

1) Find the LCM of 3, 9, 15.

- A) 15 B) 135
C) 45 D) 9

2) Given : $-2y$

Find the additive inverse and multiplicative inverse.

- A) additive inverse: $2y$
multiplicative inverse: $\frac{1}{2y}$
B) additive inverse: $-\frac{1}{2y}$
multiplicative inverse: $2y$
C) additive inverse: $\frac{1}{2y}$
multiplicative inverse: $2y$
D) additive inverse: $2y$
multiplicative inverse: $-\frac{1}{2y}$
E) None of the above.

3) Pick the number that serves as a counter example to the statement below.

All positive integers are divisible by 2 or 3.

- A) 100 B) 57
C) 30 D) 25

4) Solve: $-\frac{1}{5}x < 6$

- A) $[-30, \infty)$ B) $(-30, \infty)$
C) $(-\infty, -30)$ D) $(-\infty, -30]$

5) A college charges \$159 per unit for tuition. If we let u represent the number of units that a student is taking, build a variable expression for the student's tuition.

- A) $159 + u$
B) $u \div 159$
C) $159u$
D) $159 \div u$
E) None of the above.

6) Simplify: $\frac{6}{x^2y} + \frac{3}{xy^2}$

- A) $\frac{3y + 6x}{x^3y^3}$ B) $\frac{6y + 3x}{x^2y^2}$
C) $\frac{3y + 6x}{x^2y^2}$ D) $\frac{6y + 3x}{x^3y^3}$

7) Given that the points (4, 4) and (1, 1) form a line, find the slope of a line

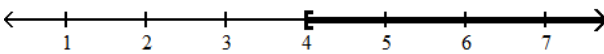
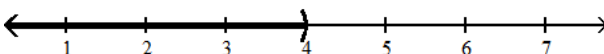
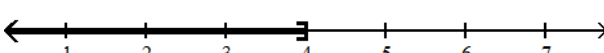
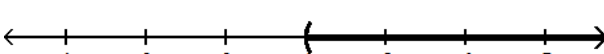
- (a) parallel and
(b) perpendicular to the given line.

- A) (a) 0; (b) 0
B) (a) 1; (b) -1
C) (a) 4; (b) $-\frac{1}{4}$
D) (a) -1; (b) 1
E) None of the above.

8) Which relation is a function?

- A) $\{(7,4), (8,8), (10,8), (10,10)\}$
B) $\{(-1,3), (-2,6), (0,0), (-2,-2)\}$
C) $\{(-2,-2), (0,0), (1,1), (2,2)\}$
D) $\{(4,0), (4,1), (4,2), (4,3)\}$

9) Solve $-25x - 15 \leq -5(4x + 7)$

- A) 
B) 
C) 
D) 

10) Solve for x : $Ax + By < C$; Assume $A > 0$

- A) $x > \frac{By - C}{A}$ B) $x < \frac{C - By}{A}$
C) $x > \frac{C - By}{A}$ D) $x < \frac{By - C}{A}$

- 11) Read the problem below and determine what additional information must be given to find a solution.

A car traveled at an average rate of 53 miles per hour for five hours and then reduced its speed to 40 miles per hour for the rest of the trip. If the trip took 7 hours, determine how long the car traveled at each rate.

- A) the time of day
- B) the distance of the trip
- C) the destination
- D) the time at each rate
- E) No additional information is needed

- 12) Write an expression for eight times the difference of two numbers.

- A) $8(x - y)$
- B) $8(x \div y)$
- C) $x - 8y$
- D) $8x - y$
- E) None of the above.

- 13) Given $F = \frac{9}{5}C + 32$. Solve for C.

- A) $C = \frac{9}{5}(F - 32)$
- B) $C = \frac{F - 32}{9}$
- C) $C = \frac{5}{9}(F - 32)$
- D) $C = \frac{5}{F - 32}$
- E) None of the above.

- 14) Which of the following is equivalent to $9x - (5x - 5) - (-6x + 1)$?

- A) $20x + 4$
- B) $10x - 6$
- C) $10x + 6$
- D) $10x + 4$

- 15) Solve: $17 < -5a + 2 \leq 37$

- A) $[-7, -3)$
- B) $(3, 7]$
- C) $(-7, -3]$
- D) $[3, 7)$

- 16) Which of the following is a valid conclusion to the statement "If a student is a high school band member, then the student is a good musician"?

- A) All students are good musicians.
- B) All good musicians are high school band members.
- C) All high school band members are good musicians.
- D) A student is a high school band member.

- 17) Solve $x^2 + 13x + 30 = 0$ for all values of x.

- A) $\{1, 30\}$
- B) $\{-10, -3\}$
- C) $\{-30, -1\}$
- D) $\{10, 3\}$

- 18) An equation and a student's solution is show below.

Solve: $x^2 + 6x + 5 = 0$

Step 1: $(x + 1)(x + 5) = 0$

Step 2: $x + 1 = 0$ or $x + 5 = 0$

Step 3: $x = -1$ or $x = -5$

What property of Real Numbers was used in Step 2?

- A) commutative property of multiplication
- B) distributive property of multiplication over addition
- C) zero product of multiplication
- D) multiplication property of equality

- 19) Below is an equation and a students work for solving it.

Solve: $3(x+5) = 2x + 35$

Step 1: $3x + 15 = 2x + 35$

Step 2: $5x + 15 = 35$

Step 3: $5x = 20$

Step 4: $x = 4$

Which step contains the student's first error?

- A) Step 1
- B) Step 2
- C) Step 3
- D) Step 4

20) If a is a Real Number, how many times does the graph of $y = ax^2 + 2x + 7$ cross the y -axis?

- A) 0
- B) 1
- C) 2
- D) not enough information

21) Find the missing number in $\frac{2}{3} \cdot \frac{?}{48} = \frac{1}{3}$

- A) 4
- B) 8
- C) 32
- D) 24

22) What is the y -intercept of $f(x) = ae^{-x}$, if a is a Real Number?

- A) a
- B) ae
- C) 0
- D) $-a$

23) Jim has scores of 93 and 88 on his first two tests. What score must he get on his third test to keep an average of 85 or greater?

- A) At least 73
- B) At least 88.7
- C) At least 90.5
- D) At least 74

24) Rewrite as a percent: $\frac{14}{9}$

- A) $155\frac{5}{9}\%$
- B) $31\frac{1}{9}\%$
- C) $15\frac{5}{9}\%$
- D) $77\frac{7}{9}\%$

25) Solve: $3p + 10 = -4 + 6p$

- A) $\frac{3}{2}$
- B) $\frac{3}{14}$
- C) $-\frac{3}{14}$
- D) $\frac{14}{3}$

26) A nail $2\frac{5}{6}$ inches long is driven into a board

$2\frac{2}{3}$ inches thick. How much of the nail

protrudes from the other side of the board?

- A) $\frac{1}{3}$ inches
- B) 1 inch
- C) $\frac{1}{6}$ inches
- D) $\frac{1}{2}$ inch

27) The equation of line 1 is $6x + ay = 3$, and the equation of line 2 is $ax - 6y = 1$. Which statement is always true about the two lines?

- A) Lines 1 and 2 have the same y -intercept.
- B) Lines 1 and 2 are parallel.
- C) Lines 1 and 2 are perpendicular.
- D) Lines 1 and 2 have the same x -intercept.

28) CD's were purchased at \$55 per dozen and sold at \$40 for four CD's. Find the profit on 7 dozen CD's.

- A) \$455
- B) \$65
- C) \$105
- D) \$15

29) Chris lost \$7.32 playing poker in one week. If this continues, what would be his net winnings after five weeks?

- A) $-\$366.00$
- B) \$36.60
- C) $-\$36.60$
- D) \$366.00

30) A playground is in the shape of a rectangle. If the length is twice the width, which of the following could be used to find the area of the playground if x is used for the width?

- A) $3x$
- B) $2x^2$
- C) $6x$
- D) $4x^2$

31) Find a linear equation containing the points $(-1, -3)$ and $(1, 1)$.

- A) $y = -2x - 1$
- B) $y = 2x - 1$
- C) $y = 1x - 2$
- D) $y = -2x + 1$

32) You are given the equation $x^2 + 3x = 5$ and asked to solve by completing the square. Which of the following would be a step in your work?

- A) $(x + 3)^2 = 14$ B) $(x + 9)^2 = 5$
C) $(x + 3)^2 = 5$ D) $(x + 9)^2 = 14$

33) Factor: $x^3 - 7x^2 - 2x + 14$

- A) $(x - 7)(x^2 + 2x)$
B) $(x + 7)(x^2 + 2)$
C) $(x + 7)(x^3 - 2)$
D) $(x - 7)(x^2 - 2)$
E) None

34) Which is equivalent to the expression $4(m - 3n) + 2(m - 3n)$?

- A) $6(2m - 6n)$
B) $8(m - 3n)$
C) $6(m - 3n)$
D) $6(m - 3n)^2$
E) None of the above.

35) One pump can empty a swimming pool in 60 minutes. A different pump can empty the same pool in 90 minutes. How long would it take to empty the pool if both pumps work together?

- A) 36 minutes B) 48 minutes
C) 30 minutes D) 75 minutes

36) A company has 144,971 employees in 1990. This number is increased by 1895 employees per year. How many employees will there be by the year 1994?

- A) 7580 B) 154,446
C) 152,551 D) 150,656

37) Simplify: $\frac{3 - x}{x^2 - 9}$

- A) $\frac{1}{x + 3}$ B) $-\frac{1}{x + 3}$
C) $\frac{1}{x - 3}$ D) $-\frac{1}{x - 3}$

38) Rewrite the expression $(6 \cdot m) \cdot n$ by applying the associative property.

- A) $6 \cdot (m \cdot n)$
B) $n \cdot (6 \cdot m)$
C) $(m \cdot 6) \cdot n$
D) Associative property does not apply

39) Evaluate: $b^2 - 4ac$ for $b = -2$, $a = 2$, $c = 2$

- A) -22 B) -12
C) -8 D) -20

40) Name the property illustrated in the statement. $4 + (24 + 14) = (4 + 24) + 14$

- A) identity element for addition
B) distributive property
C) commutative property of addition
D) associative property of addition
E) None of the above.