

Name: \_\_\_\_\_ Date: \_\_\_\_\_

12<sup>th</sup> Math Review

1.  $(x + 1)(x + 2)$

2.  $(x + 2)(x + 3)$

3.  $(x + 3)(x + 2)$

4.  $(x + 4)(x + 3)$

5.  $(x - 6)(x + 2)$

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

**Simplify each expression.**

7)  $\frac{1}{2x} + \frac{2}{3x}$

8)  $\frac{3}{m} + \frac{5}{n}$

**Solve the following equations**

10.  $\sqrt{x + 2} = 3$

11.  $\sqrt{x + 2} + 4 = x$

12.  $\sqrt{x-3} = 3$

13.  $\sqrt{6b+4} = 20$

14.  $2\sqrt{m+11} = \sqrt{12m+4}$

15.  $x - \sqrt{x+10} = 2$

### Functions

Directions: Choose the correct answer to each multiple choice question below.

16. Which equation best describes the relationship between the corresponding values of  $x$  and  $y$  shown in the table?

$x$	$y$
-2	-12
0	-6
1	-3
4	6

**F**  $y = x - 10$

**H**  $y = 3x - 6$

**G**  $y = 2x - 8$

**J**  $y = x^2 - 8$

17. For Saturday's debate tournament, Sarah ordered 3 cookies for each student participant and a tray of 30 cookies for the sponsors' hospitality room. This relationship can be expressed by the function  $f(s) = 3s + 30$ , where  $s$  is the number of student participants. Which is the dependent quantity in this functional relationship?

**A** The number of cookies ordered**C** The number of student participants**B** The number of trays ordered**D** The number of sponsors

18. For the invitational math competition, Mr. Biros ordered 3 medals for each event scheduled. Mrs. Saunders ordered 5 certificates for each team that competed and 10 certificates for sponsors. This relationship can be expressed by the function  $f(t) = 5(t) + 10$ , where  $t$  is the number of teams that compete. Which is the independent quantity in this functional relationship?

- A. The number of certificates ordered
- B. The number of teams competing
- C. The number of medals ordered
- D. The number of events

19. The table shows the number of slices of pepperoni placed on each size of pizza at Pepe's Pizza Shop.

Size of Pizza	Radius of Pizza (inches)	Number of Pepperoni Slices
Single	2	5
Small	4	17
Medium	5	26
Large	8	65
Extra large	10	101

Let  $r$  represent the radius of the pizza and let  $n$  represent the number of slices of pepperoni. Identify the equation that best represents the relationship between the radius and the number of slices of pepperoni.

- A  $r = 2n + 1$
- B  $n = 2r + 1$
- C  $r = n^2 + 1$
- D  $n = r^2 + 1$

- 20 A math club decided to buy T-shirts for its members. A clothing company quoted the following prices for the T-shirts.

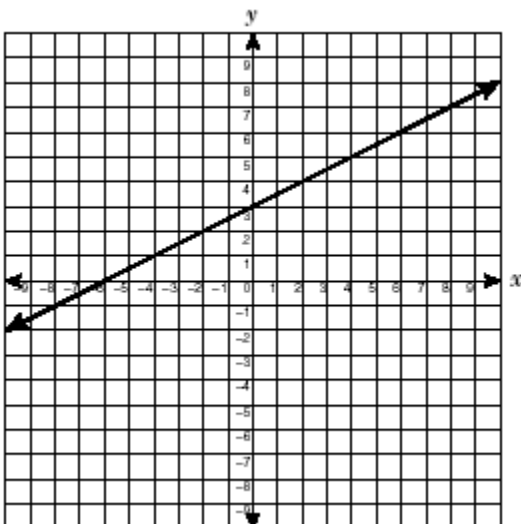
**Math Club T-Shirts**

Number of T-Shirts	Total Cost (dollars)
10	75
15	105
20	135

Which equation best describes the relationship between the total cost,  $c$ , and the number of T-shirts,  $s$ ?

- A  $c = 6.75s$
- B  $c = 7.00s$
- C  $c = 2s - 20$
- D  $c = 15 + 6s$

21. Which linear function best describes the graph shown below?



A  $y = -3x + \frac{1}{2}$

B  $y = \frac{1}{2}x + 3$

C  $y = -3x - \frac{1}{2}$

D  $y = \frac{1}{2}x - 3$

22. Xavier has a \$25 gift certificate for a movie theater. Each time that he sees a movie,  $m$ , \$5 is deducted from his gift certificate balance,  $b$ .

The equation :  $b = 25 - 5m$  describes this relationship. Which is the dependent quantity in this functional relationship?

- A. The price of each movie ticket
- B. The original value of the gift certificate
- C. The balance left on the gift certificate
- D. The number of movies he sees

23. Which of the following does not correctly represent a dependent and independent relationship?

- A. Independent variable: Time of day  
Dependent variable: Outside temperature
- B. Independent variable: Number of gallons of gas in a car's tank  
Dependent variable: Number of miles a car can be driven on a tank of gas
- C. Independent variable: Number of coins put into a gumball machine  
Dependent variable: Number of gumballs from a gumball machine
- D. Independent variable: Pace of a runner in a race  
Dependent variable: Time it takes to complete the race

**24. Which set of coordinates describes a function?**

- A.  $\{(-5, -1), (-3, -3), (-1, -5), (-5, -7)\}$
- B.  $\{(6, 3), (4, 5), (2, 3), (0, 5)\}$
- C.  $\{(4, -3), (-4, -6), (4, 3), (-4, 6)\}$
- D.  $\{(2, 4), (2, -4), (4, 8), (6, 2)\}$

**25.** The cost,  $C$ , of owning a car is a function of the number of miles driven,  $m$ . This relationship is represented by the equation  $C = 0.14m + 306$ . In this relationship which is the independent quantity, when the dependent quantity is \$306?

- A. 0
- B. 0.14
- C. 21.857
- D. 612

**26.** For a wholesale buyer, the fixed cost of purchasing the first 20 televisions is \$480. The variable cost per television is \$12. The cost function is  $c(x) = 12x + 480$ . In this relationship, the total cost,  $c(x)$ , to the buyer is dependent on

- A. The variable cost per television
- B. The fixed cost for 20 televisions
- C. The number of televisions over 20 purchased
- D. The size of the televisions

27. Robin kept a log of the number of hours she spent birdwatching during September and the cumulative number of birds she observed.

# of hrs. (x)	1	3	5	8	10	15
# of birds seen (y)	4	10	16	25	31	46

Which equation best describes the relationship between the number of hours spent birdwatching and the number of birds seen?

- A.  $y = x + 3$
- B.  $y = 2x + 2$
- C.  $y = 3x + 1$
- D.  $y = 4x$

28. The table below shows the prices for different weights of packages of strawberries at a market.

Strawberry Prices

Weight (lb)	Price (\$)
2	1.70
5	4.25
8	6.80
12	10.20

Which equation can be used to find the price,  $p$ , of any weight,  $w$ , of packages of strawberries?

- A  $p = 0.432w$
- B  $p = 0.85w$
- C  $p = 3.40w$
- D  $p = 1.70w$

**Factor the expression.**

\_\_\_\_\_ 29.  $-15x^2 - 21x$

a.  $x(-15x - 21)$

b.  $-15x(x + 7)$

c.  $-3x(5x + 7)$

d.  $5x(x - 3 + 7)$

\_\_\_\_\_ 30.  $x^2 - 6x + 8$

a.  $(x + 4)(x + 2)$

b.  $(x - 2)(x - 4)$

c.  $(x - 4)(x + 2)$

d.  $(x - 2)(x + 4)$

31.  $9x^2 - 16$

32.  $16x^2 + 40x + 25$

33.  $5x^2 - 22x - 15$

34.  $3x^2 + 26x + 35$

21.  $x^2 - 2x - 63$

35.  $8x^2 + 12x - 16$