

## NC Early Math Placement Test - Review

Select the one best answer to each question. Place each answer on your bubble sheet.

1. Find the reciprocal of  $\sqrt[3]{216}$ .

- A. 6                      B. 3                      C.  $\frac{1}{6}$                       D. 72                      E.  $\frac{1}{2}$

2. If  $2^x = 32$ , then what is the value of  $6^{x-3}$ ?

- A. 6                      B. 216                      C. 36                      D. 1296                      E. 64

3. Simplify  $\frac{\frac{p^2q}{mn}}{\frac{pq^2}{m^2n^2}}$ .

- A.  $\frac{pn}{mq}$                       B.  $\frac{pq}{mn}$                       C.  $\frac{pqm}{n}$                       D. 1                      E.  $\frac{pnm}{q}$

4. A data set includes these numbers: 73, 99, 92, 78, 84, 47, 61, 81. If the smallest and largest numbers are removed from this set, what is the median of the remaining data?

- A. 79.5                      B. 52                      C. 78.2                      D. 79                      E. 67.8

5. Find the slope of the graph of the equation  $5x + 4y - 12 = 0$ .

- A.  $\frac{4}{5}$                       B.  $\frac{5}{4}$                       C.  $-\frac{5}{4}$                       D. 5                      E.  $-\frac{4}{5}$

6. A farm equipment dealership bought 12 tractors of the same model. If the tractors had a combined weight of 46.2 tons, how much, in pounds, did one of the tractors weight? (1 ton = 2000 pounds)

- A. 6160                      B. 519                      C. 7700                      D. 7100                      E. 6500

7. If  $7 - 5(6x - 4) = -153$ , then  $x =$ 

- A. 5                      B. 7                      C. 3                      D. 6                      E. 4

8. If  $f(x) = 2x + \frac{1}{4}x$ , find  $f\left(\frac{12}{5}\right)$ .

- A.  $\frac{4}{5}$                       B.  $\frac{3}{5}$                       C.  $\frac{27}{5}$                       D.  $\frac{6}{5}$                       E. 5

9. Which numbers are written from least to greatest: 0.75,  $\frac{5}{7}$ ,  $\frac{1}{6}$ , 0.4.

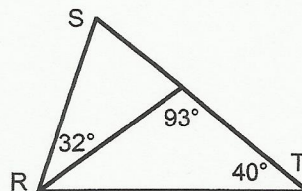
- A.  $\frac{5}{7}$ , 0.75,  $\frac{1}{6}$ , 0.4                      C.  $\frac{1}{6}$ , 0.4,  $\frac{5}{7}$ , 0.75                      E. 0.75,  $\frac{5}{7}$ , 0.4,  $\frac{1}{6}$   
 B.  $\frac{5}{7}$ , 0.75, 0.4,  $\frac{1}{6}$                       D.  $\frac{5}{7}$ ,  $\frac{1}{6}$ , 0.75, 0.4

10. Friends Jill and Samantha leave the library at the same time. Jill walks north at a rate of 5 feet per second and Samantha walks south at a rate of 3 feet per second. What is the distance, in feet, between them 8 seconds later?

A. 64      B. 16      C. 120      D. 48      E. 8

11.

In  $\triangle RST$ , to the right, find the measure of  $m\angle RST$  in degrees.



A.  $74^\circ$       B.  $63^\circ$       C.  $47^\circ$       D.  $61^\circ$       E.  $52^\circ$

12. Which of the following is an equivalent form of  $\frac{4}{x} - \frac{5}{7}$ ?

A.  $\frac{28-5x}{7x}$       B.  $-\frac{1}{x-7}$       C.  $\frac{28-5x}{x-7}$       D.  $-\frac{1}{7x}$       E.  $\frac{28+5x}{7x}$

13. In the city swimming pool, 52 laps equal 0.6 miles. If Rebecca swims 32 laps, what fraction of a mile does she swim?

A.  $\frac{24}{65}$       B.  $\frac{2}{3}$       C.  $\frac{2}{5}$       D.  $\frac{39}{40}$       E.  $\frac{8}{13}$

14. If the graph of the parabola  $y = x^2$  is translated 5 units down and 3 units to the right in the coordinate plane, then the translated graph has which of the following equations?

A.  $y = (x-5)^2 + 3$       C.  $y = (x-5)^2 - 3$       E.  $y = (x+3)^2 - 5$   
 B.  $y = (x+3)^2 + 5$       D.  $y = (x-3)^2 - 5$

15. In expanded form,  $(2x - 5y)^2 = ?$

A.  $4x^2 - 10y^2$       C.  $2x^2 - 10xy + 5y^2$       E.  $4x^2 + 25y^2$   
 B.  $4x^2 - 25y^2$       D.  $4x^2 - 20xy + 25y^2$

16. Which is a factor of the polynomial  $2x^3 + x^2 - 15x$ ?

A.  $x+2$       B.  $2x+5$       C.  $x^2$       D.  $x-3$       E.  $x+3$

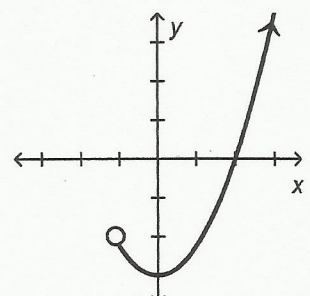
17. Given the relation  $\{(3,5), (5,6), (6,7)\}$ , what is the inverse of this relation?

A.  $\left\{\left(\frac{1}{3}, \frac{1}{5}\right), \left(\frac{1}{5}, \frac{1}{6}\right), \left(\frac{1}{6}, \frac{1}{7}\right)\right\}$       D.  $\{(-3,-5), (-5,-6), (-6,-7)\}$   
 B.  $\{(5,3), (6,5), (7,6)\}$       E.  $\left\{\left(3, \frac{3}{5}\right), \left(5, \frac{6}{5}\right), \left(6, \frac{7}{6}\right)\right\}$   
 C.  $\{(6,7), (5,6), (3,5)\}$



18. What kind of function would best model the data below, where  $x$  is the independent variable and  $y$  is the dependent variable?

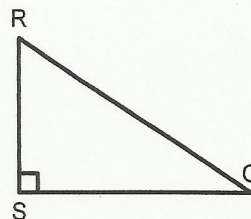
$x$	-5	-2	-1	3	6	9	12
$y$	undefined	undefined	-1	0.6	1.1	1.4	1.6

- A. linear  
B. exponential  
C. logarithmic  
D. absolute value  
E. quadratic
19. If  $F$  is the temperature in degrees Fahrenheit and  $C$  is the temperature in degrees Celsius, then  $F = \frac{9}{5}C + 32$ . If the temperature is 95 degrees Fahrenheit, then which of the following is the temperature in degrees Celsius?
- A. 24      B. 30      C. 27      D. 38      E. 35
20. Solve the quadratic equation  $4x^2 - 9x - 9 = 0$ . Name the larger of the two solutions.
- A.  $x = 4$       B.  $x = -\frac{3}{4}$       C.  $x = \frac{1}{4}$       D.  $x = -3$       E.  $x = 3$
21. The equation of the line determined by the points  $(4, 0)$  and  $(0, -5)$  is:
- A.  $y = \frac{4}{5}x + 4$       C.  $y = \frac{5}{4}x + 4$       E.  $y = \frac{5}{4}x - 5$   
B.  $y = -\frac{5}{4}x - 5$       D.  $y = \frac{4}{5}x - 5$
22. The function  $P(x) = -500x^2 + 12,000x$  models the profit,  $P$ , in dollars for a company that manufactures large computers, where  $x$  is the number of computers produced. For which value of  $x$  will the company make a maximum profit?
- A. 72000      B. 12      C. 24      D. 6      E. 2.4
23. Simplify:  $(3a^{-4}b^{-5})(-4a^{-2}b^8)$
- A.  $\frac{b^3}{a^6}$       C.  $-\frac{b^3}{a^6}$       E.  $-\frac{12b^3}{a^6}$   
B.  $-\frac{a^4}{b^3}$       D.  $-\frac{12a^6}{b^3}$
24. Find the domain of the function in the graph to the right.
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- A.  $x > -1$       C.  $-1 \leq x \leq 3$       E.  $x < -1$   
B.  $x \geq -3$       D. all real numbers
25. On the first day of the semester, Shay scored a 75 on a math pre-test. On the last day of the same semester, Shay scored a 84 on the post-test. By what percent did Shay's score improve?
- A. 15%      B. 25%      C. 12%      D. 18%      E. 20%

26.

In the right triangle QRS,  $m\angle Q = 30$ ,  $m\angle R = 60$ , and  $QS = 9$ .

What is the measure of  $\overline{QR}$ ?



- A.  $3\sqrt{6}$       B. 18      C.  $3\sqrt{3}$       D.  $4\sqrt{3}$       E.  $6\sqrt{3}$

27. Circle X has a radius of 3. Circle Y has a radius of 6. What is the difference between the areas of the two circles?

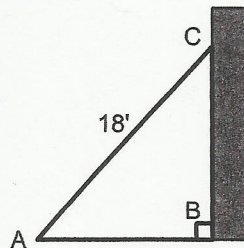
- A.  $27\pi$       B.  $18\pi$       C.  $45\pi$       D.  $36\pi$       E.  $9\pi$

28. The graphs of  $x = 3y$  and  $5x - 6y = 36$  meet at a point. What is the y-coordinate of the point?

- A. 18      B.  $\frac{5}{6}$       C. 12      D. 4      E.  $-\frac{1}{3}$

29.

A pole 18 feet long leans against a building. The measure of the angle the pole makes with the building is  $27^\circ$ . Which of the following represents the distance BC from the base of the building to the top of the pole?



- A.  $18 \tan 27^\circ$       C.  $9 \sin 27^\circ$       E.  $18 \sin 27^\circ$   
 B.  $18 \cos 27^\circ$       D.  $9 \cos 27^\circ$

30. If the area of one face of a large cube of ice is 25 square units, what is the volume of the cube in cubic units?

- A. 625      B. 125      C. 10      D. 75      E. 100

31. Find the solution set of  $2 - |x - 5| = -4$ .

- A.  $\{11\}$       B.  $\{\}$       C.  $\{-1, 11\}$       D.  $\{1, 11\}$       E.  $\{-11, 1\}$

32. If  $2x + 4 - 7x \geq 24$ , then which graph below best illustrates the solution?

