

1. Add the integers.

$$16 + (-21)$$

$$16 + (-21) = \boxed{-5}$$

2. Subtract.

$$3 - 9$$

$$3 - 9 = \boxed{-6}$$

3. Multiply.

$$(4)(-7)$$

$$(4)(-7) = \boxed{-28}$$

4. Find the absolute value.

$$|1|$$

$$|1| = \boxed{1}$$

5. Simplify. Write the answer in lowest terms.

$$\frac{11}{12} + \frac{2}{9}$$

$$\frac{11}{12} + \frac{2}{9} = \boxed{1\frac{5}{36}} \text{ (Type an integer, fraction, or mixed number.)}$$

6. Divide. Write the answer in lowest terms.

$$\frac{14}{75} \div \frac{1}{5}$$

$$\frac{14}{75} \div \frac{1}{5} = \boxed{\frac{14}{15}} \text{ (Simplify your answer. Type an integer, fraction, or mixed number.)}$$

7. Use the distributive property to rewrite this expression, then simplify the new expression, if possible.

$$-3(n + 3)$$

$$-3(n + 3) = \boxed{-3n - 9} \text{ (Simplify your answer.)}$$

8. Evaluate the following expression for the value given.

$$x^2 + 3x - 9; x = -4$$

$$x^2 + 3x - 9 = \boxed{-5} \text{ (Type an integer or a decimal.)}$$

9. Simplify the expression.

$$6xy + xy - 6xy$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. $6xy + xy - 6xy$ simplifies to $\boxed{xy}$. (Simplify your answer.)
- ☐ B. The expression cannot be simplified.

10. Simplify the following expression, where possible.

$$6y - 7(3y - 18)$$

$$6y - 7(3y - 18) = \boxed{-15y + 126} \text{ (Simplify your answer. Do not factor.)}$$

11. Simplify.

$$4^5 \cdot 4^7$$

$$4^5 \cdot 4^7 = \boxed{16777216}$$

(Simplify your answer.)

12. Simplify.

$$(y^5)^7$$

$$(y^5)^7 = \boxed{y^{35}}$$

13. Simplify. (Assume all variables are nonzero.)

$$\frac{g^7}{g^5}$$

$$\frac{g^7}{g^5} = \boxed{g^2}$$

(Type exponential notation with positive exponents.)

14. Express the following using a positive exponent. Then simplify the expression.

$$7^{-2}$$

Write using a positive exponent. Do not evaluate.

$$7^{-2} = \boxed{\frac{1}{7^2}}$$

Evaluate.

The answer is $\boxed{\frac{1}{49}}$.

(Simplify your answer. Type an integer or a fraction.)

15. Write the expression with only positive exponents. Assume all variables represent non-zero numbers.

$$9x^{-2}$$

Which expression is written with positive exponents and represents $9x^{-2}$?

- ☐ A. $\frac{1}{9x^2}$
- ☐ B. $-9x^2$
- ☐ C. $-\frac{x^2}{9}$
- ☒ D. $\frac{9}{x^2}$

16. Identify the coefficient of each term of the polynomial.

$$-4x^4 + 4x^3 - 8x^2 + 6x - 1$$

The coefficient of the first term is .

The coefficient of the second term is .

The coefficient of the third term is .

The coefficient of the fourth term is .

The coefficient of the fifth term is .

17. Identify the polynomial as a monomial, binomial, or trinomial.

$$25x^2 - 64$$

Choose the correct answer below.

- ☐ trinomial
☒ binomial
☐ monomial

18. Evaluate the given polynomial for $x = 11$.

$$-x^2 + 4x + 21$$

The answer is . (Simplify your answer.)

19. Add.

$$(3x^3 + 7x^2 - 20x) + (x^2 + 6x - 13)$$

$$(3x^3 + 7x^2 - 20x) + (x^2 + 6x - 13) = \boxed{3x^3 + 8x^2 - 14x - 13} \text{ (Simplify your answer.)}$$

20. Subtract the polynomials.

$$(x^3 - 5x^2 + 15) - (x^2 - 3x + 17)$$

$$(x^3 - 5x^2 + 15) - (x^2 - 3x + 17) = \boxed{x^3 - 6x^2 + 3x - 2} \text{ (Simplify your answer.)}$$

21. Find the product.

$$-2y^2(7y^2 + 7y - 8)$$

$$-2y^2(7y^2 + 7y - 8) = \boxed{-14y^4 - 14y^3 + 16y^2}$$

(Simplify your answer.)

22. For the functions $f(x) = x^3 - 6x^2 + 8x + 6$ and $g(x) = -5x^6$, find $f(x) \cdot g(x)$.

$$f(x) \cdot g(x) = \boxed{-5x^9 + 30x^8 - 40x^7 - 30x^6} \text{ (Simplify your answer.)}$$

23. Multiply.

$$(b + 4)(b - 2)$$

$$(b + 4)(b - 2) = \boxed{b^2 + 2b - 8}$$

(Simplify your answer.)

24. Use the FOIL method to find the product.

$$(4x + 9)(2x - 1)$$

$$(4x + 9)(2x - 1) = \boxed{8x^2 + 14x - 9}$$
 (Simplify your answer.)

25. Multiply.

$$(a - 5)(a + 5)$$

$$(a - 5)(a + 5) = \boxed{a^2 - 25}$$
 (Simplify your answer.)

26. Multiply $(x - 17)(x + 17)$.

$$(x - 17)(x + 17) = \boxed{x^2 - 289}$$

(Simplify your answer.)

27. Multiply.

$$(x + 11)^2$$

$$\text{The answer is } \boxed{x^2 + 22x + 121}.$$

(Simplify your answer.)

28. Multiply.

$$(6x + 7)^2$$

$$(6x + 7)^2 = \boxed{36x^2 + 84x + 49}$$
 (Simplify your answer.)

29. Factor.

$$3s - 9$$

$$3s - 9 = \boxed{3(s - 3)}$$

(Simplify your answer. Factor completely.)

30. Factor the greatest common factor (GCF) out of the given expression.

$$63x^7 - 35x^3 - 147x^2$$

$$63x^7 - 35x^3 - 147x^2 = \boxed{7x^2(9x^5 - 5x - 21)}$$
 (Factor completely.)

31. Factor completely.

$$c^2 - 4c - 32$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ **A.** $c^2 - 4c - 32 = \boxed{(c - 8)(c + 4)}$

☐ **B.** The expression is prime.

32. Factor the trinomial.

$$x^2 + 17x - 18$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☒ A. $x^2 + 17x - 18 = (x + 18)(x - 1)$

☐ B. The trinomial is prime.

33. Factor completely.

$$2x^2 + 7x + 3$$

$$2x^2 + 7x + 3 = (2x + 1)(x + 3)$$

34. Factor completely.

$$3r^2 + 16r + 5$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ A. $3r^2 + 16r + 5 = (3r + 1)(r + 5)$

☐ B. The expression is prime.

35. Factor by grouping.

$$c^2 + 3c + 8c + 24$$

The answer is $(c + 3)(c + 8)$.

36. Factor the following polynomial by grouping.

$$3x^2 + 15x + 5x + 25$$

$$3x^2 + 15x + 5x + 25 = (3x + 5)(x + 5) \text{ (Factor completely.)}$$

37. Factor completely.

$$s^2 - 9$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ A. $s^2 - 9 = (s - 3)(s + 3)$

☐ B. The expression is prime.

38. Factor completely.

$$w^3 - 64$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☒ A. $w^3 - 64 = (w - 4)(w^2 + 4w + 16)$
(Factor completely. Simplify your answer.)

☐ B. The polynomial is prime.

39. Factor completely.

$$x^7 + 9x^5 - 225x$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ A. $x^7 + 9x^5 - 225x = x(x^6 + 9x^4 - 225)$

☐ B. The expression is prime.

40. Factor completely.

$$a^2 + 9a + 20$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ A. The answer is $(a + 4)(a + 5)$.

☐ B. The expression is prime.