

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

Algebra 1 Midterm Review

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

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

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

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.  $21u^3v^3w$      $33u^2vw^4$

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

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

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

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

- A. 30       C. 16
- B. 26       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       C. (\$27.00)  
 B. \$201.00       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       C. 3  
 B. -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.

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

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

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

17. Simplify the following expression.

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

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

18. Solve for  $x$ .

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

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

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

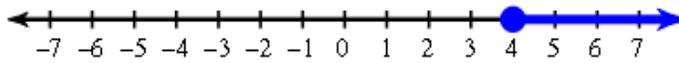
$$(3x + 3x) + 7 = 49$$

$$6x + 7 = 49$$

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

- A. Brian regrouped the terms to multiply  $5x$  and  $5x$  by 9. This procedure is justified by the associative property.
- B. Brian regrouped the terms to add  $5x$  and  $5x$ . This procedure is justified by the associative property.
- C. Brian regrouped the terms to add  $5x$  and  $5x$  and 9. This procedure is justified by the commutative property.
- D. Brian regrouped the terms to multiply  $5x$  and  $5x$ . 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?

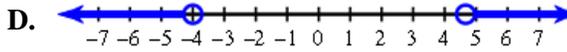
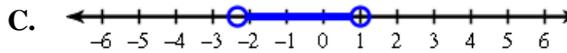
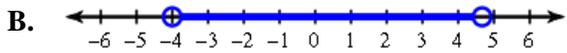
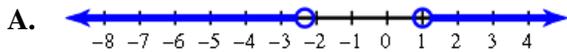
A.  $-\frac{x}{6} \leq \frac{-2}{3}$

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:  $|3r - 1| > 13$



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 from selling 30 bobbleheads