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Chapter 2 Study Guide

Simplify.

1. 12^2

$12 \cdot 12$

144

2. 2^6

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$4 \cdot 4 \cdot 4$

$16 \cdot 4 = 64$

3. 4^3

$4 \cdot 4 \cdot 4$

$16 \cdot 4$

64

4. 6^0

1

Simplify the following expressions (rewrite as a single power of the given base).

5. $p^2 \cdot p^4 \cdot p^1$

p^7

6. $3^5 \cdot 3^{11} \cdot 3^4$

3^{20}

7. $v^{12} \cdot v^0 \cdot v^3$

v^{15}

8. $5 \cdot 5 \cdot 5 \cdot 5$

5^4

Evaluate using the values given.

9. $b^2 + 2a^2$ when $a = 5$ and $b = 6$

$(6)^2 + 2(5)^2$

$36 + 2(25)$

$36 + 50 = 86$

10. $(y^2 + x)^y$ when $x = 4$ and $y = 2$

$(2^2 + 4)^2 = (4+4)^2 = 8^2$

$= 64$

Rewrite the following expression (written in expanded form) as a decimal.

11. $(3 \cdot 1{,}000) + (2 \cdot 100) + (4 \cdot 10) + (7 \cdot 0.1) + (9 \cdot 0.001)$

3,240.709

Rewrite the following as decimals.

12. Three hundred seven ten-thousandths

.0307

13. One hundred two and seventy-two hundredths

102.72

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Use < to order the following numbers from least to greatest.

14. 3.123345, 3.123354, 3.123344

3.123344 < 3.123345 < 3.123354

15. 30.00345, 3.99999, 30.0005

3.99999 < 30.0005 < 30.00345

Round each number to the place value indicated.

16. 6.815553 to the nearest **ten-thousandth**

6.8156

17. 5.9606 to the nearest **tenth**

6.0

18. 1,389,327.0976 to the nearest **hundred thousand**.

1,400,000

Identify the property that is being illustrated by the following equations
(**commutative, associative, or distributive**)

19. $7 + 9 + 10 = 10 + 7 + 9$

commutative

20. $3 \cdot (2 \cdot 5) = (3 \cdot 2) \cdot 5$

associative

21. $5(x + 3 - 2y) = 5x + 5 \cdot 3 - 5 \cdot 2y$

distributive

22. $30 - 4 - 7 - 5 = 5 - 4 - 7 - 30$

none

Given the expression: $2x + 4 - 6y + 8w + a$

23. How many terms are there in the expression above?

5

24. What are the variables in the expression above?

x, y, w, a

25. What are the coefficients in the expression above?

2, −6, 8, 1

26. What are the constants in the expression above?

4

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Simplify each expression by using the distributive property.

27. $3(1+4b)$

3+12b

28. $7(2n-6)$

14n-42

29. $10(2v+7-4w)$

20v+70-40w

Simplify each expression by combining like terms.

30. $2x+3x+5-x$

2x+3x-x+5

4x+5

31. $7k-7k+13$

13

32. $9x+10-5-7x$

9x-7x+10-5

2x+5

33. $5a+8b-2a+11-7b+4-b+10a$

5a-2a+10a+8b-7b-b+11+4

13a+15

34. $3gh+7g-g+5g+11gh+7g$

3gh+11gh+7g-g+7g+5g

14gh+18g

Simplify each expression (use the distributive property first and then combine like terms).

35. $4(7m+5)+m$

28m+20+m

29m+20

36. $5(3+4n)-8-11n$

15+20n-8-11n

7+9n

37. $9+2(x+7)+5x$

9+2x+14+5x

7x+23

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Solve the following equations.

- Show all your work.
- Plug your solution back in to the original equation to check your answer.

38. $4x + 7 + 8x - 2 = 65$

$4x+8x+7-2=65$

$12x+5=65$

$-5 \quad -5$

$\frac{12x}{12} = \frac{60}{12}$

$x = 5$

✓ $4(5)+7+8(5)-2$

$20+7+40-2$

$67-2=65$

39. $5(4a + 15) = 95$

$20a+75=95$

$-75 \quad -75$

$\frac{20a}{20} = \frac{20}{20}$

$a = 1$

✓ $5(4(1)+15)$

$5(4+15)$

$5(19) = 95$

40. $5(x + 2) - x - 2 = 52$

$5x+10-x-2=52$

$5x-x+10-2=52$

$4x+8=52$

$-8 \quad -8$

$\frac{4x}{4} = \frac{44}{4}$

$x = 11$

✓ $5(11+2)-11-2$

$5(13)-11-2$

$65-11-2$

$54-2=52$

41. $3(4x + 3) - 2x + 1 = 12$

$12x+9-2x+1=12$

$12x-2x+9+1=12$

$10x+10=12$

$-10 \quad -10$

$\frac{10x}{10} = \frac{2}{10}$

$x = \frac{1}{5} = 0.2$

✓ $3(4(\frac{1}{5})+3)-2(\frac{1}{5})+1$

$3(\frac{4}{5}+3)-2(\frac{1}{5})+1$

$3(3.8)-(.4)+1$

$11.4-.4+1=12$