

Benchmark Test : Algebra 1

Name _____

Date _____

Class/Grade _____

1 Benchmark: MA.912.A.3.1

What is the value of x in the equation

$$\frac{2}{x} - 3 = \frac{26}{x}?$$

(A) -8

(B) $-\frac{1}{8}$

(C) $\frac{1}{8}$

(D) 8

2 Benchmark: MA.912.A.3.5

In his will, a man leaves one-half of his money to his wife, one-half of what is then left to his older child, and one-half of what is then left to his younger child. His two cousins divide the remainder equally, each receiving \$2,000. What was the total amount of money in the man's will?

(A) \$16,000

(B) \$24,000

(C) \$32,000

(D) \$40,000

3 Benchmark: MA.912.A.3.1

Simplify:

$$\frac{1}{4}g(5 + 3) - 4g + 13$$

(A) $-\frac{15}{4}g + 21$

(B) $-2g + 13$

(C) $-2g + 21$

(D) $-\frac{11}{4}g + 16$

4 Benchmark: MA.912.A.3.1

Solve the following equation for y :

$$\frac{1}{3}(y - 6) = 4y - \frac{2}{5}(2 - y)$$

(A) $y = -\frac{79}{15}$

(B) $y = -\frac{366}{75}$

(C) $y = -\frac{11}{5}$

(D) $y = -\frac{18}{61}$

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5 Benchmark: MA.912.A.3.1

What is the value of x in the equation below?

$$-3x + 14 = 4x - 7$$

- (A) $x = -7$
- (B) $x = 3$
- (C) $x = 8$
- (D) $x = 14$

6 Benchmark: MA.912.A.3.3

In terms of a , b , and c , what is the value of x in the equation below?

$$bx - 3a = c$$

- (A) $\frac{c}{3a} - b$
- (B) $\frac{c}{b - 3a}$
- (C) $\frac{c + 3a}{b}$
- (D) $\frac{c}{b} + 3a$

7 Benchmark: MA.912.A.3.5

At Central High School, the sophomore class has 60 more students than the freshman class. The junior class has 50 fewer than twice the number of students in the freshman class. The senior class is three times as large as the freshman class. If there are a total of 1,424 students at Central High School, how many students are in the freshman class?

- (A) 202
- (B) 205
- (C) 235
- (D) 236

8 Benchmark: MA.912.A.3.3

The formula for potential energy is $P = mgh$, where P is potential energy, m is mass, g is gravity, and h is height. Which expression can be used to represent g ?

- (A) $\frac{P}{m} - h$
- (B) $\frac{P}{mh}$
- (C) $P - m - h$
- (D) $P - mh$

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9 Benchmark: MA.912.A.3.5

Patty needs a total of \$80 to buy a bicycle. She has already saved \$35. If she saves \$10 a week from her earnings, what is the least number of weeks she must work to have enough money to buy the bicycle?

- (A) 3
- (B) 4
- (C) 5
- (D) 8

10 Benchmark: MA.912.A.3.3

In chemistry, n molecules of an ideal gas have pressure (P), volume (V), and temperature (T) that stand in the following relation, where R is a constant.

$$PV = nRT$$

Which of the following is the ideal gas equation solved for n ?

- (A) $n = \frac{PV}{RT}$
- (B) $n = PVRT$
- (C) $n = PV + RT$
- (D) $n = PV - RT$

11 Benchmark: MA.912.A.3.1

What is the value of x in the equation $2(x - 3) + 1 = 19$?

- (A) 6
- (B) 9
- (C) 10.5
- (D) 12

12 Benchmark: MA.912.A.3.1

What is the value of x in the equation

$$\frac{3}{4}x + 2 = \frac{5}{4}x - 6?$$

- (A) -16
- (B) -4
- (C) 4
- (D) 16

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13 Benchmark: MA.912.A.3.3

In terms of b , what is the value of x in the equation below?

$$2x + b = 3$$

- (A) $\frac{3}{2} - b$
- (B) $\frac{3}{2 + b}$
- (C) $\frac{3}{b} - 2$
- (D) $\frac{3 - b}{2}$

14 Benchmark: MA.912.A.3.3

If $c = 2m + d$, which expression represents m ?

- (A) $\frac{c}{2} - d$
- (B) $\frac{c - d}{2}$
- (C) $c - \frac{d}{2}$
- (D) $d - 2c$

15 Benchmark: MA.912.A.3.1

Solve this equation.

$$\frac{2x + 17}{3} = \frac{-x}{24}$$

- (A) $x = -9$
- (B) $x = -8$
- (C) $x = -1$
- (D) $x = \frac{15}{17}$

16 Benchmark: MA.912.A.3.3

The mean (m) of two numbers (a and b) can be found using the equation below.

$$m = \frac{1}{2}(a + b)$$

Which of the following is the same equation solved for a ?

- (A) $a = 2(m + b)$
- (B) $a = m - \frac{b}{2}$
- (C) $a = 2m - b$
- (D) $a = \frac{m - b}{2}$

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17 Benchmark: MA.912.A.3.3

In terms of x , what is the value of y in the equation below?

$$3y + 2 = x$$

- (A) $\frac{x - 2}{3}$
- (B) $\frac{x}{5}$
- (C) $\frac{x}{3} - 2$
- (D) $\frac{x}{2} - 3$

18 Benchmark: MA.912.A.3.3

In terms of y , m , and b , what is the value of x in the equation below?

$$y = mx + b$$

- (A) $\frac{y - b}{m}$
- (B) $\frac{y}{b} - m$
- (C) $\frac{y}{m} - b$
- (D) $\frac{y}{m + b}$

19 Benchmark: MA.912.A.3.5

Elena and Matthew are president and vice-president of their ninth-grade class at Riverside High School. They have suggested that the school sponsor a dance to raise money for the victims of a recent hurricane. The expenses for the dance will be \$250 for the DJ and \$100 for the refreshments. Tickets will cost \$5 a person. How many tickets must be sold in order to raise \$1,000 after expenses?

- (A) 250
- (B) 270
- (C) 350
- (D) 420

20 Benchmark: MA.912.A.3.3

In terms of C and p , what is the value of r in the equation below?

$$C = 2pr$$

- (A) $\frac{C}{2p}$
- (B) $C - 2p$
- (C) $\frac{2C}{p}$
- (D) $\frac{C}{p} - 2$

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21 Benchmark: MA.912.A.3.1

The formula for converting temperatures from degrees Celsius to degrees Fahrenheit is

$F = \frac{9}{5}C + 32$. If the temperature is 20°C , what is the temperature in degrees Fahrenheit?

- (A) 4
- (B) 33.8
- (C) 43.1
- (D) 68

22 Benchmark: MA.912.A.3.5

The entertainment committee voted to hire a DJ for the school dance. The DJ charges a \$75 set-up fee plus \$30 per hour for playing music. The committee has a budget of \$200, which they cannot exceed. What whole number is the greatest number of hours the DJ can be booked?

- (A) 4 hours
- (B) 5 hours
- (C) 6 hours
- (D) 9 hours

23 Benchmark: MA.912.A.3.5

George began making paper flowers for the tables at the school awards banquet. He can make 3 flowers per minute. Sue joined him 5 minutes after he started. She can make 4 flowers per minute. George continued to make 3 flowers per minute. Together, they made 190 flowers. Which statement about the number of flowers made is true?

- (A) George made 90 flowers.
- (B) Sue made 25 flowers.
- (C) George made 30 flowers.
- (D) Sue made 160 flowers.

24 Benchmark: MA.912.A.3.3

The equation below can be used to find the interest (I) drawn by an amount of money (P) in a bank account (with interest rate r) for an amount of time (t).

$$I = Prt$$

Which of the following is the same equation solved for r ?

- (A) $r = \frac{I}{Pt}$
- (B) $r = I - P - t$
- (C) $r = \frac{I - t}{P}$
- (D) $r = I - Pt$

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25 Benchmark: MA.912.A.3.5

Rasheed works in a department store and is paid an hourly wage of \$9.00 and a 6 percent commission on all his sales. Last week, Rasheed earned \$542.64 and averaged \$88.00 in sales per hour. What was Rasheed's total amount of sales last week?

- (A) \$2,018
- (B) \$3,171
- (C) \$3,344
- (D) \$4,562

26 Benchmark: MA.912.A.3.1

What is the value of x in the equation

$$\frac{x}{2x + 1} = \frac{4}{3}?$$

- (A) -5
- (B) $-\frac{5}{4}$
- (C) $-\frac{4}{5}$
- (D) $-\frac{1}{5}$

27 Benchmark: MA.912.A.3.5

Jess saved \$500 working during the summer. He plans to buy school clothes with his money. He found jeans he liked for \$30 per pair, including tax, and shirts for \$17, including tax. If he buys exactly twice as many shirts as jeans, how many pairs of jeans can Jess buy without exceeding \$500?

- (A) 6
- (B) 7
- (C) 10
- (D) 16

28 Benchmark: MA.912.A.3.5

Annie plans to grow vegetables in her backyard. She wants to grow onions and tomatoes, and plans to buy 6 times as many onion plants as tomato plants. Tomato plants cost \$0.99 each and onion plants cost \$0.08 each. Annie has \$60 to spend. If Annie buys exactly 6 times as many onion plants as she buys tomato plants, how many onion plants can she buy without going over \$60?

- (A) 40
- (B) 60
- (C) 200
- (D) 240

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29 Benchmark: MA.912.A.3.1

If $3(x - 2) = 2x + 6$, what is the value of x ?

- (A) 0
- (B) 5
- (C) 12
- (D) 20

30 Benchmark: MA.912.A.3.5

Pam is playing with red and black marbles. The number of red marbles she has is three more than twice the number of black marbles she has. She has 42 marbles in all. How many red marbles does Pam have?

- (A) 13
- (B) 15
- (C) 29
- (D) 33

