Mathematical Ideas
Chapter 7 Test A

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the equation.

1) $-7b + 1 + 5b = -3b + 6$ 1) _____

A. $\{-1\}$ B. $\{5\}$ C. $\{-6\}$ D. $\{6\}$

2) $\frac{p}{3} - \frac{3p}{8} = 2$ 2) _____

A. $\{-46\}$ B. $\{48\}$ C. $\{46\}$ D. $\{-48\}$

3) $7[-7p + 5 + 2(p + 1)] = 6p + 1$ 3) _____

A. $\left\{\frac{48}{7}\right\}$ B. $\left\{\frac{48}{41}\right\}$ C. $\left\{-\frac{22}{41}\right\}$ D. $\left\{-\frac{22}{7}\right\}$

Solve the problem.

4) *The mathematical model $C = 400x + 60{,}000$ represents the cost in dollars a company has in manufacturing x items during a month. Based on this model, how much does it cost to produce 400 items?* 4) _____

A. \$150 B. $\$\frac{3}{8}$ C. \$220,000 D. \$160,000

5) Suppose the sales of a particular brand of appliance satisfy the relationship $S(x) = 90x + 1900$, where S(x) represents the number of sales in year x, with x = 0 corresponding to 1982. Find the number of sales in 1987. 5) _____

A. 4610 B. 2350 C. 4700 D. 2260

6) A plane flies 400 miles with the wind and 300 miles against the wind in the same length of time. If the speed of the wind is 25 mph, what is the speed of the plane in still air? 6) _____

A. 175 mph B. 200 mph C. 165 mph D. 180 mph

Let x represent the unknown, and write an equation for the sentence. Do not solve.

7) Four times a number added to 7 times the number equals 55. 7) _____

A. $4x(7 + x) = 55$ B. $4(x + 7) = 55x$

C. $4x - 7x = 55$ D. $4x + 7x = 55$

Determine the ratio and write it in lowest terms.

8) 86 inches to 6 feet 8) _____

A. $\frac{43}{3}$ B. $\frac{43}{36}$ C. $\frac{3}{43}$ D. $\frac{36}{43}$

Tell which brand or which size is the better buy.

9) Brand X: 8 oz for \$1.04
Brand Y: 6 oz for \$0.72 9) _____

A. Equal value B. Not enough information

C. Brand Y D. Brand X

Solve the problem.

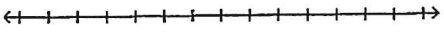
10) A car rental company has two rental rates. Rate 1 is \$40 per day plus \$.10 per mile. Rate 2 is \$80 per day plus \$.05 per mile. If you plan to rent for one week, how many miles would you need to drive to pay less by taking Rate 10)

A. More than 5700 miles B. more than 5600 miles

C. more than 11,200 miles D. more than 19,600 miles

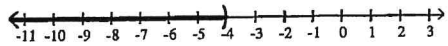
Solve and graph.

11) $18x + 12 > 6(2x - 2)$ 11) _____

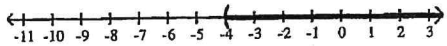


A) $(0, \infty)$

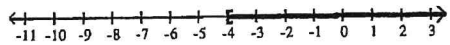
B) $(-\infty, -4)$



C) $(-4, \infty)$



D) $[-4, \infty)$



Write the number in standard notation.

12) 2.28×10^3 12) _____

A. 2280 B. 228 C. 22,800 D. 68.4

Evaluate the expression.

13) -4^{-2} 13) _____

A. $\frac{1}{8}$ B. $-\frac{1}{16}$ C. -16 D. 16

Use scientific notation to solve the problem.

14) A computer can do one calculation in 1.4×10^{-7} seconds. Write this number in standard notation without using exponents. 14) _____

A. 0.00000014 sec B. 0.0000014 sec

C.0.000000014 sec D. 14,000,000 sec

Use a combination of rules for exponents to simplify. Write answers with only positive exponents. Assume that all variables represent nonzero real numbers.

15) $\frac{(4m)^{-7}}{(7m)^{-8}}$ 15) _____

A) $\frac{4^7 m}{7^8}$ B) $\frac{7^7 m}{4^8}$ C) $\frac{7^8 m}{4^7}$ D) $\frac{4^8 m}{7^7}$

Apply the quotient rule for exponents, if applicable, and write the result using only positive exponents. Assume all variables represent nonzero numbers.

16) $\frac{x^{-2}}{x^{-15}}$ 16) _____

A) x^{13} B) $\frac{1}{x^{17}}$ C) $-x^{13}$ D) $\frac{1}{x^{13}}$

Perform the indicated operation.

17) $(5x^2 - x - 6) + (-2x^2 - 4x + 3)$ 17) _____

A. $-3x^2 + 3x + 3$ B. $3x^2 - 5x - 3$

C. $3x^2 - 3x - 3$ D. $3x^2 + 3x - 3$

Factor out the greatest common factor. Simplify the factors, if possible.

18) $25wx - 20wy - 25wz$ 18) _____

A. $5(5wx - 4wy - 5wz)$ B. $5w(5x - 4y - 5z)$

C. $25w(x - 20y - 25z)$ D. $5w(5x - 20wy - 5wz)$

Factor completely.

19) $28m^2 + 57mn + 14n^2$ 19) _____

A. $(4m + 2n)(7m + 7n)$ B. $(4m + 7n^2)(7m + 2)$

C. $(4m + 7n)(7m + 2n)$ D. $(4m - 7n)(7m - 2n)$

Solve the problem.

20) Two cars leave an intersection. One car travels north, the other east. When the car traveling north had gone 6 miles, the distance between the cars was 2 miles more than the distance traveled by the car heading east. How far had the eastbound car traveled? 20) _____

A. 8 miles B. 6 miles C. 10 miles D. 12 miles