Math Drill

Time yourself from start to finish and record your time below. The SAT Non-Calculator section is all about speed and practice makes perfect!

YOUR TIME: _____

Multiplication Facts to 100 (B)

Name: _____ Date: _____ Score: ____ /100

Calculate each product.

9 × 7	9 × 4	4 × 10	6 × 4	4 × 3	5 × 8	2 × 9	2 × 3	3 × 4	2 × 7
9 × 10	8 × 6	3 × 10	9 × 2	5 × 4	3 × 3	3 × 8	3 × 5	8 × 3	7 × 6
10 × 8	6 × 10	5 × 10	5 × 6	9 × 5	4 × 6	2 × 10	8 × 4	8 × 9	8 × 8
10 × 10	7 × 9	7 × 5	9 × 6	3 × 9	10 × 9	5 × 7	7 × 7	4 × 5	2 × 4
6 × 8	10 × 6	4 × 7	5 × 2	6 × 2	3 × 2	7 × 2	9 × 8	7 × 4	2 × 5
6 × 9	10 × 5	4 × 2	10 × 4	6 × 6	3 × 7	7 × 3	8 × 7	4 × 8	4 × 4
5 × 9	10 × 2	8 × 2	7 × 8	6 × 7	6 × 3	10 × 7	9 × 9	9 × 3	10 × 3
2 × 6	5 × 3	8 × 5	3 × 6	6 × 5	5 × 5	2 × 8	7 × 10	4 × 9	8 × 10
2 × 2	5 × 5	3 × 6	10 × 5	10 × 4	7 × 5	8 × 7	3 × 3	7 × 10	6 × 3
4 × 7	3 × 5	8 × 5	9 × 2	4 × 4	2 × 7	9 × 6	6 × 8	5 × 7	6 × 6

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Unit 3 - Functions and Linear Equations

Topic: Relations and Functions

1

What is the domain of the function that contains points at $(-5,2)$, $(-2,1)$, $(0,2)$, and $(4,-3)$?

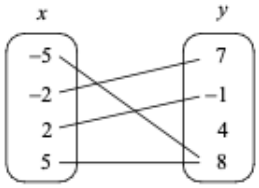
A) $\{-3,\ 1,\ 2\}$

B) $\{-2,\ 1,\ 0\}$

C) $\{-5,\ -2,\ 1,\ 2\}$

D) $\{-5,\ -2,\ 0,\ 4\}$

2



Which of the following relation is a correct representation of the mapping shown above?

A) $\{(-5,7),\ (-2,-1),\ (2,4),\ (5,8)\}$

B) $\{(-5,8),\ (-2,7),\ (2,-1),\ (5,8)\}$

C) $\{(7,-5),\ (-1,-2),\ (4,2),\ (8,5)\}$

D) $\{(8,-5),\ (7,-2),\ (-1,2),\ (8,5)\}$

3

If point $(7,b)$ is in Quadrant I and point $(a,-3)$ is in Quadrant III, in which Quadrant is the point (a,b)?

A) Quadrant I

B) Quadrant II

C) Quadrant III

D) Quadrant IV

4

If $f(x)=-2x+7$, what is $f(\frac{1}{2}x+3)$ equal to?

A) $-x+1$

B) $-x+3$

C) $-x+5$

D) $-x+10$

5

$$g(x)=kx^3+3$$

For the function g defined above, k is a constant and $g(-1)=5$. What is the value of $g(1)$?

A) -3

B) -1

C) 1

D) 3

6

If $f(x+1)=-\frac{1}{2}x+6$, what is the value of $f(-3)$?

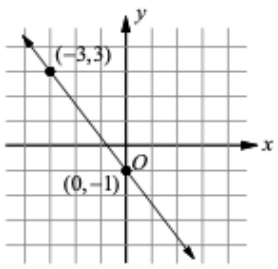
7

$$f(x)=x^2-b$$

In the function above, b is a constant.
If $f(-2)=7$, what is the value of $f(b)$?

Topic: Rate of Change and Slope

1



What is the rate of change shown in the graph of the line above?

A) $-\frac{4}{3}$

B) $-\frac{3}{4}$

C) $\frac{3}{4}$

D) $\frac{4}{3}$

2

x	−3	0	3	6
y	−1	1	3	5

What is the average rate of change for the relation shown in the table above?

A) $\frac{1}{3}$

B) $\frac{1}{2}$

C) $\frac{2}{3}$

D) $\frac{5}{6}$

3

The graph of the linear function f passes through the points $(a,1)$ and $(1,b)$ in the xy-plane. If the slope of the graph of f is 1, which of the following is true?

A) $a-b=1$

B) $a+b=1$

C) $a-b=2$

D) $a+b=2$

4

What is the slope of the line that passes through $(3,2)$ and $(-1,-8)$?

5

What is the value of r if the line that passes through $(4,3)$ and $(-5,r)$ has a slope of -1?

6

What is the value of a if the line that passes through $(a,7)$ and $(1,a)$ has a slope of $-\frac{5}{9}$?

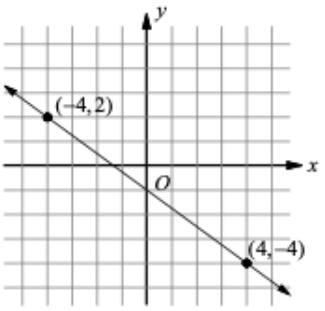
7

$$-x+4y=6$$

What is the slope of the line in the equation above?

Topic: Parallel and Perpendicular Lines

Questions 1-3 refer to the following information.



The graph of a linear equation is shown in the diagram above.

1

Which of the following is the equation of the line in point-slope form?

A) $y+4=-\frac{4}{3}(x-4)$

B) $y-4=-\frac{4}{3}(x+4)$

C) $y-2=-\frac{3}{4}(x+4)$

D) $y+2=-\frac{3}{4}(x-4)$

2

Which of the following is the equation of the line in slope-intercept form?

A) $y=-\frac{3}{4}x+1$

B) $y=-\frac{3}{4}x-1$

C) $y=-\frac{4}{3}x+1$

D) $y=-\frac{4}{3}x-1$

3

Which of the following is the equation of the line in standard form?

A) $4x-3y=-4$

B) $4x+3y=-4$

C) $3x-4y=-4$

D) $3x+4y=-4$

4

In 2005, 120 students at Lincoln High School had smart phones. By 2010, 345 students in the same school had smart phones. Which of the following best describes the annual rate of change in the number of smart phones students had from 2005 to 2010 at Lincoln High School?

A) The average increase in the number of smart phones per year is 40.

B) The average increase in the number of smart phones per year is 45.

C) The average increase in the number of smart phones per year is 50.

D) The average increase in the number of smart phones per year is 55.

5

Which of the following is the equation of the line that passes through point $(4,-1)$ and has slope -2?

A) $x+2y=2$

B) $x-2y=6$

C) $2x-y=9$

D) $2x+y=7$

Topic: Solving Systems of Linear Equations

1

$$y = 2x + 4$$
$$x - y = -1$$

Which ordered pair (x, y) satisfies the system of equations shown above?

A) $(-2, -3)$

B) $(-3, -2)$

C) $(-1, 2)$

D) $(-2, 0)$

2

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

If (x, y) is a solution to the system of equations above, what is the value of $x + y$?

A) -2

B) -1

C) 1

D) 2

3

$$2x - ky = 14$$
$$5x - 2y = 5$$

In the system of equations above, k is a constant and x and y are variables. For what values of k will the system of equations have no solution?

4

Which of the following systems of equations has infinitely many solutions?

A) $x + y = 1$
$x - y = 1$

B) $-2x + y = 1$
$-2x + y = 5$

C) $\frac{1}{2}x - \frac{1}{3}y = 1$
$3x - 2y = 6$

D) $2x + 3y = 1$
$3x - 2y = 1$

5

$$ax - y = 0$$
$$x - by = 1$$

In the system of equations above, a and b are constants and x and y are variables. If the system of equations above has no solution, what is the value of $a \cdot b$?

6

$$2x - \frac{1}{2}y = 15$$
$$ax - \frac{1}{3}y = 10$$

In the system of equations above, a is a constant and x and y are variables. For what values of a will the system of equations have infinitely many solution?

Topic: Absolute Value Equations

1

Which of the following expressions is equal to -1 for some values of x?

A) $|1-x|+6$

B) $|1-x|+4$

C) $|1-x|+2$

D) $|1-x|-2$

2

If $|2x+7|=5$, which of the following could be the value of x?

A) -6

B) -4

C) -2

D) 0

3

For what value of x is $|x-1|-1$ equal to 1?

A) -1

B) 0

C) 1

D) 2

4

For what value of x is $|3x-5|=-1$?

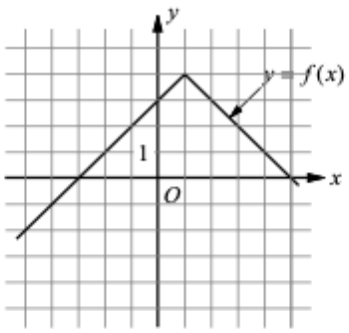
A) -2

B) -1

C) 0

D) There is no such value of x.

5



The graph of the function f is shown in the xy-plane above. For what value of x is the value of $f(x)$ at its maximum?

A) -3

B) -1

C) 1

D) 3

6

For what value of n is $3-|3-n|$ equal to 3?

Unit 3 Review Questions

1

x	-4	0	6
$f(x)$	-4	-1	k

In the table above, if $f(x)$ is a linear function, what is the value of k?

A) 2.5

B) 3

C) 3.5

D) 4

2

The graph of a line in the xy- plane has slope $\frac{1}{3}$ and contains the point $(9,1)$. The graph of a second line passes through the points $(-2,4)$ and $(5,-3)$. If the two lines intersect at (a,b), what is the value of $a+b$?

A) -2

B) 2

C) 4

D) 6

3

Which of the following expressions is equal to 0 for some value of x?

A) $5+|x+5|$

B) $5+|x-5|$

C) $-5+|x+5|$

D) $-5-|x-5|$

4

Line ℓ in the xy- plane contains points from each of the Quadrants I, III, and IV, but no points from Quadrant II. Which of the following must be true?

A) The slope of line ℓ is zero.

B) The slope of line ℓ is undefined.

C) The slope of line ℓ is positive.

D) The slope of line ℓ is negative.

5

x	-3	-1	1	5
$f(x)$	9	5	1	-7

The table above shows some values of the linear function f. Which of the following defines f?

A) $f(x)=2x-3$

B) $f(x)=-2x+3$

C) $f(x)=2x-1$

D) $f(x)=-2x+1$

6

If $f(x)=-6x+1$, what is $f(\frac{1}{2}x-1)$ equal to?

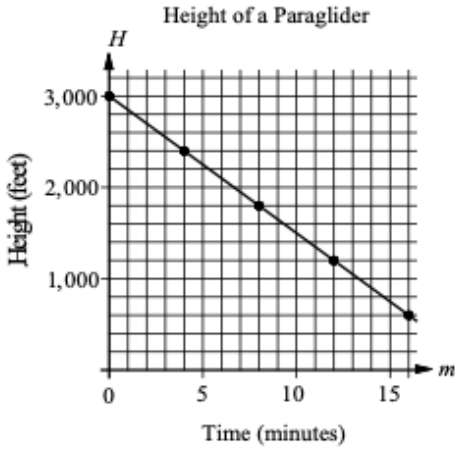
A) $-3x+7$

B) $-3x-5$

C) $-3x+1$

D) $-3x-1$

Questions 7 and 8 refer to the following information.



The graph above shows the relationship between the height of paraglider H, in feet, and time m, in minutes.

7

Which of the following represents the relationship between H and m?

A) $H = -100m + 3000$

B) $H = -150m + 3000$

C) $H = -175m + 3000$

D) $H = -225m + 3000$

8

If the height of the paraglider is 1,350 feet, which of the following best approximates the time the paraglider has been flying?

A) 10 minutes

B) 10 minutes and 30 seconds

C) 11 minutes

D) 11 minutes and 30 seconds

9

A line in the xy-plane passes through the point $(1,-2)$ and has a slope of $\frac{1}{3}$. Which of the following points lies on the line?

A) $(3,-2)$

B) $(2,-\frac{4}{3})$

C) $(0,-2)$

D) $(-1,-\frac{8}{3})$

10

$$f(x) = ax + 2$$

In the function above, a is a constant. If $f(-1) = 4$, what is the value of $f(-\frac{1}{2})$?

11

If the slope of the line in the xy-plane that passes through the points $(2,-4)$ and $(6,k)$ is $\frac{3}{2}$, what is the value of k?

12

$$\frac{1}{3}x - \frac{3}{4}y = -11$$

$$\frac{1}{2}x + \frac{1}{6}y = -1$$

If (x, y) is the solution to the system of equations above, what is the value of $x + y$?

Unit 4 - Linear Inequalities and Graphs

Topic: Translating Words into Inequalities

1

If $-3+n \le 25$, which inequality represents the possible range of values for $4n-12$?

A) $4n-12 \le -100$

B) $4n-12 \le 100$

C) $4n-12 \ge -100$

D) $4n-12 \ge 100$

2

Which of the following numbers is NOT a solution to the inequality $\frac{1}{2}x-\frac{1}{3}>\frac{7}{9}+\frac{5}{2}x$?

A) $-\frac{7}{2}$

B) $-\frac{5}{2}$

C) $-\frac{3}{2}$

D) $-\frac{1}{2}$

3

If $-3a+7 \ge 5a-17$, what is the greatest possible value of $3a+7$?

A) 16

B) 14

C) 12

D) 10

4

Nine is not more than the sum of a number and 17.

Which of the following inequalities represents the statement above?

A) $9 \ge 17n$

B) $9 \ge n+17$

C) $9 \le 17n$

D) $9 \le n+17$

5

The product of 7 and number n is no less than 91.

Which of the following inequalities represents the statement above?

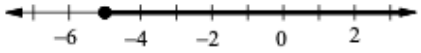
A) $7n \le 91$

B) $7n < 91$

C) $7n \ge 91$

D) $7n > 91$

6



Which of the following inequalities represents the graph above?

A) $n \le -5$

B) $n < -5$

C) $n \ge -5$

D) $n > -5$

Topic: Compound and Absolute Value Inequalities

1

Which of the following numbers is NOT a solution to the inequality $3-n<-2$ or $2n+3\le -1$?

A) -6

B) -2

C) 2

D) 6

2

Which of the following numbers is a solution to the inequality $5w+7>2$ and $6w-15\le 3(-1+w)$?

A) -1

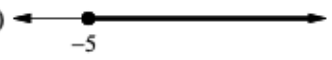
B) 2

C) 5

D) 8

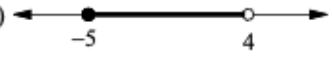
3

Which of the following is the graph of $-x\le 5$ and $7-\frac{1}{2}x>x+1$?

A)


B)


C)


D)


4

If $-2<n<-1$, what is the value of $7+\frac{1}{2}n$ rounded to the nearest whole number?

5

Which of the following numbers is NOT a solution to the inequality $\left|\frac{1}{2}x-1\right|\le 1$?

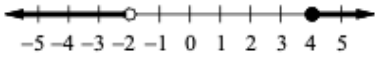
A) 0

B) 2

C) 4

D) 6

6



Which of the following is the compound inequality for the graph above?

A) $x<-2$ or $4\le x$

B) $x\le -2$ or $4<x$

C) $-2<x\le 4$

D) $-2\le x<4$

7

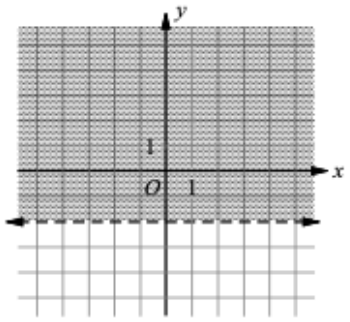
If $\frac{1}{4}x-1\le -x+5$, what is the greatest possible value of x?

8

If $\left|\frac{3}{4}n-2\right|<1$ and n is an integer, what is one possible value of n?

Topic: Graphing Inequalities in Two Variables

1



Which of the following inequalities represents the graph above?

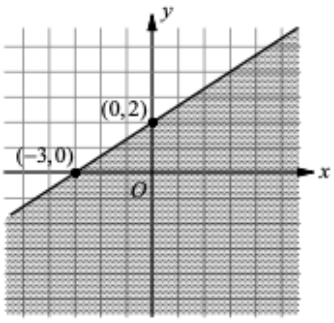
A) $x > -2$

B) $x < -2$

C) $y > -2$

D) $y < -2$

2



Which of the following inequalities represents the graph above?

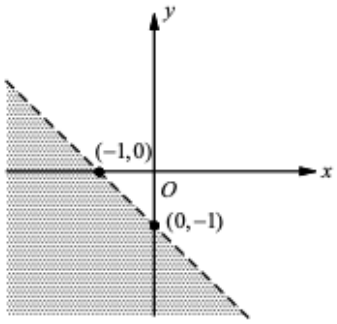
A) $2y - 3x \geq 6$

B) $2y - 3x \leq 6$

C) $3y - 2x \geq 6$

D) $3y - 2x \leq 6$

3



Which of the following inequalities represents the graph above?

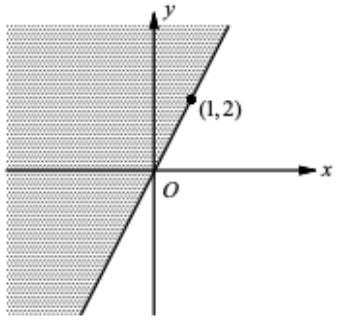
A) $x + y < -1$

B) $x + y > -1$

C) $x + y \leq -1$

D) $x + y \geq -1$

4



Which of the following inequalities represents the graph above?

A) $2x - y \geq 0$

B) $2x - y \leq 0$

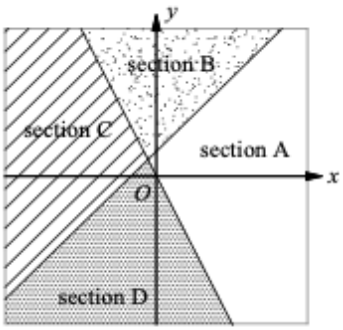
C) $x - 2y \geq 0$

D) $x - 2y \leq 0$

Topic: Graphing Systems of Inequalities

1

$$\begin{cases} y - x \geq 1 \\ y \leq -2x \end{cases}$$



A system of inequalities and a graph are shown above. Which section or sections of the graph could represent all of the solutions to the system?

A) Section A

B) Section B

C) Section C

D) Section D

2

Which of the following ordered pairs (x, y) is a solution to the system of inequalities $y > x - 4$ and $x + y < 5$?

A) $(4, -2)$

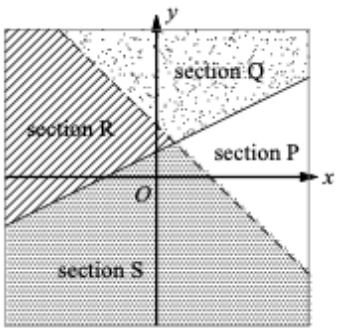
B) $(0, 2)$

C) $(5, 3)$

D) $(0, -5)$

3

$$\begin{cases} x - 2y \leq -2 \\ y < -x + 2 \end{cases}$$



A system of inequalities and a graph are shown above. Which section or sections of the graph could represent all of the solutions to the system?

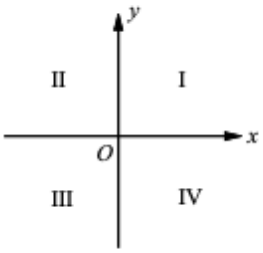
A) Section P

B) Section Q

C) Section R

D) Section S

4



If the system of inequalities $2 - y < 2x$ and $-x \leq 4 - y$ is graphed on the xy-plane above, which quadrant contains no solutions to the system?

A) Quadrant II

B) Quadrant III

C) Quadrant IV

D) There are solutions in all four quadrants.

Unit 4 Review Questions

1

The sum of $120k$ and $215j$ does not exceed 2,500.

Which of the following inequalities represents the statement above?

A) $120k + 215j < 2{,}500$

B) $120k + 215j > 2{,}500$

C) $120k + 215j \leq 2{,}500$

D) $120k + 215j \geq 2{,}500$

2

One half of a number decreased by 3 is at most -5.

Which of the following inequalities represents the statement above?

A) $\frac{1}{2}n - 3 \leq -5$

B) $3 - \frac{1}{2}n \leq -5$

C) $\frac{1}{2}n - 3 < -5$

D) $3 - \frac{1}{2}n < -5$

3

Which of the following numbers is NOT a solution to the inequality $\frac{3b+5}{-2} \geq b - 8$?

A) 0

B) 1

C) 2

D) 3

4

Which of the following inequalities is equivalent to $0.6(k-7) - 0.3k > 1.8 + 0.9k$?

A) $k < 10$

B) $k < -10$

C) $k > 10$

D) $k > -10$

5

$4m - 3 \leq 2(m+1)$ or $7m + 23 < 15 + 9m$

Which of the following numbers is a solution to the compound inequality above?

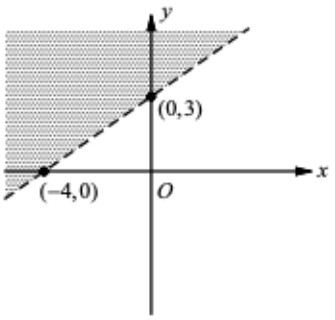
A) 2

B) 3

C) 4

D) 5

6



Which of the following inequalities represents the graph above?

A) $4y - 3x > 12$

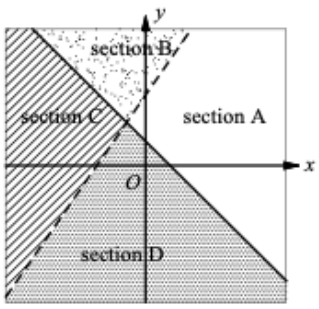
B) $4y - 3x < 12$

C) $3y - 4x > 12$

D) $3y - 4x < 12$

7

$$\begin{cases} 2y-3x \le 6 \\ y > 1-x \end{cases}$$



A system of inequalities and a graph are shown above. Which section or sections of the graph could represent all of the solutions to the system?

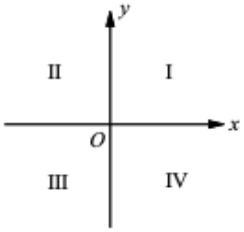
A) Section A

B) Section B

C) Section C

D) Section D

8



If the system of inequalities $3 \ge x$ and $-1 \le y$ is graphed in the xy-plane above, which quadrant contains no solutions to the system?

A) Quadrant II

B) Quadrant III

C) Quadrant IV

D) All four quadrants contain solutions.

9

$$\begin{cases} y < ax+1 \\ y > bx-1 \end{cases}$$

In the xy-plane, if $(1,0)$ is a solution to the system of inequalities above, which of the following must be true?

I. $a > -1$

II. $a+b=0$

III. $b<1$

A) I only

B) I and II only

C) I and III only

D) I, II, and III

10

$$\begin{cases} y \ge 12x+600 \\ y \ge -6x+330 \end{cases}$$

In the xy-plane, if (x,y) lies in the solution set of the system of inequalities above, what is the minimum possible value of y?

11

If $-6 \le 3-2x \le 9$, what is the greatest possible value of $x-1$?

12

For what integer value of x is $4x-2>17$ and $3x+5<24$?