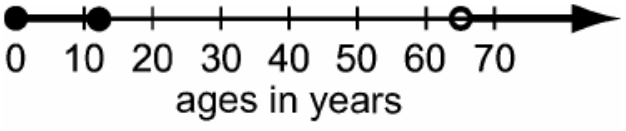
A. 0.302%
B. 3.02%
C. 30.2%
D. 302%

15. You can receive a reduced ticket price at the local movie theater if you are 65 or older, or if you are younger than 12.
Which graph displays this information?

A.


B.


C.


D.


16. Quadrilateral ABCD, with diagonal $\overline{BD}$, has $\overline{AB} \cong \overline{CD}$.

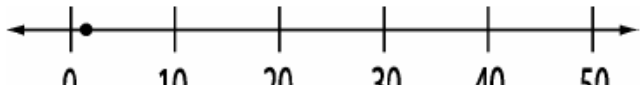
Which statement would make $\Delta BAD \cong \Delta DCB$?

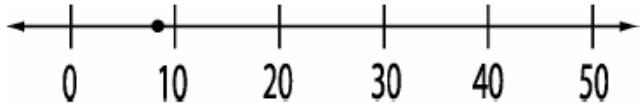
A. $\angle C \cong \angle A$
B. $\overline{AB} \parallel \overline{CD}$
C. $\overline{AD} \parallel \overline{CB}$
D. $\overline{AB} \perp \overline{BC}$

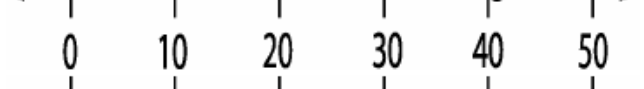
17. The library on campus is shaped like a regular polygon. Gayle finds the measurement of one of the interior angles of the library to be 165.6°.
Using the measurement of the angle, Gayle determines the library has ___ sides.

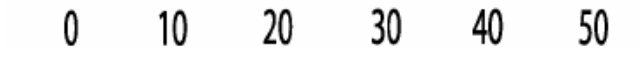
A. 13
B. 15
C. 25
D. 38

18. Which of these number lines best represents the value of $(40)^{\frac{1}{5}}$?

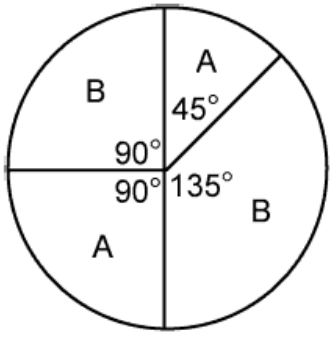
A.


B.


C.


D.


19. If you spin the spinner two times, what is the probability it will land on A both times?



A. $\frac{1}{4}$

B. $\frac{3}{8}$

C. $\frac{6}{8}$

D. $\frac{9}{64}$

20. Every year the population of Springfield decreases by a factor of $\frac{1}{6}$.

If the population of Springfield on Jan. 1, 1980 was 3,521, what was the approximate population on Jan. 1, 2000?

A. 92
B. 111
C. 132
D. 587

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	2009 HS Content Standard
1	D	H.A : Algebra and Numeracy	H.1A.1
2	D	H.S : Data Analysis	H.1S.5
3	C	H.A : Algebra and Numeracy	H.1A.1
4	B	H.A : Algebra and Numeracy	H.1A.4
5	B	H.G : Geometry	H.1G.3
6	A	H.G : Geometry	H.1G.7
7	A	H.S : Data Analysis	H.2S.2
8	C	H.S : Data Analysis	H.2S.3
9	C	H.A : Algebra and Numeracy	H.1A.1
10	B	H.A : Algebra and Numeracy	H.1A.1
11	B	H.A : Algebra and Numeracy	H.1A.1
12	B	H.G : Geometry	H.1G.1
13	B	H.G : Geometry	H.2G.2
14	C	H.A : Algebra and Numeracy	H.1A.2
15	A	H.A : Algebra and Numeracy	H.1A.1
16	B	H.G : Geometry	H.1G.2
17	C	H.G : Geometry	H.1G.5
18	A	H.A : Algebra and Numeracy	H.1A.1
19	D	H.S : Data Analysis	H.2S.3
20	A	H.A : Algebra and Numeracy	H.1A.1