This test contains 30 multiple-choice questions. Work each problem in the space on this page. Select the best answer. Write the letter of the answer on the blank at the right.

1 Carla earns $9 per hour working at a clothing store. She is writing a function to show the relationship between her hours worked h, and her wages earned w. In Carla's function, what does the independent variable represent?

   A the number of hours worked

   B the wage earned in one hour

   C the total wages earned

   D the amount of time Carla must work to earn $1

1 _**A**_

$w = 9h$

2 Which statement describes each ordered pair (x, y) in the table?

2 _**J**_

x	0	2	4	6
y	−2	2	14	34

$0^2 - 2 = -2$
$2^2 - 2 = 2$
$4^2 - 2 = 14$
$6^2 - 2 = 34$

   F y is 2 less than x.

   G y is equal to x.

   H y is 2 less than twice x.

   J y is 2 less than the square of x.

3 Which function describes the data in the table?

3 _**B**_

x	0	1	2	3
y	3	5	7	9

   A $y = x + 3$

   B $y = 2x + 3$

   C $y = 3x$

   D $y = 3x - 1$

4 What is the domain of the function $f(x) = \frac{3}{x+2}$?

4 _**G**_

   F the set of all real numbers

   G the set of all real numbers except $x = -2$

   H the set of all real numbers except $x = 0$

   J the set of all real numbers except $x = 2$

$x + 2 \neq 0$

$x \neq -2$

5 The table below defines a linear function. What is the slope of the line?

5 _____ **B**

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{7-3}{4-2} = \frac{4}{2} = 2$$

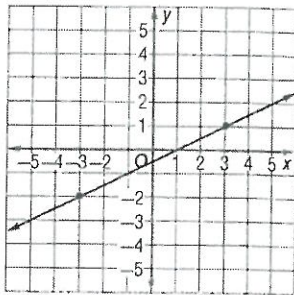| x	y
4	7
2	3
0	−1
−2	−5
−4	−9

A $\frac{1}{2}$　　　B 2　　　C $\frac{7}{4}$　　　D $\frac{11}{5}$

6 Which statement is NOT true for the graph below?

6 _____ **J**

F The x-intercept is 1. ✓　　　H The slope is $\frac{1}{2}$. ✓

G The y-intercept is $-\frac{1}{2}$. ✓　　　J The line contains the origin.

7 A student graphed the line $y = 3x + 2$ plotting and connecting points A, B, and C. How can the student use points A, B, and C to find the graph of $y = 3x - 5$?

7 _____ **B**

lines are parallel and y=3x+5 shifts down 7 units to y=3x-5.

A Move each point down 5 units.
B Move each point down 7 units.
C Move each point left 3 units.
D Move each point right 7 units.

8 What is the range of the function $f(x) = 3x^2 - 7$?

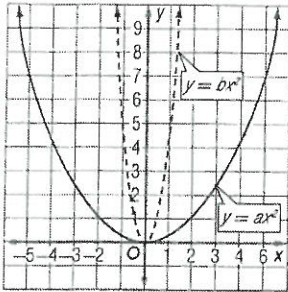8 _____ **H**

F $y \geq 7$　　　G $y \leq 7$　　　H $y \geq -7$　　　J $y \leq -7$

Shift down 7 units.

9 The graph of $y = ax^2$ and $y = bx^2$ are shown below. Which statement describes the relationship between a and b?
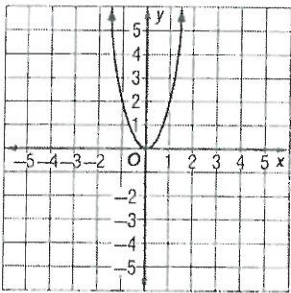
9 _C_

$y = bx^2$

$y = ax^2$

Since a is wider than b a must be less than b.

A $a = b$

B $a > b$

C $a < b$

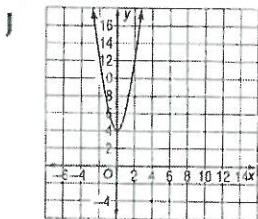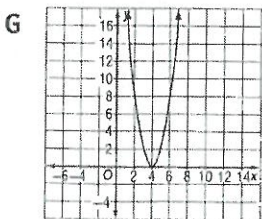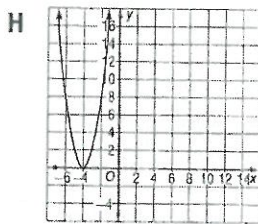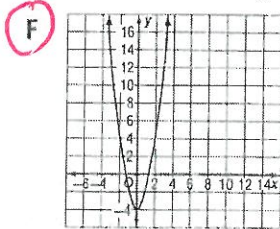**D** There is not enough information to determine the relationship.

10 The graph of $y = 2x^2$ is shown below.

10 _F_

Shift down 4 units.

Which of the following shows the graph of $y = 2x^2 - 4$?

F

H

G

J

11 The health club charges a $75 membership fee plus a $40 monthly fee. Wesley has $300 to spend on a health club membership. Which inequality can be used to find m, the number of months for which Wesley can afford to be a member of the health club?

A $300 \geq 75 + 40m$

B $300 \leq 75m + 40$

C $300 \leq 75 + 40m$
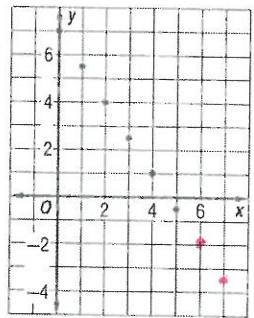
D $300 \geq 75m + 40$

11 _A_

$75 + 40m \leq 300$

12 The number of cars sold in May m was 60 less than four times the number of cars sold in April a. Which equation shows the relationship between m and a?

F $m = a - 60$

G $m = 60 - 4a$

H $m = a^4 - 60$

J $m = 4a - 60$

12 _J_

$m = 4a - 60$

13 The graph below shows several ordered pairs for a linear function.

13 _D_

Which is the best prediction of the value of y when x is 7?

A -1.5 **B** -2 **C** -2.5 **D** -3.5

14 Solve for x.
$12 - 14x = -72$

F -36
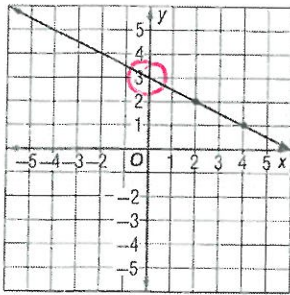
G -6

H 36

J 6

14 _J_

$12 - 14x = -72$

$-14x = -84$

$x = 6$

15 The graph shows part of the line $y = -\frac{1}{2}x + b$. What is the value of b?

15 _C_

$b = $ y-int.
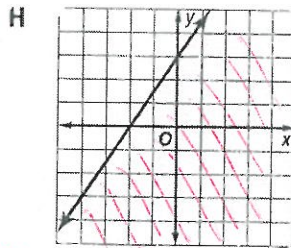
y-int $= 3$

A $-\frac{1}{2}$ B 2   (C) 3   D 6
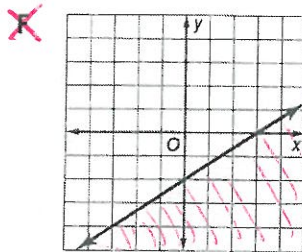
16 In which graph does the shaded area show the solutions to the inequality $3x - 2y \le -6$?
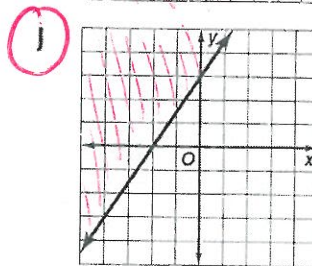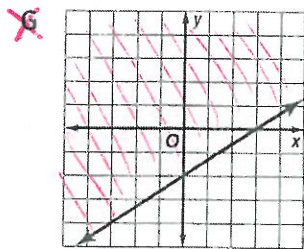
16 _J_

X F

H

X G

(J)

$3x - 2y \le -6$

$3x + 6 \le 2y$

$\frac{3}{2}x + 3 \le y$

$(0,0)$

$3(0) - 2(0) \le -6$

$0 \le -6$ X NO

so J.

17 Which is NOT a reasonable solution to the inequality $2x \ge x$?

17 _A_

A $x = -1$ B $x = 0$ C $x = 1$ D $x = 2$

$2(-1) \ge -1$ $2(0) \ge 0$ $2(1) \ge 1$ $2(2) \ge 2$
$-2 \ge -1$ $0 \ge 0 \checkmark$ $2 \ge 1 \checkmark$ $4 \ge 2 \checkmark$

NO

18 Molly has $5.20 in dimes and quarters. The number of dimes is 3 more than the number of quarters. Which system of linear equations can be used to find d, the number of dimes, and q, the number of quarters?
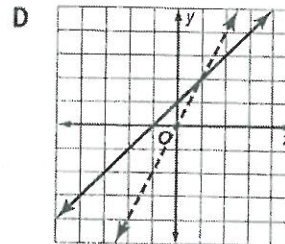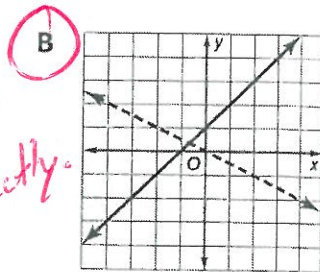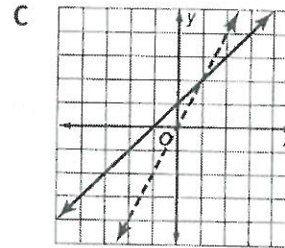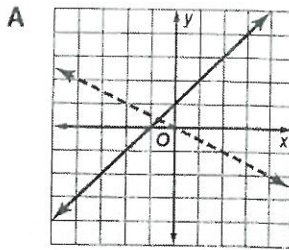
　F　$3q + d = 5.20$
　　　$q + d = 0.35$

　(G)　$d = 3 + q$
　　　$0.10d + 0.25q = 5.20$

　H　$(q + 3) + q = 5.20$
　　　$q + d = 0.35$

　J　$q = 3 + d$
　　　$0.10d + 0.25q = 5.20$

18 _____G_____

19 Which shows the solution set of the following system of inequalities?

$$x - y \leq -1$$
$$x + 2y < 0$$

A

C

B

D

19 _____B_____

$x - y \leq -1$

$x + 1 \leq y$

$x + 2y < 0$
$2y < -x$

$y < -\frac{1}{2}x$

can't see shading
but B has the
lines graphed correctly.

20 What are the solutions to the equation $2x^2 + 9x = 5$?

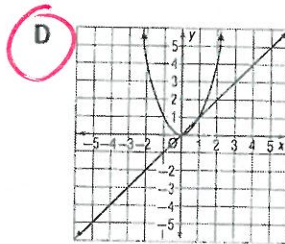　F　$x = -1, x = \frac{5}{2}$

　G　$x = 1, x = -\frac{5}{2}$
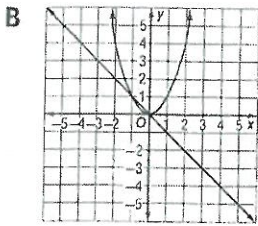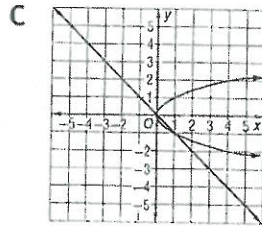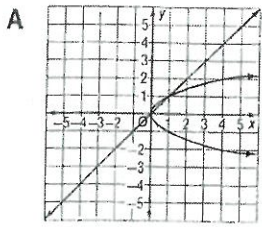
　H　$x = 5, x = -\frac{1}{2}$

　(J)　$x = -5, x = \frac{1}{2}$

20 _____J_____

$2x^2 + 9x - 5 = 0$
$2x^2 - x + 10x - 5 = 0$
$x(2x-1) + 5(2x-1) = 0$
$(x+5)(2x-1) = 0$
$x + 5 = 0 \quad 2x - 1 = 0$

$x = -5$

$x = \frac{1}{2}$

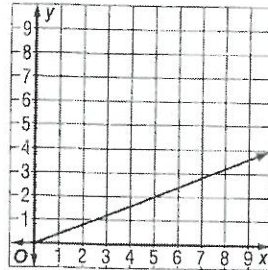**21** Which of these shows the graphs of $y = x$ and $y = x^2$?

21 _D_

A

C

B

D

22 Which relationship is best shown by the graph?

y inc by 2
avg 5 inc of x.

22 _G_

F Oranges cost $0.50 per pound.

G A tree grows 2 inches every 5 months.

H The temperature of a cooler decreases 4 degrees every 10 minutes that it is open.

J A pool's water level increases at 5 gallons per minute.

23 Which algebraic expression represents the phrase "6 less than the sum of x and the square of x?"

23 _A_

A $x + x^2 - 6$

C $6 - x + x^2$

B $x + \sqrt{x} - 6$

D $6 - (x + x^2)$

24 Which expression is equivalent to $-3(8 - 10)$?

24 _H_

F $-24 - 30$

H $-24 + 30$

G $-24 - 10$

J $24 - 30$

$-24 + 30$

6

25 What is the equation of the line shown?

25 __A__
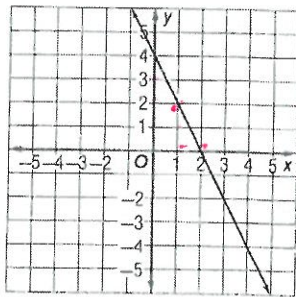
$y = -2x + 4$

A $y = -2x + 4$

C $y = -2x - 4$

B $y = 4x - 2$

D $y = 4x + 2$

26 Which is an equation of the line that has a slope of $-\frac{1}{3}$ and passes through the point $(-5, 2)$?

26 __H__

$y - y_1 = m(x - x_1)$

$y - 2 = -\frac{1}{3}(x + 5)$

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

$3y - 6 = -x - 5$

$x + 3y = 1$

F $x - 3y = -11$

H $x + 3y = 1$

G $x - 3y = 11$

J $x + 3y = 21$

27 The weight of an object on the moon varies directly as its weight on earth. The constant of variation is 6. Which equation describes this relationship?

27 __A__

A $y = 6x$

C $xy = 6$

B $y = x + 6$

D $x + y = 6$

28 Adam bought CDs for $18 each and T-shirts for $11 each. Altogether, he spent $105. Which equation best represents Adam's purchase?

28 __G__

$18c + 11t = 105$

F $4c + 3t = 105$

H $29ct = 105$

G $18c + 11t = 105$

J $(18 + 11)(c + t) = 105$

29 Simplify $\frac{\sqrt{a} \cdot b^2}{a^3 b^5}$.

29 __C__

$\frac{a^{\frac{1}{2}} b^2}{a^{\frac{3}{2}} b^5}$

$\frac{1}{ab^3}$

A $a^{\frac{1}{3}} b^{\frac{2}{5}}$

C $\frac{1}{ab^3}$

B $a^{\frac{2}{4}} b^{10}$

D $\frac{1}{a^{\frac{1}{2}} b^3}$

30 Which relationship would most likely have a negative correlation?

30 __G__

F the time elapsed, and the number of words typed

G the temperature outside, and the number of people wearing coats

H the number of students in a school, and the number of teachers in the school

J the rate at which a car is driven, and the number of miles driven in one hour

As temp inc # of coats dec.

OR

As temp dec # of coats inc.