

Factor.

1. $x^2 + 11x + 28$

[1] _____

2. $-4j + j^2 - 12$

[2] _____

3. Simplify. Write the answer as a simple fraction with all exponents positive. $\frac{2 - \frac{e}{f}}{\frac{5}{f} + e}$

[3] _____

4. Simplify. Write the answer as a simple fraction with all exponents positive. $\frac{x^2 y^3 z - y^{-1} z^{-3}}{-3x^{-2} - xy^{-1}}$

[4] _____

Solve the system by the elimination method:

5. $4x - 4y = -4$

$3x + 4y = 25$

[5] _____

6. Solve the system by the elimination method: $3x + 2y = -5$

$$4x - y = -14$$

[6] _____

7. Solve the system by substitution:

$$4x - y = -20$$

$$x - y = -5$$

[7] _____

Simplify:

8. $-5\sqrt{50} - \sqrt{300} - 3\sqrt{2} - 2\sqrt{27}$

[8] _____

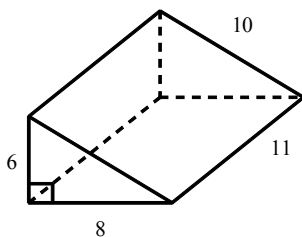
9. $-3\sqrt{2} - 2\sqrt{20,000} + 7\sqrt{18}$

[9] _____

10. In the Olympics, the athlete received an 85% score on the compulsory exercises, which were weighted 70%. In the optional round, weighted 30% , the athlete received a 95%. What was the athlete's weighted average?

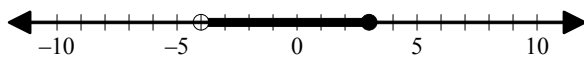
[10] _____

11. Find the volume and the total surface area of the right triangular prism. Dimensions are in feet.



[11] _____

12. Write a conjunction that describes this graph. Specify the domain.



[12] _____

13. Graph the following inequality on a number line: $x - 4 \geq -7$; $D = \{\text{Real numbers}\}$

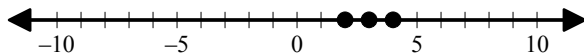
[13] _____

14. Indicate whether each of the following numbers is a rational or an irrational number.

- (a) $\frac{5}{6}$ (b) $\sqrt{3+5}$ (c) $1\sqrt{7}$ (d) -5

[14] _____

15. Write a conjunction that describes this graph. Specify the domain.



[15] _____

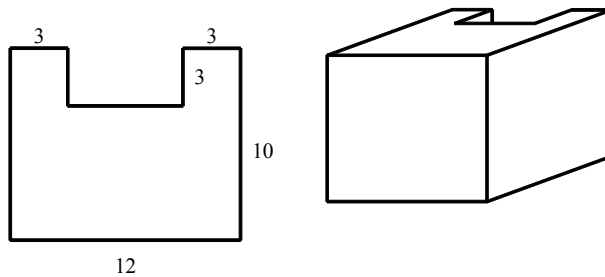
16. Graph the following inequality on a number line: $x + 1 > 0$; $D = \{\text{Integers}\}$

[16] _____

17. Simplify: $-3\left\{\left[(-2-2)-(-3^0-3)-2\right]-3\right\} \pm \sqrt{16}$

[17] _____

18. A base of a right prism whose height is 11 meters is shown. Find the volume of the prism. All angles are right angles. Dimensions are in meters.



[18] _____

19. A ski club planned a trip to Breckenridge, and 48 of the members signed up. If 70% of the members did not sign up, how many members does the club have?

[19] _____

20. The experimental treatment caused side effects in 9% of those who had it. If 324 experienced side effects, how many people had the experimental treatment?

[20] _____

21. The advertisement of the super blow-out sale caused the number of shoppers to increase by 120 percent. If 220 shoppers were there before the advertisement, how many were there after the advertisement?

[21] _____

22. Simplify. Write the answers with all variables in the denominator.

a) $(3^0 x^4 y^{-5} z^4)^{-2}$ b) $\left(\frac{5^0 x^{-1} z^2}{y^{-2}}\right)^{-4}$

[22] _____

23. Use nine unit multipliers to convert 27 cubic feet to cubic meters.

[23] _____

24. Given the sets $A = \{4, 5, 6\}$, $B = \{3, 4, 5, 6, \dots\}$, and $C = \{3, 4, 5\}$, tell which of the following statements are true and which are false.

a) $C \subset B$ b) $C \not\subset B$ c) $8 \in A$ d) $A \subset C$

[24] _____

25. A single die is rolled two times. What is the probability that the next roll will produce a number less than 3?

[25] _____