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Unit 5 Practice Exam 2017 (Chapters 8 & 9)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

B 1. Match the table with the function that models the data.

x	y
1	4
2	16
3	64
4	256

a. $y = 4x$ (b.) $y = 4^x$ c. $y = x^4$

Short Answer

2. Simplify the expression. $(-4.5)^0$ 1

3. Simplify the expression. $(2)^{-5}$ $\frac{1}{2^5} = \frac{1}{32}$

4. Simplify the expression. $2^{-3} \cdot 4^0$ $\frac{1}{2^3} = \frac{1}{8}$

5. Simplify the expression. $7^{-5} \cdot 7^{10} \cdot 7^8$ 7^{13}

6. Simplify the expression. $(x^8)^2$ x^{16}

7. Simplify the expression. $2j^9 \cdot 4j^4$ $8j^{13}$

8. Simplify the expression. $6g^{-3}m^5$ $\frac{6m^5}{g^3}$

9. Simplify the expression. $\left(\frac{9}{4}\right)^2$ $\frac{9^2}{4^2} = \frac{81}{16}$

10. Simplify the expression. $(6k^6)^3$ $6^3k^{18} = 216k^{18}$

11. Simplify the expression. $7x^{-8} \cdot 6x^3$ $42x^{-5} = \frac{42}{x^5}$

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12. Simplify the expression. $(3xy^3)^2(xy)^6$

$3^2 x^2 y^6 x^6 y^6 = 9x^8y^{12}$

13. Simplify the expression. $\frac{d^2}{d^8}$

$d^{2-8} = d^{-6} = \frac{1}{d^6}$

14. Simplify the expression. $\left(\frac{5}{8j}\right)^2$

$\frac{5^2}{8^2 j^2} = \frac{25}{8^2 j^2}$

15. Simplify the expression. $\frac{6^9}{6^8}$

6^1 or 6

16. Simplify the expression. $\frac{7}{g^{-2}h^9}$

$\frac{7g^2}{h^9}$

17. Simplify the expression. $(x^9)^0(x^7)^2$

x^{14}

18. Simplify the expression. $-4x^3 \cdot 2y^{-2} \cdot 5y^5 \cdot x^{-8}$

$-40x^{-5}y^3 = \frac{-40y^3}{x^5}$

19. Evaluate the function rule for the given value. $y = 10 \cdot 4^x$ for $x = 3$

$10 \cdot 4^3 = 10 \cdot 64 = 640$

$y = A \cdot B^x$

20. Identify the initial amount a and the growth factor b in the exponential function.

$h(x) = 240 \cdot 5.1^x$

initial amount; growth factor

$a = 240$

$b = 5.1$

21. Find the balance in the account. $4,800 principal earning 5%, compounded annually, after 11 years

$y = 4800 \cdot (1 + 0.05)^{11}$ (0.05)

$y = \$8209.6$

22. A boat costs $9,950 and decreases in value by 6% per year. How much will the boat be worth after 10 years?

$y = 9950 \cdot (1 - 0.06)^{10}$ (0.06; 0.94)

$y = 5359.2$ dollars

23. Evaluate $6x^{-1}y^2$ for $x = 3$ and $y = 1$.

$6(3)^{-1}(1)^1 = \frac{6 \cdot (1)^1}{(3)^1} = \frac{6}{3} = 2$

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highest degree to lowest

24. Write the polynomial in standard form.
$8g - 5g^3 + 9g^2 - 7$ $-5g^3 + 9g^2 + 8g - 7$

25. Add the polynomials. Write your answer in standard form. $(7u^3 + 5u^2 + 8) + (7u^3 - 4u + 3)$
$14u^3 + 5u^2 - 4u + 11$

26. Subtract the polynomials. Write your answer in standard form. $(7w^2 - 5w - 5) - (2w^2 + 2w - 4)$
$5w^2 - 7w - 1$

27. Name the polynomial based on its degree and number of terms.
$5x^2 + 4x - 8$ quadratic trinomial. OR 2nd degree trinomial

28. Find the GCF of the terms of the polynomial.
$46x^2 + 24x^6$ $2x^2$ $2x^2(23 + 12x^4)$

29. Simplify the product using FOIL. $(4x + 3)(2x - 3)$
$8x^2 - 12x + 6x - 9 = \boxed{8x^2 - 6x - 9}$

30. Simplify the product using FOIL. $(m + 5)(m - 5)$
$m^2 - 5m + 5m - 25 = \boxed{m^2 - 25}$

31. Simplify the product. $3n(n^2 + 4n + 5)$
$\boxed{3n^3 + 12n^2 + 15n}$

32. Simplify the product using FOIL. $(2x - 7)(3x - 5)$
$6x^2 - 10x - 21x + 35 = \boxed{6x^2 - 31x + 35}$

33. Find the square. $(3x + 2)^2$
$(3x+2)(3x+2)$ $\boxed{9x^2 + 12x + 4}$

34. Factor the expression. $x^2 + 18x + 65$
$(x + 5)(x + 13)$

35. Factor the expression. $d^2 + 12d + 27$
$(d + 9)(d + 3)$

36. Factor the expression. $2g^2 + 3g - 20$
$(2g - 5)(g + 4)$

Factors of -40
-5 8 2g
10 4

	g	4
$2g$	$2g^2$	$8g$
-5	$-5g$	-20

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37. Factor the expression. $d^2 - 18d + 81$

$(d-9)(d-9)$

Factor the expression.

38. $16j^2 + 24j + 9$

$(4j+3)(4j+3)$

Factors of 144: $12 \cdot 12$

	$4j$	3
$4j$	$16j^2$	$12j$
3	$12j$	9

39. $r^2 - 49$

$(r-7)(r+7)$

40. $49b^2 - 36$

$(7b+6)(7b-6)$

41. Solve the equation using the zero-product property. $(2x - 8)(x + 6) = 0$

$2x-8=0$

$2x=8$

$x=4$

$x+6=0$

$x=-6$

42. Solve the equation by factoring. $z^2 + 12z + 27 = 0$

$(z+3)(z+9)=0$

$z+3=0$

$z=-3$

$z+9=0$

$z=-9$