$\qquad$ Date: $\qquad$

## Algebra EOC Practice Test \#1

## Multiple Choice

Identify the choice that best completes the statement or answers the question.
$\qquad$ 1. George is helping the manager of the local produce market expand her business by distributing flyers around the neighborhood. He gets paid $\$ 20$ a day as well as $\$ 0.05$ for every flyer he distributes. George would like to earn at least $\$ 65$ each day. Which of the following represents this situation, where $x$ is the number of flyers distributed.
a. $20+0.05 x \leq 65$
b. $20+5 x \leq 65$
c. $20+0.05 x \geq 65$
d. $20+5 x \geq 65$
2. Divide $\left(16 x^{6}-12 x^{4}+4 x^{2}\right)$ by $4 x^{2}$.
a. $4 x^{3}-3 x^{2}+1$
b. $4 x^{4}-3 x^{2}$
c. $4 x^{4}-3 x^{2}+1$
d. $12 x^{4}-8 x^{2}+0$
3. Which graph represents the solutions of $p+1<-1$ OR $p-5>7$ ?
a.

c.

b.

d.

4. John is considering accepting one of two sales positions. ABC Company offers a yearly salary of $\$ 45,000$. XYZ Company offers a yearly salary of $\$ 38,000$ plus a $2 \%$ annual commission on sales. For what amount of sales $s$ is the salary at XYZ Company greater than the salary at ABC Company?
a. $\quad s>7000$
b. $\quad s>35,000$
c. $\quad s>70,000$
d. $s>350,000$
5. Solve $\frac{4}{s}=\frac{-2}{9}$.
a. -4.5
b. -18
c. 18
d. 4.5
6. The average of Paula's two test scores must be 80 or more for her to get at least a B in the class. She got a 72 on her first test. What grades can she get on the second test to make at least a B in the class?
a. at least 76
c. at least 88
b. at least 84
d. at least 92
$\qquad$ 7. What is the equation of the line shown in the graph?

a. $y=3 x+\frac{3}{2}$
b. $y=-3 x-5$
c. $y=3 x-5$
d. $y=2 x-5$
8. Solve $m-8 \leq 14$.
a. $\quad m \leq 6$
b. $\quad m \geq 6$
c. $m \leq 22$
d. $m \geq 22$
9. Graph the line with the slope $\frac{1}{2}$ and $y$-intercept 3 .
a.

c.

b.

d.

$\qquad$ 10. Which of the following relations is a function?
a. $\quad\{(-2,-2),(-2,-1),(-2,0),(-2,1),(-2,2)\}$
b. $\quad\{(1,0),(-1,0),(2,1),(-2,1),(3,2),(-3,2)\}$
c. $\quad\{(-2,1),(-1,2),(0,0),(-1,1),(2,-2)\}$
d. $\{(-3,3),(1,3),(-3,2),(1,2),(-3,1),(1,1)\}$
11. Simplify $\left(a^{3} b\right)^{2}$.
a. $\quad a^{3} b^{2}$
b. $a^{6} b$
c. $a^{6} b^{2}$
d. $a^{9} b^{2}$
___ 12. Simplify the expression $\sqrt{\frac{48}{147}}$.
a. $\frac{4}{7}$
b. $\frac{4}{7} \sqrt{3}$
c. $\frac{16}{49}$
d. $\frac{\sqrt{48}}{\sqrt{147}}$
13. The formula for the resistance of a conductor with voltage $V$ and current $I$ is $r=\frac{V}{I}$. Solve for $V$.
a. $\quad I=V r$
b. $\quad V=\frac{I}{r}$
c. $\quad V=I r$
d. $\quad V=\frac{r}{I}$
14. Which system has no solution?
a. $\left\{\begin{array}{l}y=x+4 \\ y-x=-4\end{array}\right.$
b. $\left\{\begin{array}{l}2 y=2 x+8 \\ -2 x=2 y-8\end{array}\right.$
c. $\left\{\begin{array}{l}y=\frac{1}{2} x+6 \\ 2 x+5=y\end{array}\right.$
d. $\left\{\begin{array}{l}y=4 x+1 \\ y-1=4 x\end{array}\right.$
$\qquad$ 15. 30 people were asked if they wore a blue shirt or a red shirt this week. The Venn diagram shows the results of the survey.


What is the missing value in the Venn diagram?
a. 7
b. 12
c. $\quad 18$
d. 19
16. Look at the map below.


Which is the distance between Kensington and Greenwich?
a. $\quad 20 \sqrt{3} \mathrm{mi}$
b. $20 \sqrt{5} \mathrm{mi}$
c. $40 \sqrt{3} \mathrm{mi}$
d. $40 \sqrt{5} \mathrm{mi}$
$\qquad$ 17. A sales clerk earns a $3 \%$ commission on each sale. What is the commission earned on a sale of $\$ 4450$ ?
a. $\quad \$ 133.50$
b. $\$ 148.33$
c. $\$ 1335.00$
d. $\$ 13.35$
18. Given $f(x)=x^{2}+1$ with domain $\mathrm{D}:\{-2,-1,0,1,3\}$. What is the range, R ?
a. $\mathrm{R}:\{-1,-2,0,1,3\}$
c. $R:\{5,2,1,2,10\}$
b. $\mathrm{R}:\{4,1,0,1,9\}$
d. R: $\{3,0,-1,0,8\}$
19. Solve $y+w-\frac{3}{4} z=0$ for $z$.
a. $\quad z=\frac{4}{3}(y+w)$
b. $\quad z=\frac{3}{4}(y+w)$
c. $z=\frac{4}{3} w+y$
d. $\quad z=\frac{4 y}{3}+w$
20. Gloria earns 1.5 times her normal hourly pay for each hour that she works over 40 hours in a week. Her normal pay is $p$ dollars per hour. Last week Gloria worked 47 hours and earned $\$ 489.85$. The following equation represents this situation where $p$ is Gloria's normal hourly pay in dollars per hour.

$$
40 p+7(1.5 p)=489.85
$$

What is Gloria's normal hourly pay?
a. $\quad \$ 5.90$
b. $\$ 6.95$
c. $\$ 8.70$
d. $\$ 9.70$
21. Tell whether the slope of the line is positive, negative, zero, or undefined.

a. negative
c. undefined
b. positive
d. zero
22. Let $A=\{\mathrm{a}, \mathrm{b}, \mathrm{d}, \mathrm{f}, \mathrm{g}\}$ and B be a sets in the universe $U=\{$ letters of the alphabet $\}$. If $A \cap B=\{\mathrm{b}, \mathrm{d}\}$, which could be set $B$ ?
a. $B=\{\mathrm{b}, \mathrm{d}, \mathrm{g}\}$
b. $\quad B=\{\mathrm{b}, \mathrm{d}, \mathrm{k}\}$
c. $B=\{\mathrm{b}, \mathrm{d}, 5, \mathrm{e}\}$
d. $B=\{\mathrm{a}, \mathrm{f}, \mathrm{g}\}$
23. Leah scored $p$ points in the first half of the basketball game. In the second half, she scored 3 more than $\frac{1}{2}$ the number of points she scored in the first half of the game. Altogether, she scored 21 points in the game. The following equation represents this situation where $p$ represents the number of points Leah scored in the first half.

$$
p+\left(\frac{1}{2} p+3\right)=21
$$

How many points did Leah score in the first half?
a. 6
b. 9
c. $\quad 12$
d. 18
24. Subtract $\left(6 a^{2}+3 a\right)-\left(4 a^{2}+2 a\right)$.
a. $\quad 2 a^{2}+a$
b. $2 a^{2}+5 a$
c. 3
d. $3 a^{3}$
25. Which of the following is the equation of the line that has $x$-intercept $=-2$ and $y$-intercept $=-4$ ?
a. $y=-2 x-4$
b. $y=2 x-4$
c. $y=-2 x+4$
d. $y=-\frac{1}{2} x-4$
26. Janell has 5 gallons of paint. After painting 800 square feet of walls in her house, she has 3 gallons left. The graph below show's Janell's situation.


What is the equation of this linear function? What is the slope and what does it represent?
a. $\quad y=-\frac{1}{400} x+5 ;$ slope $=-\frac{1}{400} ;$ this means that for every gallon of paint used, 400 sq. ft. of area is painted.
b. $y=-\frac{1}{40} x+5$; slope $=-\frac{1}{40}$; this means that for every gallon of paint used, 40 sq. ft . of area is painted.
c. $y=-\frac{1}{800} x+5 ;$ slope $=-\frac{1}{800}$; this means that for every gallon of paint used, 800 sq. ft. of area is painted.
d. $y=-\frac{1}{4} x+5 ;$ slope $=-\frac{1}{400}$; this means that for every gallon of paint used, 4 sq. ft . of area is painted.
27. Which expression is NOT equivalent to the other expressions?
a. $\left(4 x^{2} y\right)^{2}$
b. $4 x^{4} y^{2}$
c. $16 x^{4} y^{2}$
d. $4^{2} x^{4} y^{2}$
28. The height of a ball in feet is modeled by $y=-16 x^{2}+72 x$, where $x$ is the time in seconds after the ball is hit. How long is the ball in the air?

a. $\quad 2.25 \mathrm{~s}$
b. $\quad 4.5 \mathrm{~s}$
c. 9 s
d. 81 s
29. The diagram shows a Venn diagram for sets $A$ and $B$. What is the intersection?

## Set A: factors of 9

Set B: factors of 12

a. $\{1\}$
b. $\{1,3\}$
c. $\{2,4,6,12\}$
d. $\{9\}$
30. Factor $p^{2}-40$.
a. $(p-20)^{2}$
c. $(p+20)^{2}$
b. $(p-20)(p+20)$
d. cannot be factored
31. Multiply: $(a+b)(a-b)$
a. $a^{2}+2 a b-b^{2}$
b. $a^{2}+b^{2}$
c. $a^{2}-b^{2}$
d. $a^{2}-2 a b-b^{2}$
32. Simplify $y^{10} \cdot y^{5}$.
a. $y^{2}$
b. $y^{5}$
c. $y^{15}$
d. $y^{50}$
33. Solve $7(x-2)=7 x+14$.
a. no solution
c. 2
b. 0
d. all real numbers
34. Find the slope of the line that contains the points $(1,-1)$ and $(-2,8)$.
a. -5
b. -3
c. $-\frac{7}{3}$
d. $-\frac{1}{3}$
35. For $f(x)=24-2 x$, find $f(2)$ and find $x$ such that $f(x)=10$.
a. $28 ; 12$
b. $22 ; 4$
c. $20 ; 7$
d. $22 ; 7$
36. If you graph $y=x^{2}-6 x+9$, the $y$-intercept of the graph of the equation is $\qquad$ .
a. -3
c. 2
b. 9
d. 0
37. Reserved tickets for the football game cost $\$ 20$ each and general admission tickets cost $\$ 12$ each. The total ticket sales brought in $\$ 900$. The equation below can be used to find out how many of each type of ticket were sold, where $x$ is the number of reserved tickets and $y$ is the number of general admission tickets.

$$
20 x+12 y=900
$$

Which of the following graphs shows the graph of this equation?
a.

c.

b.

d.

38. Give the domain and range of the relation.

a. $\mathrm{D}:-2 \leq x \leq 4 ; \mathrm{R}:-3 \leq y \leq 2$
b. $\mathrm{D}:-3 \leq x \leq 2 ; \mathrm{R}:-2 \leq y \leq 4$
c. $\mathrm{D}:-3 \leq x \leq 2 \quad \mathrm{R}:-3 \leq y \leq 6$
d. $\mathrm{D}:-3 \leq x \leq 2 ; \mathrm{R}: 0 \leq y \leq 4$
39. Solve $x^{2}-7 x-8=0$ by factoring.
a. $\quad x=-1$ or $x=8$
b. $\quad x=1$ or $x=-8$
c. $x=-3$ or $x=8$
d. $x=-3$ or $x=8$
$\qquad$ 40. Which of the following graphs shows the graph of this equation?

$$
y+1=2(x-1)
$$

a.



c.

41. The scatter plot shows the relationship between the weekly total sales $(\$)$ and the number of different rug designs a rug store has. Based on this relationship, use the line of best fit to predict what the total sales will be when the store has 110 different rug designs.

a. $\$ 31,000$
b. $\$ 0$
c. $\$ 38,000$
d. $\$ 35,000$
42. Factor $x^{2}-16$.
a. $(x-4)^{2}$
c. $(x+4)^{2}$
b. $(x+4)(x-4)$
d. cannot be factored
$\qquad$ 43. Factor $x^{2}-6 x-16$.
a. $(x+2)(x-8)$
c. $(x-4)(x-2)$
b. $(x-8)(x-2)$
d. cannot be factored
$\qquad$ 44. Solve $A=\frac{1}{2}(b+c) h$ for $c$.
a. $\quad c=\frac{h}{2 A}-b$
b. $\quad c=2 A h-b$
c. $\quad c=\frac{2 A}{h}-b$
d. $c=2 h(A-b)$
45. The ratio of boys to girls in a class is $2: 3$. If there are 18 girls in the class, how many boys are there?
a. 6
b. 10
c. 12
d. 27
46. Solve $\left\{\begin{array}{l}2 x+3 y=4 \\ 3 x-3 y=-9\end{array}\right.$.
a. $(2,0)$
b. $(-1,2)$
c. $(1,-2)$
d. $(-5,2)$
47. Use the zero product property to solve the equation $(x+3)(x-2)=14$.
a. The solutions are 5 and -4 .
c. The solutions are -5 and 4 .
b. The solutions are -3 and 2 .
d. The solutions are 3 and -2 .
48. Divide: $\left(18 x^{3}+9 x^{2}\right) \div(3 x)$
a. $6 x^{2}+3$
b. $6 x^{2}+3 x$
c. $3 x^{2}+3 x$
d. $6 x^{3}+3 x$
49. Which of the following is the solution to this inequality?

$$
3(5+2 n) \geq 7+10 n
$$

a. $n \geq 2$
b. $n \geq-2$
c. $n \leq 2$
d. $n \leq-2$
50. Multiply $(x+7)(x-7)$.
a. $x^{2}-49$
b. $x^{2}+14 x-49$
c. $2 x-14$
d. $x^{2}+49$
51. $U$ is the set of natural numbers less than $8 . G$ is the set of even integers less than 10 . Which is the complement of set $G$ in universe $U$ ?
a. $\{1,3,5,7\}$
b. $G$
c. $\{2,4,6\}$
d. $\{1,3,5,7,8\}$
-_- 52. Simplify the quotient $\frac{\sqrt{15}}{\sqrt{2}}$.
a. $\frac{\sqrt{15}}{2}$
b. $\frac{\sqrt{30}}{2}$
c. $\sqrt{7.5}$
d. $\frac{2}{\sqrt{30}}$
53. Graph $-2 x+4 y=4$ for the domain $\mathrm{D}:\{-8,-4,0,4,8\}$.
a.

b.

c.

d.

54. Determine whether the pairing is a function. If it is a function, describe the rule that relates the input value to the output value.

| input | -3 | -1 | 0 | 1 | 3 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| output | 0 | 2 | 3 | 4 | 6 |

a. The pairing is not a function.
c. The pairing is a function. The rule is "input value multiplied by 3 then add 3."
b. The pairing is a function. The rule is
d. The pairing is a function. The rule is "input value multiplied by 2 then add "input value plus 3." 3."
55. The values in the table show a linear relationship. Find the slope.

| $\boldsymbol{x}$ | -4 | 2 | 8 | 14 |
| :---: | :---: | :---: | :---: | :---: |
| $\boldsymbol{y}$ | 10 | 7 | 4 | 1 |

a. 2
b. -2
c. $\frac{1}{2}$
d. $-\frac{1}{2}$

