CHAPTER 1 FORM A

Name_____

Mark the statement as true or false.

   1) Some rational numbers are integers.

      A) True   B) False

Evaluate the expression, given x = -2, y = 3, and a = -4.

   2) $9x + 2y - 8a$

      A) 20   B) -50   C) -14   D) 55

Evaluate the expression using order of operations.

   3) $7[2 + 2(7 - 2)]$

      A) 24   B) 140   C) 136   D) 84

Solve the problem.

   4) Bridge Computing, Inc. sells computer hard drives. The profit is given by the equation P = 136n - 7500, where n is the number of hard drives sold. Estimate the profit, to the nearest ten dollars, corresponding to the sale of 750 hard drives.

      A) \$94,500   B) \$94,520   C) \$94,490   D) \$94,510

Evaluate the expression.

   5) 5^3

      A) 8   B) 4   C) 15   D) 125

Add or subtract as indicated.

   6) $(7n^6 - 8n^5 + 3n) + (9n^6 + 2n^5 + 4n)$

      A) $16n^{12} - 6n^{10} + 7n^2$

      B) $16n - 6n^5 + 7n^6$

      C) $16n + 6n^5 + 7n^6$

      D) $16n^6 + 6n^5 + 7n$

      E) None of the above

Find the product.

   7) $(6p - 1)(36p^2 + 6p + 1)$

      A) $216p^3 - 1$ B) $216p^3 + 42p^2 - 1$ C) $36p^3 - 1$ D) $216p^3 + 1$

Factor out the greatest common factor.

   8) $128x^9y^9 - 32x^6y^6 - 144x^3y^4$

      A) $16x^3(8x^6y^9 - 2x^3y^6 - 9y^4)$ B) $16(8x^9y^9 - 2x^6y^6 - 9x^3y^4)$

      C) $16x^3y^4(8x^6y^5 - 2x^3y^2 - 9)$ D) No common factor

Factor completely.

9) $2x^3 + 6x^2y - 20xy^2$

    A) $(2x^2 + 4xy)(x - 5y)$

    B) $2x(x - 2y)(x + 5y)$

    C) $2x(x + 2y)(x - 5y)$

    D) $(x - 2y)(2x^2 + 10xy)$

    E) Cannot be factored

Write the expression in lowest terms.

10) $\dfrac{(y + 3)(y - 2)}{(y - 2)(y + 4)}$

    A) $\dfrac{y - 3}{y - 4}$

    B) $\dfrac{2y - 2}{2y + 2}$

    C) $\dfrac{y + 2}{y + 2}$

    D) $\dfrac{y + 3}{y + 4}$

    E) None of the above

Perform the indicated operation. Give the answer in lowest terms.

11) $\dfrac{z^2 + 10z + 24}{z^2 + 14z + 48} \div \dfrac{z^2 + 4z}{z^2 + 16z + 64}$

    A) $z + 8$ B) $\dfrac{z}{z^2 + 14z + 48}$ C) $\dfrac{z + 8}{z}$ D) $\dfrac{z + 8}{z^2 + 8z}$

Simplify the complex fraction.

12) $\dfrac{\dfrac{-3}{x + 3} + \dfrac{5}{x + 5}}{\dfrac{5}{x + 5} - \dfrac{-3}{x - 2}}$

    A) $\dfrac{2x^2 - 26 - 60}{2x^2 - 11x + 15}$

    B) $\dfrac{2x^2 - 4x}{2x^2 - 23x + 15}$

    C) $\dfrac{2x^2 - 4x}{8x^2 + 29x + 15}$

    D) $\dfrac{-(x - 2)}{x + 3}$

    E) None of the above

Simplify the expression. Write answer with positive exponents. Variables are positive real numbers.

13) $(b^7)^{3/7}$

   A) $b^{10/7}$ B) $b^{1/7}$ C) $b^{3/49}$ D) b^3

Write the rational exponential expression as an equivalent radical expression.

14) $(3x)^{-1/3}$

   A) $\dfrac{1}{\sqrt[3]{3x}}$ B) $3\sqrt[3]{x}$ C) $\dfrac{-3}{\sqrt[3]{x}}$ D) $\dfrac{1}{\sqrt[3]{-3x}}$

Solve the equation.

15) $-2.6q = -10.8 - 1.4q$

   A) 9 B) 4.7 C) -12 D) 4.2

Solve the equation for x.

16) $a^2x - 3x = 7a^2$

   A) $x = \dfrac{7}{3}$ B) $x = \dfrac{7a^2}{a^2 + 3}$ C) $x = -\dfrac{7}{3}$ D) $x = \dfrac{7a^2}{a^2 - 3}$

Solve the problem.

17) A rectangular carpet has a perimeter of 180 inches. The length of the carpet is 24 inches more than the width. What are the dimensions of the carpet?

   A) 66 inches × 90 inches B) 57 inches × 81 inches
   C) 33 inches × 57 inches D) 78 inches × 102 inches

Solve by the square-root property.

18) $(r + 5)^2 = 11$

   A) $5 + \sqrt{11}, 5 - \sqrt{11}$ B) $\sqrt{11}, \sqrt{11}$
   C) $-5 + \sqrt{11}, -5 - \sqrt{11}$ D) 6

Use the quadratic formula to solve the equation.

19) $x^2 - x = -56$

   A) 1, 56 B) 7, 8
   C) -7, -8 D) No real number solutions

Solve the problem.

20) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 18 km, the distance between the cars was 6 km more than the distance traveled by the car heading east. How far had the eastbound car traveled?

   A) 18 km B) 30 km C) 24 km D) 36 km

Answer Key
Testname: CHAPTER 1 FORM A

1) A
2) A
3) D
4) A
5) D
6) E
7) A
8) C
9) B
10) D
11) C
12) C
13) D
14) A
15) A
16) D
17) C
18) C
19) D
20) C

CHAPTER 1 FORM B

Name_____

Name the property illustrated.

    1) $8 \cdot 1 = 8$

        A) Distributive property   B) Associative property

        C) Identity property   D) Commutative property

Evaluate the expression, given x = -2, y = 3, and a = -4.

    2) $(-2 + x)(9 + y)(2 - a)$

        A) -288   B) 96   C) -0   D) 288

Express each of the following statements in symbols, using <, >, $\leq$, or $\geq$.

    3) t is positive.

        A) $t < 0$ B) $t > 0$ C) $t \leq 0$ D) $t \geq 0$

Evaluate the expression.

    4) $-|-8| - |17|$

        A) -9   B) 25   C) 9   D) -25

Evaluate the expression.

    5) -4^5

        A) 20   B) -1024   C) -20   D) 1024

Add or subtract as indicated.

    6) $(-5x^4 + 5x^6 - 8 + 2x^5) - (-4 + 5x^5 + 7x^6 - 9x^4)$

        A) $12x^6 + 7x^5 - 14x^4 - 12$

        B) $-2x^6 + 7x^5 - 14x^4 - 12$

        C) $12x^6 + 7x^5 - 14x^4 - 4$

        D) $-2x^6 - 3x^5 + 4x^4 - 4$

        E) None of the above

Solve the problem.

    7) The polynomial $0.0038x^4 - 0.0033x^3 + 0.0031x^2 + 0.14x + 1.19$ gives the predicted sales volume of a company, in millions of items, where x is the number of years from now. Determine the predicted sales 18 years from now.

        A) 524.37 million   B) 464.76 million   C) 384.38 million   D) 342.87 million

Factor completely.

    8) $x^2 + 4x - 32$

        A) $(x + 8)(x - 4)$ B) $(x - 8)(x + 1)$

        C) $(x - 8)(x + 4)$ D) Cannot be factored

9) $9x^2 + 25$

    A) $(3x + 5)(3x - 5)$ B) $(3x - 5)^2$

    C) $(3x + 5)^2$ D) Cannot be factored

Write the expression in lowest terms.

10) $\dfrac{3x + 15}{2x^2 + 15x + 25}$

    A) $\dfrac{3x + 2}{2x + 15}$

    B) $\dfrac{3}{2x + 5}$

    C) $\dfrac{3x + 15}{2x^2 + 15x + 25}$

    D) $\dfrac{3x}{2x + 5}$

    E) None of the above

Perform the indicated operations. Give the answer in lowest terms.

11) $\dfrac{4}{y^2 - 3y + 2} + \dfrac{7}{y^2 - 1}$

    A) $\dfrac{11}{(y - 1)(y + 1)(y - 2)}$

    B) $\dfrac{11y - 10}{(y - 1)(y - 2)}$

    C) $\dfrac{56y - 10}{(y - 1)(y + 1)(y - 2)}$

    D) $\dfrac{10y - 11}{(y - 1)(y + 1)(y - 2)}$

    E) None of the above

Evaluate the expression. Write answer without exponents.

12) $(-8)^0$

    A) 0   B) 1   C) -1   D) -8

Simplify the expression. Write answer with positive exponents. Variables are positive real numbers.

13) $(16k^4m^{-8})^{1/4}$

    A) $\dfrac{2k}{m^2}$ B) $\dfrac{4k}{m^2}$ C) $4km^2$ D) $2km^2$

Simplify the expression.

14) $\sqrt{13} \cdot \sqrt{9}$

    A) $9\sqrt{13}$ B) 22   C) $3\sqrt{13}$ D) $\sqrt{22}$

Solve the equation.

15) $\dfrac{p}{4} - \dfrac{3p}{8} = 4$

A) -32   B) 4   C) 32   D) -4

Solve the formula for the specified variable.

16) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = S - r$ B) $h = \dfrac{S - 2\pi r^2}{2\pi r}$ C) $h = \dfrac{S}{2\pi r} - 1$ D) $h = 2\pi(S - r)$

Solve the problem.

17) A triangle has a perimeter of 84 inches. Its shortest side measures 9 inches shorter than its middle side, and its longest side measures 6 inches longer than its middle side. Find the lengths of the triangle's three sides.

A) 20 inches, 29 inches, 35 inches
B) 36 inches, 27 inches, 21 inches
C) 32 inches, 23 inches, 29 inches
D) 24 inches, 33 inches, 27 inches
E) None of the above

Solve by the square-root property.

18) $(x + 7)^2 = 28$

A) $-7 + 2\sqrt{14},\ -7 - 2\sqrt{14}$ B) $2\sqrt{7},\ -2\sqrt{7}$

C) $2\sqrt{7} - 7,\ 2\sqrt{7} + 7$ D) $-7 + 2\sqrt{7},\ -7 - 2\sqrt{7}$

Use the discriminant to determine the number of real solutions of the equation.

19) $s^2 - 2s - 8 = 0$

A) 1   B) 2   C) No real solutions

Solve the problem.

20) A rug is to fit in a room so that a border of even width is left on all four sides. If the room is 15 feet by 23 feet and the area of the rug is 240 square feet, how wide will the border be?

A) 2.5 ft   B) 1.5 ft   C) 3.5 ft   D) 4 ft

1) C
2) A
3) C
4) D
5) B
6) D
7) C
8) A
9) D
10) B
11) E
12) B
13) A
14) C
15) A
16) B
17) A
18) D
19) B
20) B

CHAPTER 1 FORM C

Name_____

Name the property illustrated.

1) $8 + 4 = 4 + 8$

    A) Distributive property   B) Identity property

    C) Associative property   D) Commutative property
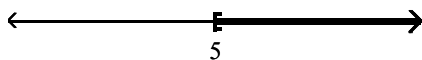
Evaluate the expression using order of operations.

2) $-15 + (5 \cdot 2 + 40) \div 5$

    A) 5   B) -5   C) 3   D) 1

Graph the interval on the real-number line.

3) $[5, \infty)$

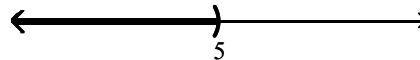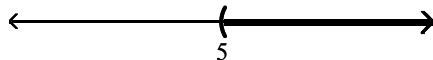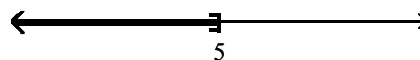   A)   B)

    C)   D)

Fill in the blank with either =, <, >, ≤, or ≥ to make the statement true.

4) $|9 - 5| \_\_ |9| - |5|$

    A) =   B) <   C) >   D) ≤   E) ≥

Evaluate the expression.

5) $\left(\dfrac{5}{4}\right)^3$

    A) $\dfrac{5}{64}$ B) $\dfrac{125}{4}$ C) $\dfrac{15}{4}$ D) $\dfrac{125}{64}$

Find the product.

6) $(x + 5y)(x + 7y)$

    A) $x + 12xy + 35y$ B) $x^2 + 12xy + 35y^2$ C) $x^2 + 12xy + 12y^2$ D) $x^2 + 9xy + 35y^2$

Solve the problem.

7) The distance, s, in feet, traveled by a body falling freely from rest in t seconds is approximated by the function $s(t) = 16t^2$. An experimenter on a ladder releases a marble from rest. The marble takes 2 seconds to fall to the ground. How high was the marble when it was released?

    A) 4 feet   B) 1024 feet   C) 32 feet   D) 64 feet

Factor completely.

8) $x^2 - x - 63$

    A) $(x - 7)(x + 9)$ B) $(x - 63)(x + 1)$

    C) $(x + 7)(x - 9)$ D) Cannot be factored

9) $x^2 + 12x + 36$

    A) $(x - 6)^2$ B) $(x + 6)^2$

    C) $(x + 6)(x - 6)$ D) Cannot be factored

Write the expression in lowest terms.

10) $\dfrac{(y + 3)(3 - y)}{(-y + 3)(3 + y)}$

    A) 1   B) 0   C) -y   D) -1

Perform the indicated operations. Give the answer in lowest terms.

11) $\dfrac{4a + 8b}{2} - \dfrac{4a - 8b}{2}$

    A) 0   B) 8b   C) 64b   D) 4a

Evaluate the expression. Write answer without exponents.

12) 3^{-3}

    A) $\dfrac{1}{-27}$ B) 27   C) -27   D) $\dfrac{1}{27}$

Simplify the expression. Write answer with positive exponents. Variables are positive real numbers.

13) $y^{2/9}(y^{5/9} - 8y^{4/9})$

    A) $y^{-1/3} - 8y^{-2/9}$ B) $y^{7/9} - 8y^{2/3}$ C) $y^{2/5} - 8y^{1/2}$ D) $y^{10/81} - 8y^{8/81}$

Simplify the expression.

14) $\sqrt[4]{12} \cdot \sqrt[4]{20}$

    A) $4\sqrt{2}$ B) $2\sqrt[4]{3} + 2\sqrt[4]{5}$ C) $\sqrt[4]{240}$ D) $2\sqrt[4]{15}$

Solve the equation.

15) $\dfrac{a}{2} - \dfrac{1}{2} = -2$

    A) 5   B) -3   C) -5   D) 3

16) $|4s + 9| = |s - 3|$

    A) - 4   B) $4, \dfrac{6}{5}$ C) $- 4, -\dfrac{6}{5}$ D) No solution

Use factoring to solve the equation.

17) $4x^2 - 28x + 40 = 0$

  A) 2, 5   B) 0, 2, 5   C) -2, -5   D) 4, 2, 5

Use the quadratic formula to solve the equation.

18) $5m^2 + 12m + 3 = 0$

  A) $\dfrac{-6 \pm \sqrt{51}}{5}$

  B) $\dfrac{-6 \pm \sqrt{21}}{5}$

  C) $\dfrac{-6 \pm \sqrt{21}}{10}$

  D) $\dfrac{-12 \pm \sqrt{21}}{5}$

  E) None of the above

Find approximate solutions of the equation.

19) $x^2 - 8.4x + 1.6 = 0$

  A) -0.20, 0.20   B) -0.20, -8.20   C) 8.20, 0.20   D) 8.20, -8.20

Solve the equation for the indicated variable.

20) $v^2 = 2as$ for v

  A) $v = \pm\sqrt{2as}$ B) $v = \dfrac{2a}{s}$ C) $v = 2a\sqrt{s}$ D) $v = \pm\sqrt{\dfrac{2a}{s}}$

1) D
2) B
3) A
4) A
5) D
6) B
7) D
8) D
9) B
10) A
11) B
12) D
13) B
14) D
15) B
16) C
17) A
18) B
19) C
20) A

CHAPTER 1 FORM D

Name_____

Name the property(ies) illustrated.
    1) $5(7 + 11) = (7 + 11)5$
        A) Distributive and associative properties
        B) Identity and associative properties
        C) Commutative property
        D) Associative and commutative properties
        E) None of the above

Evaluate the expression using order of operations.
    2) $(2 + 8)[3 + (6 + 8)]$
        A) 170   B) 23   C) 44   D) 27

Graph the interval on the real-number line.
    3) $(-4, -1]$
        A)   B)

        C)   D)

Use inequality symbols to rewrite the statement. Let x represent the unknown.
    4) The market shakeout could result in as few as 7 companies remaining in business.
        A) $x < 7$ B) $x - 7 = 0$ C) $x \geq 7$ D) $x \leq 7$

Simplify. Leave answer with exponent.
    5) $(7y)^3 \cdot (7y)^6$
        A) $49y^{18}$ B) $7y^{18}$ C) $49y^9$ D) $(7y)^9$

Find the product.
    6) $(5.7x - 0.3)(0.8x + 4.2)$
        A) $6.5x^2 + 23.7x + 23.7$ B) $4.56x^2 + 23.7x - 1.26$
        C) $6.5x^2 + 23.7x - 1.26$ D) $4.56x^2 + 23.7x + 23.7$

Factor out the greatest common factor.
    7) $12m^8 - 20m^6 - 14m^3$
        A) $2(6m^8 - 10m^6 - 7m^3)$ B) $m^3(12m^5 - 20m^3 - 14)$
        C) $2m^3(6m^5 - 10m^3 - 7)$ D) No common factor

Factor completely.

    8) $3x^2 - 3x - 18$

        A) $3(x - 2)(x + 3)$ B) $(3x + 6)(x - 3)$

        C) $3(x + 2)(x - 3)$ D) Cannot be factored

    9) $27c^3 + 64$

        A) $(3c + 4)(9c^2 + 16)$ B) $(3c - 4)(9c^2 + 12c + 16)$

        C) $(3c + 4)(9c^2 - 12c + 16)$ D) $(27c + 4)(c^2 - 12c + 16)$

Perform the indicated operation. Give the answer in lowest terms.

    10) $\dfrac{2x^2}{4} \cdot \dfrac{12}{x^3}$

        A) $\dfrac{x}{6}$ B) $\dfrac{6}{x}$ C) $\dfrac{6x^2}{x^3}$ D) $\dfrac{24x^2}{4x^3}$

Simplify the complex fraction.

    11) $\dfrac{\dfrac{1}{a} + 1}{\dfrac{1}{a} - 1}$

        A) $\dfrac{1}{1 + a^2}$

        B) $\dfrac{a}{1 - a^2}$

        C) $\dfrac{a}{1 + a^2}$

        D) $\dfrac{1}{1 - a^2}$

        E) None of the above

Simplify the expression. Write answer with positive exponents.

    12) $\dfrac{8^6}{8^{-5}}$

        A) 8^{-3} B) $\dfrac{1}{8^{11}}$ C) 8^{11} D) 8^1

Write the rational exponential expression as an equivalent radical expression.

    13) $-3x^{-1/3}$

        A) $\dfrac{1}{\sqrt[3]{-3x}}$ B) $\dfrac{-3}{\sqrt[3]{x}}$ C) $\dfrac{1}{\sqrt[3]{3x}}$ D) $3\sqrt[3]{x}$

Simplify the expression.

14) $\sqrt{81 - 64}$

    A) $\sqrt{17}$ B) $\sqrt{73}$ C) 73   D) 17

Use a calculator to solve the equation.

15) $\dfrac{2.67x + 2.49}{2.65} - \dfrac{2.81x - 2.87}{2.04} = x$

    A) 0.07   B) 1.71   C) -0.07   D) -0.03

Solve the problem.

16) Janet drove 325 kilometers and the trip took 5 hours. How fast was Janet traveling?

    A) 65 kilometers per hour   B) 55 kilometers per hour

    C) 75 kilometers per hour   D) 85 kilometers per hour

Use factoring to solve the equation.

17) $4k^2 - 16 = 0$

    A) $\dfrac{1}{2}, -\dfrac{1}{2}$ B) $\dfrac{1}{2}, 0$ C) 4, 0   D) 2, - 2

Use the quadratic formula to solve the equation.

18) $2n^2 = -10n - 7$

    A) $\dfrac{-5 \pm \sqrt{39}}{2}$

    B) $\dfrac{-5 \pm \sqrt{11}}{4}$

    C) $\dfrac{-10 \pm \sqrt{11}}{2}$

    D) $\dfrac{-10 \pm \sqrt{11}}{4}$

    E) None of the above

Find approximate solutions of the equation.

19) $7.23y^2 - 0.1y - 5.7 = 0$

    A) 0.88, -0.89   B) 0.89, -0.89   C) 0.88, -0.88   D) 0.89, -0.88

Solve the equation for the indicated variable.

20) $r = \pm\sqrt{\dfrac{A}{2\pi}}$ for A

    A) $A = \pm\sqrt{2\pi r}$ B) $A = 2\pi r^2$ C) $A = \pm 2\pi\sqrt{r}$ D) $A = 2\pi r$

1) C
2) A
3) B
4) C
5) D
6) B
7) C
8) C
9) C
10) B
11) E
12) C
13) B
14) A
15) B
16) A
17) D
18) E
19) D
20) B