

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
- ☐ 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      ☐ 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.

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

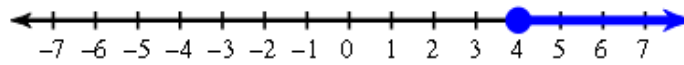
$$(3x + 3x) + 7 = 49$$

$$6x + 7 = 49$$

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?

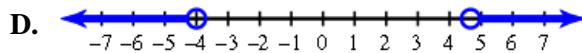
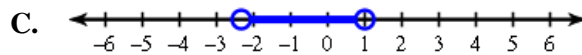
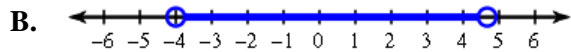
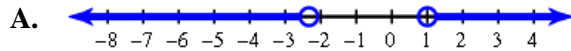
A.  $-\frac{x}{6} \leq \frac{-2}{3}$

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