Name:_____ **Algebra 1 Midterm Review**

1. Order the following list of numbers from least to greatest.

$$\frac{9}{5},\ 1.\overline{8},\ \frac{5}{3},\ \sqrt{3}$$

- **A.** $1.\overline{8},\ \frac{5}{3},\ \sqrt{3},\ \frac{9}{5}$
- **B.** $\sqrt{3},\ \frac{9}{5},\ \frac{5}{3},\ 1.\overline{8}$
- **C.** $\frac{5}{3},\ \frac{9}{5},\ 1.\overline{8},\ \sqrt{3}$
- **D.** $\frac{5}{3},\ \sqrt{3},\ \frac{9}{5},\ 1.\overline{8}$

2. Simplify. $\sqrt{891}$

- **A.** $8\sqrt{11}$
- **B.** $81\sqrt{11}$
- **C.** $9\sqrt{11}$
- **D.** $8\sqrt{91}$

3. $\sqrt{93x}$

The expression above should be further simplified for which value of x?

- **A.** 46
- **B.** 11
- **C.** 118
- **D.** 33

4. Simplify: $7\sqrt{32} - 5\sqrt{18}$

- **A. $17\sqrt{2}$**
- **B. $13\sqrt{2}$**
- **C. $2\sqrt{13}$**
- **D. $5\sqrt{7}$**

5. The greatest common factor (GCF) of x^3y^k and $x^{2k}y^4$ is x^3y^3. What is the value of k?

- A. 1
- B. 2
- C. 3
- D. 4

6. $21u^3v^3w \quad 33u^2vw^4$

What is the greatest common factor (GCF) of the monomials shown above?

- **A.** $3u^3v^3w^4$
- **B.** $3u^2vw$
- **C.** $231u^5v^4w^5$
- **D.** $231u^2vw$

7. Evaluate the following expression for $x = 122$.

$$2\sqrt{x-1} + 6$$

- **A.** 30
- **B.** 26
- **C.** 16
- **D.** 28

8. Simplify: $5(12 - |-11 + 5|) - |11 - 7|^2$

- **A.** 38
- **B.** -50
- **C.** -36
- **D.** 14

9. Alfred is a new photographer. In order for his work to get exposure, Alfred has decided to have a booth at an arts festival. He is charging $19.19 for his color prints and $28.81 for his black and white prints. Which is a reasonable amount that Alfred would make if he sold 6 color prints and 3 black and white prints?

- **A.** $432.00
- **B.** $201.00
- **C.** ($27.00)
- **D.** $288.00

10. A polynomial expression is shown below.

$(18x^5 - 36x^4) - (sx^3 - 7)(3x^2 - 6x + 2)$

The expression is simplified to $-12x^3 + 21x^2 - 42x + 14$.

What is the value of s?

- **A.** 6
- **B.** -3
- **C.** 3
- **D.** -6

11. Simplify the following expression.

$(4x + 2)(x - 7)$

- **A.** $4x^2 - 26x - 14$
- **B.** $4x^2 - 30x - 9$
- **C.** $4x^2 + 26x - 14$
- **D.** $4x^2 - 26x - 9$

12. Simplify the expression given below.

$(9x^3 - 2) - (5x^2 + 2x - 7)$

- **A.** $9x^3 - 5x^2 - 2x + 5$
- **B.** $9x^3 - 4x^2 - 1x + 5$
- **C.** $4x^3 - 2x + 5$
- **D.** $9x^3 + 5x^2 + 2x + 9$

13. Factor the following polynomial completely.

$9x^3 - 81x^2 + 72x$

- **A.** $9x(x - 1)(x - 8)$
- **B.** $-9(x^3 + 9x + 8)$
- **C.** $9x(x - 1)(x + 8)$
- **D.** $9(x^3 - 9x^2 + 8x)$

14. Four expressions are shown below.

$5\sqrt{x}$ $5x^2$ $\frac{5}{2x}$ $\frac{x}{5}$

Which inequality comparing two of the expressions is true when $0.2 \le x \le 0.6$?

- **A.** $\frac{x}{5} > 5x^2$
- **B.** $5\sqrt{x} > \frac{5}{2x}$
- **C.** $\frac{x}{5} > \frac{5}{2x}$
- **D.** $5\sqrt{x} > 5x^2$

15. Factor the polynomial below.

$x^2 + 6x + 8$

- **A.** $(x + 2)(x - 4)$
- **B.** $(x - 2)(x - 4)$
- **C.** $(x - 2)(x + 4)$
- **D.** $(x + 2)(x + 4)$

16. Simplify the following expression.

$$\frac{x-4}{-10x^2+90x-200} \quad x \neq 4, 5$$

- **A.** $\frac{1}{-10x+50}$
- **B.** $-10x-50$
- **C.** $-10x+50$
- **D.** $\frac{1}{-10x-50}$

17. Simplify the following expression.

$$\frac{x^2+6x-16}{(x+8)(x+4)}$$

- **A.** 1
- **B.** $\frac{x+8}{x+4}$
- **C.** $\frac{x-2}{x+4}$
- **D.** $\frac{x-2}{x+2}$

18. Solve for *x*.

$$7x-4=4x+7x+8$$

- **A.** $x=-\frac{3}{7}$
- **B.** $x=-3$
- **C.** $x=3$
- **D.** $x=\frac{3}{7}$

19. Matt and Casey are wrapping gifts. They bought *x* rolls of wrapping paper and *y* packages of ribbon. They spent a total of $30. The equation below describes the relationship between the number of rolls of wrapping paper and the number of packages of ribbon purchased.

$$6x + 3y = 30$$

The ordered pair (3, 4) is a solution of the equation. What does the solution (3, 4) represent?

- **A.** Matt and Casey purchased 3 rolls of wrapping paper and 4 packages of ribbon.
- **B.** Wrapping paper costs $3 per roll, and ribbon costs $4 per package.
- **C.** Matt and Casey purchased 4 rolls of wrapping paper and 3 packages of ribbon.
- **D.** A package of ribbon costs $1 more than a roll of wrapping paper.

20. Brian is solving an equation. His work is shown below.

$$3x+(3x+7)=49$$

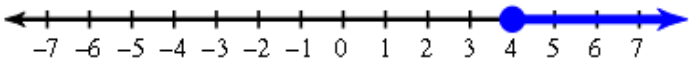
$$(3x+3x)+7=49$$

$$6x+7=49$$

Which statement describes the procedure Brian used in his work and which property justifies the procedure?

- **A. Brian regrouped the terms to multiply 3*x* and 3*x* by 7. This procedure is justified by the associative property.**
- **B. Brian regrouped the terms toadd 3*x* and 3*x*. This procedure is justified by the associative property.**
- **C. Brian regrouped the terms to add 3*x* and 3*x* and 7. This procedure is justified by the commutative property.**
- **D. Brian regrouped the terms to multiply 3*x* and 3*x*. This procedure is justified by the commutative property.**

21. The solution set of an inequality is listed below.



Which inequality has the solution set shown on the number line?

A. $-\frac{x}{6} \leq \frac{-2}{3}$

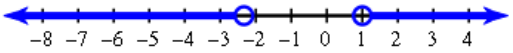
C. $\frac{x}{6} \leq \frac{2}{3}$

B. $\frac{x}{6} \leq \frac{-2}{3}$

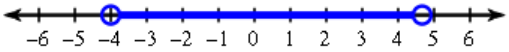
D. $-\frac{x}{6} \leq \frac{2}{3}$

22. Which graph shows the solution set of the inequality: $|3r - 1| > 13$

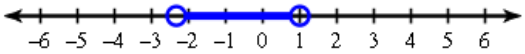
A.



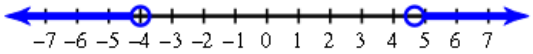
B.



C.



D.



23. Jeremy makes and sells bobbleheads. His monthly goal is to make a profit over $1,500.

- **He sells each bobblehead for $30.**
- **He has a monthly fixed cost of $725.**

The inequality $30x + 725 > 1{,}500$ models the situation. Which best describes the meaning of *x* in the inequality?

A. The number of bobbleheads that Jeremy must sell to recover his monthly fixed costs

B. The profit made from 2 months of sales

C. The number of bobbleheads Jeremy must sell to reach his goal

D. The profit made form selling 30 bobbleheads