Keystone Review – Algebraic Expressions

Name: _____   **Date:** _____

1. If x represents an even number, which expression represents an odd number?

   A. x^2 B. $x+3$ C. $3x$ D. $\dfrac{x}{3}$

2. Which expression represents the number of cents in d dimes and n nickels?

   A. $d+n$

   B. $15(d+n)$

   C. $10d+5n$

   D. $\dfrac{d}{10}+\dfrac{n}{5}$

3. If $n+7$ represents an even number, the next larger even number is represented by

   A. $n+8$

   B. $n+9$

   C. $10n+7$

   D. $2n+7$

4. Maria is twice as old as Sue. If x represents Sue's age, which expression represents how old Maria will be in three years?

   A. $2x$

   B. $x+3$

   C. $\frac{1}{2}x-3$

   D. $2x+3$

5. If x represents the smallest of three consecutive odd integers, then the largest would be represented by

   A. $x+2$ B. $x+3$ C. $x+4$ D. $x+5$

6. What is the supplement of an angle that measures $3x°$?

   A. $90°-3x°$

   B. $3x°-90°$

   C. $180°-3x°$

   D. $3x°-180°$

7. Find the value of (x^2-5x+4) if $x=7$.

8. When $x=2$ and $y=3$, which expression has the *smallest* value?

   A. $(x-y)$

   B. $x \cdot y$

   C. $x+y$

   D. $x \div y$

9. If $x=4y$, what is the value of $\dfrac{x}{y}$, $y \neq 0$?

10. If $a=-2$ and $b=3$, what is the value of $-3a^2 b$?

11. Find the sum of $5x^3-3x^2+5$ and $-2x^3+6x^2-5$.

12. From $6x^2-3x+9$ subtract $2x^2-5x+8$.

13. The expression $y^3 + y^3$ is equivalent to

   A. $2y^6$ B. $2y^3$ C. y^9 D. y^6

14. The quotient of $\dfrac{-18x^6}{6x^3}$ is equal to

   A. $-3x^3$ B. $-3x^2$ C. $-12x^2$ D. $-12x^3$

15. The product of $3x^2y^3$ and $-4x^3y^4$ is

   A. $-7x^5y^7$ B. $-x^5y^7$

   C. $-12x^5y^7$ D. $-12x^6y^{12}$

16. The quotient $\dfrac{16x^3y^5}{4xy^2}$ is equivalent to

   A. $4x^2y^3$ B. $4xy^7$

   C. $12x^2y^3$ D. $12x^3y^3$

17. The product of $3x^2y^3$ and $4xy^2$ is equivalent to

   A. $7x^2y^6$ B. $7x^2y^5$

   C. $12x^2y^6$ D. $12x^3y^5$

18. Express the product $(2x - 3)(x + 5)$ as a trinomial.

19. The expression $(x - 4)^2$ is equivalent to

   A. $x^2 - 16$ B. $x^2 + 16$

   C. $x^2 - 8x + 16$ D. $x^2 + 8x + 16$

20. The binomials $(x - 2)$ and $(2x + 3)$ are the factors of which polynomial?

   A. $2x^2 - 6$ B. $2x^2 - x - 6$

   C. $2x^2 + x - 6$ D. $2x^2 + 7x - 6$

21. Which expression is equal to $(x + 3)^2$?

   A. $x^2 + 6$ B. $x^2 + 9$

   C. $x^2 + 6x + 9$ D. $x^2 + 3x + 9$

22. Express $(4x - 5)(6x + 5)$ as a trinomial.

23. Factor: $x^2 + 5x - 24$

24. Factor: $25x^2 - 9$

25. Factor: $x^2 - 5x + 6$

26. Factor: $b^2 - 4$

27. If $x - 3$ is a factor of $x^2 + x - 12$, then the other factor is

    A. $4x - 3$ B. $3x - 4$ C. $x - 4$ D. $x + 4$

28. Written in factored form, the binomial $a^2 b - ab^2$ is equivalent to

    A. $ab(a - b)$ B. $(a - b)(a + b)$

    C. $a^2(b - b^2)$ D. $a^2 b^2 (b - a)$

29. The greatest common monomial factor of $12x^2$ and $8x^3$ is

    A. $96x^5$ B. $12x^2$ C. $8x^3$ D. $4x^2$

30. The greatest common factor of $12x^2 y^3$ and $24xy^2$ is

    A. $6xy$ B. $24xy^2$ C. $12xy^2$ D. $2xy$

31. If $a + b = 5$ and $a - b = 3$, find the value of $a^2 - b^2$.

32. If $(2x + 3)(x - 2)$ is written in the form $ax^2 + bx + c$, what is the value of c?

33. What value of k makes the trinomial $x^2 - 10x + k$ a perfect square?

34. If $(x - 3)$ and $(x + 7)$ are the factors of the trinomial $x^2 + ax - 21$, what is the value of a?

    A. -3 B. -4 C. 7 D. 4

35. Which expression is the simplest form of $\dfrac{25x^4 y^2 - 15x^2 y}{5xy}$ if $x \neq 0$ and $y \neq 0$?

    A. $\dfrac{5x^2 y - 3}{5xy}$ B. $\dfrac{5x^3 y - 3x}{5xy}$

    C. $5x^2 y - 3$ D. $5x^3 y - 3x$

36. If $x \neq 2$, then $\dfrac{x^2 - 4}{2x - 4}$, in simplest form, is equivalent to

    A. x B. $\dfrac{x}{2}$ C. $\dfrac{x - 2}{2}$ D. $\dfrac{x + 2}{2}$

37. For which value of x is the expression $\dfrac{x}{x - 2}$ undefined?

    A. 1 B. 2 C. -2 D. 0

38. The expression $\dfrac{5}{(x-2)(x+3)}$ is meaningless when x is equal to

    A. 2 or −3

    B. −2

    C. −2 or 3

    D. 0

39. Express as a single fraction in simplest form:
    $$\frac{a}{3} + \frac{2a}{5}$$

40. Express in simplest form: $\dfrac{2 + \dfrac{4}{x-2}}{\dfrac{2}{x-2}}$

41. If $\sqrt{84}$ is simplified to $a\sqrt{b}$ such that a and b are integers, what is the value of a?

42. If $x > 0$, the expression $(\sqrt{x})(\sqrt{2x})$ is equivalent to

    A. $\sqrt{2x}$ B. $2x$ C. $x^2\sqrt{2}$ D. $x\sqrt{2}$

43. If $a > 0$, then $\sqrt{9a^2 + 16a^2}$ equals

    A. $\sqrt{7a}$ B. $5\sqrt{a}$ C. $5a$ D. $7a$

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1.
Answer: B

2.
Answer: C

3.
Answer: B

4.
Answer: D

5.
Answer: C

6.
Answer: C

7.
Answer: 18

8.
Answer: A

9.
Answer: 4

10.
Answer: −36

11.
Answer: $3x^3 + 3x^2$

12.
Answer: $4x^2 + 2x + 1$

13.
Answer: B

14.
Answer: A

15.
Answer: C

16.
Answer: A

17.
Answer: D

18.
Answer: $2x^2 + 7x − 15$

19.
Answer: C

20.
Answer: B

21.
Answer: C

22.
Answer: $24x^2 − 10x − 25$

23.
Answer: $(x + 8)(x − 3)$

24.
Answer: $(5x − 3)(5x + 3)$

25.
Answer: $(x − 3)(x − 2)$

26.
Answer: $(b − 2)(b + 2)$

27.
Answer: D

28.
Answer: A

29.
Answer: D

30.
Answer: C

31.
Answer: 15

32.
Answer: −6

33.
Answer: 25

34.
Answer: D

35.
Answer: D

36.
Answer: D

37.
Answer: B

38.
Answer: A

39.
Answer: $\frac{11a}{15}$

40.
Answer: *x*

41.
Answer: 2

42.
Answer: D

43.
Answer: C