Final Review. (Answers)

Write the definition of each word.

1. algebra — See glossary. Answers may vary.
2. variable
3. order of operations
4. formula

What do the letters in PEMDAS mean?

1. P Parentheses
2. E Exponents
3. M Multiplication
4. D Division
5. A Addition
6. S Subtraction

Apply the property of equality to the equation and solve both sides.

1. $2 = 2$ — multiply both sides by -8 — $2(-8) = 2(-8)$, $-16 = -16$
2. $-6 = -6$ — add 4 to both sides — $-6 + 4 = -6 + 4$, $-2 = -2$
3. $12 = 12$ — divide both sides by 3 using the fraction symbol $\frac{12}{3} = \frac{12}{3}$, $4 = 4$
4. $-1 = -1$ — subtract 3 from both sides — $-1 - 3 = -1 - 3$, $-4 = -4$

Solve

1. $-6(4 - 1) = -18$

2. $3(2 + 6) = 24$

3. $6(5 - 2) = 18$

4. $-4(6 - 5) = -4$

5. $V = l \times w \times h$, where $l = 5$, $w = 6$, $h = 2$ $V = 60$

6. $A = b \times h$, where $b = 10$ and $h = 4$ $A = 40$

7. $h = -16t^2$, where $t = 3$ $h = -144$

8. $t = \frac{d}{r}$, where $d = 100$ and $r = 50$ $t = 2$

9. $x - 5 = 3$ $x = 8$

10. $b + 4 = 9$ $b = 5$

11. $x - 5 = 0$ $x = 5$

12. $r + 3 = 9$ $r = 6$

13. $4k = 24$ $k = 6$

14. $z \div 7 = 3$ $z = 21$

15. $2k = 40$ $k = 20$

16. $\frac{t}{2} = 5$ $t = 10$

17. $y \div 6 = 36$ $y = 216$

Simplify using the order of operations.

1. $6 + 5 - 1 + 3$ 13

2. $7(3 - 1) + 4$ 18

3. $-2(4 + 2) + 10$ -2

4. $5 - (5 - 2) + 2 - 1$ 3

5. $10 \times 2 \div 4 \times 3 \div 5$ 3

6. $3(4 - 1)^2 + 10$ 37

7. $\dfrac{5 \times 4 + 5}{3 - 1} =$ 25/2

8. $1 + [\ 12 - (4 + 2)]$ 7

9. $\dfrac{4 \times 3 \times 55}{3 \times 2 \times 11}$ 10

10. $25 - [3 + (2 - 1)^3] + 2$ 23

11. $\dfrac{7}{3} \times \dfrac{15}{2} \times \dfrac{8}{7}$ 20

12. $\dfrac{[8 - (4 - 1)] - 25}{(2+ 2)^2 - 12}$ -5

Evaluate each expression.

1. $3c - 5$, when $c = 8$ 19

2. $-2b$, when $b = -9$ 18

3. $-r^2 + 1$, when $r = 4$ -15

4. $16q + 12$, when $q = -1$ -4

5. $11t^2 + 3t$, when $t = 3$ 108

6. $\frac{14x - 6}{11}$, when $x = 2$ 2

7. $-2x^3 + 4x^2$, when $x = -2$ 32

Chapter 2 – Order of Operations (Answers)

Solve.

1. $4 \times (-2) + 25 \times (4 + -2)$ 42

2. $-12 - 2(3 + 1)^2 - 10 \div (-2)$ -39

3. $\dfrac{(-5 + 5)^2 - 27}{(2 - 1) - -2}$ -9

4. $3(-10) \div (-2) \times 3 \div 9 \times 2$ 10

5. $\dfrac{-8}{3} \times \dfrac{-7}{2} \times \dfrac{12}{-49}$ -16/7

6. $-9 - 4 + -3 - -2$ -14

7. $-13 + [4 + (-4 - 2)]$ -15

8. $\dfrac{12 \times (-5) \times 6 \times (-20)}{-12 \times 2 \times (-4) \times (-3)}$ -25

9. $\dfrac{10 + 2[4 + (3 - (+2)]}{4^2 - -4}$ 1

Chapter 3 – Properties (Answers)

Solve the following by using properties. Name the properties you use.

1. $\frac{23}{0}$ = undefined

2. $-63 \times 1 = -63$
Multiplicative Identity Property

3. $\frac{0}{39} = 0$
Zero Property of Multiplication

4. $(19 + 8) + 2 =$
$19 + (8 + 2) =$
$19 + 10 = 29$
Associative Property of Addition

5. $5 \times \frac{1}{5} = 1$
Property of Reciprocals

6. $-802 + 802 = 0$
Property of Opposites

7. $-12 + 0 = -12$
Additive Identity of Addition

8. $10(4 + 3) =$
$40 + 30 = 70$
Distributive Property

9. $29 \times 1 = 29$
Multiplicative Identity Property

10. $(31 \times 5) \times 2 =$
$31 \times (5 \times 2) =$
$31 \times 10 = 310$
Associative Property of Multiplication

11. $20 \times 7 \times 5 =$
$20 \times 5 \times 7 =$
$100 \times 7 = 700$
Commutative Property of Multiplication

12. $15 + 8 + 5 =$
$15 + 5 + 8 =$
$20 + 8 = 28$
Commutative Property of Addition

13. $\frac{62}{0}$ = undefined

14. $\frac{-48}{0}$ = undefined

15. $-5(3 - 2) =$
$-15 + 10 = -5$
Distributive Property

16. $\frac{0}{-567} = 0$
Zero Property of Multiplication

17. $8 \times \frac{1}{8} = 1$
Property of Reciprocals

18. $(-4)(0) = 0$
Zero Property of Multiplication

19. $-2(7 + 3) =$
$-14 - 6 = -20$
Distributive Property

Chapter 4 – Evaluating Expressions (Answers)

Evaluate the expressions.

1.	$14 - y$, when $y = 9$	5
2.	$p - 7$, when $p = 13$	6
3.	$4c$, when $c = 3$	12
4.	$-6g$, when $g = -1$	6
5.	$-16 \div t$, when $t = 4$	-4
6.	$\frac{14}{x}$, when $x = 7$	2
7.	$-8 - w$, when $w = -5$	-3
8.	$a \div (-2)$, when $a = -22$	11
9.	n^3 , when $n = 3$	27
10.	k^4 , when $k = -2$	16
11.	$-y^2$, when $y = -2$	-4
12.	$-c^3$, when $c = -1$	1

13. $4g^2 - 2$, when $g = 4$ 62

14. $3d^2 - d + 6$, when $d = -2$ 20

15. $\frac{-4x^3}{5x + 2}$, when $x = -2$ -4

16. $10 + 5x + x^2$, when $x = 4$ 46

17. $\frac{-3x + 18}{x^2}$, when $x = 3$ 1

18. $24 - x^3$, when $x = -2$ 32

Chapter 4 – Formulas (Answers)

1. $A = \frac{a \times p}{2}$, where a = 4 and p = 20 — 40

2. $A = \frac{h(b + c)}{2}$, where h = 4 , b = 8 and c = 6 — 28

3. $V = \frac{B \times h}{3}$, where B = 15 and h = 2 — 10

4. $P = 2l + 2w$, where $l = 5$ and w = 6 — 22

5. $A = s^2$, where s = 10 — 100

Chapter 4 – Properties of Equality (Answers)

6. 20 = 20 — divide both sides by 5 using a fraction symbol
$\frac{20}{5} = \frac{20}{5}$ 4 = 4

7. -7 = -7 — add three to both sides
-7 + 3 = -7 + 3
-4 = -4

8. -2 = -2 — subtract 8 from both sides
-2 -8 = -2 -8
-10 = -10

9. (-8) = (-8) — multiply both sides by (-4) using parentheses
(-8)(-4) = (-8)(-4)
32 = 32

10. -27 = -27 — divide both sides by 3 using the ÷ symbol
-27 ÷ 3 = -27 ÷ 3
-9 = -9

Chapter 4 – Equations (Answers)

Solve the equations by guessing and checking.

1. $x + 4 = 13$ $x = 9$

2. $b - 4 = 8$ $b = 12$

3. $4k = 24$ $k = 6$

4. $j \div 2 = 4$ $j = 8$

5. $\frac{w}{3} = 5$ $w = 15$

6. $r + 2 = 9$ $r = 7$

7. $w - 4 = 16$ $w = 20$

8. $4y = 36$ $y = 9$

9. $x \div 8 = 2$ $x = 16$

10. $\frac{f}{6} = 6$ $f = 36$