Grade 8/Algebra I

Mathematics

2019 Benchmark 2 Exam

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Directions:**

* Read each question carefully. SHOW ALL OF YOUR WORK.
* For multiple-choice questions, you must mark your answers on the exam paper and on your answer sheet by darkening the circle for the letter that matches your answer choice.
* For written-response questions, you must write your answers and show of work clearly and legibly in the space provided.

Part One: Multiple Choice

\_\_\_\_\_ /20

Part Two: Short Response

\_\_\_\_\_ /6

Total Score

\_\_\_\_\_ /26

**Part I**

1. Visible light has a wavelength of about 0.0000475 cm. Which of the following represents the wavelength of visible blue light in scientific notation?

A. $4.75×10^{5}$

B. $475×10^{7}$

C. $4.75×10^{-5}$

D. $475×10^{-7}$

2. What is the solution for the following system of equations?

$$2x+y=7$$

$$x-2y=6$$

A. (3,1)

B. (1,3)

C. (-1,4)

D. (4,-1)

3. What is the value of *x* in the equation $\frac{3}{4}x+2=\frac{5}{4}x-6$?

A. -16

B. 16

C. -4

D. 4

4. What is the solution to the equation below?

$$2\left(x-3\right)=2x+5$$

A. $x=2.75$

B. $x=-2.75$

C. There is no solution.

D. There are infinitely many solutions.

5. A line contains the points (4, 2) and (0, 1). What is the equation of the line?

A. $y=2x-6$

B. $y=\frac{3}{4}x-1$

C. $y=\frac{1}{4}x+1$

D. $y=\frac{4}{3}x-\frac{10}{3}$

6. What is the value of *x* in the equation $13x-2\left(x+4\right)=8x+1$?

A. 1

B. 2

C. 3

D. 4

7. Which equation is equivalent to $x+2y=6$?

A. $y=-x+6$

B. $y=-\frac{1}{2}x-6$

C. $y=-x+3$

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

8. Which of the following is **not** equivalent to $\frac{1}{2^{3}}$?

A. $(2^{-5})(2^{2})$

B. $\frac{2^{17}}{2^{20}}$

C. $(2^{-2})(2^{5})$

D. $2^{-2}÷2^{1}$

9. Which statement is true about the graph of the line whose equation is $y=8$?

A. The line is parallel to the x-axis.

B. The line is parallel to the y-axis.

C. The line passes through the origin.

D. The line has a slope of 8.



10. Which equation represents the line shown on the coordinate grid to the right?

A. $y=2x+5$

B. $y=\frac{1}{2}x-5$

C. $y=-2x+5$

D. $y=-\frac{1}{2}x-5$

11. If the slope of a straight line is 0, the graph of this line may pass through Quadrants

A. I and II

B. I and III

C. I and IV

D. II and IV

12. Which ordered pair is the solution set of the following system of inequalities?

$$y<\frac{1}{2}x+4$$

$$y\geq -x+1$$

A. (-5,3)

B. (0,4)

C. (3,-5)

D. (4,0)

13. When solved graphically, which system of equations will have *exactly* on point of intersection?

A. $y=-x-20$

$$ y=x+17$$

B. $y=0.5x+30$

$$ y=0.5x-30$$

C. $y=\frac{3}{5}x+12$

$$ y=0.6x-19$$

D. $y=-x+15$

$$ y=-x+25$$

14. Which ordered pair is in the solution set of the system of inequalities shown in the accompanying graph?



A. (2,5)

B. (2,-2)

C. (4,3)

D. (-4,3)

15. What is the value of *x* in the equations $\frac{3}{4}x+2=\frac{5}{4}x-6$?

A. -16

B. 16

C. -4

D. 4

16. One the coordinate plane below, rectangle *ABCD* is rotated 90º clockwise about the origin to form rectangle *WXYZ*.



Which statement about the relationship between rectangle *ABCD* and rectangle *WXYZ* is true?

A. $\overbar{DA}≅\overbar{YZ}$

B. $\overbar{DC}≅\overbar{XY}$

C. $\overbar{BC}≅\overbar{YZ}$

D. $\overbar{AB}≅\overbar{WX}$

**Part II**

15. On the set of axes below, solve the following system of equations graphically. State the coordinates of the solution.

$$y=4x-1$$

$$2x+y=5$$



16. Graph the following system of inequalities on the set of axes shown below and label the solution set *S*.

$$y>-x+2$$

$$y\leq 2x+5$$



17. Charles needs to fill a large fish tank with water using a hose. He has two hoses from which to choose. Water flows through each hose at a constant rate. The graph below shows the amount of water, in gallons, that flows through Hose A based on the number of minutes used.



A total of 112 gallons of water can flow through Hose B in 14 minutes. Which hose has a faster water flow rate, in gallons per minute, and what is that rate?