

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 6ee5222e



$\frac{3}{5}x + \frac{3}{4}y = 7$

Which table gives three values of *x* and their corresponding values of *y* for the given equation?

A.

| <i>x</i> | <i>y</i>         |
|----------|------------------|
| 1        | $\frac{113}{20}$ |
| 2        | $\frac{101}{20}$ |
| 4        | $\frac{77}{20}$  |

B.

| <i>x</i> | <i>y</i>       |
|----------|----------------|
| 1        | $\frac{47}{5}$ |
| 2        | $\frac{44}{5}$ |
| 4        | $\frac{38}{5}$ |

C.

| <i>x</i> | <i>y</i>         |
|----------|------------------|
| 1        | $\frac{148}{15}$ |
| 2        | $\frac{136}{15}$ |
| 4        | $\frac{112}{15}$ |

D.

| <i>x</i> | <i>y</i>         |
|----------|------------------|
| 1        | $\frac{128}{15}$ |
| 2        | $\frac{116}{15}$ |
| 4        | $\frac{92}{15}$  |

Question ID 252d6b8a

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 252d6b8a

$5x + 7y = 1$   
 $ax + by = 1$

$-\frac{5}{7} \times -\frac{a}{b} = -1$   
 $a = -7$   
 $b = 5$

แทนค่า

In the given pair of equations,  $a$  and  $b$  are constants. The graph of this pair of equations in the  $xy$ -plane is a pair of perpendicular lines. Which of the following pairs of equations also represents a pair of perpendicular lines?

- A.  $10x + 7y = 1$   
 $ax - 2by = 1$

$-\frac{10}{7} \times \frac{7}{-10} = 1 \times$
- ~~B.  $10x + 7y = 1$   
 $ax + 2by = 1$~~

~~$-\frac{10}{7} \times \frac{7}{10} = -1 //$~~
- C.  $10x + 7y = 1$   
 $2ax + by = 1$

$-\frac{10}{7} \times \frac{14}{5} = -4 \times$
- D.  $5x - 7y = 1$   
 $ax + by = 1$

$\frac{5}{7} \times \frac{7}{5} = 1 \times$

# Question ID 900234f1

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 900234f1

$$5G + 45R = 380$$

At a school fair, students can win colored tokens that are worth a different number of points depending on the color. One student won  $G$  green tokens and  $R$  red tokens worth a total of  $380$  points. The given equation represents this situation. How many more points is a red token worth than a green token?

$$\begin{aligned} |5 - 45| &= 40 // \\ |45 - 5| &= 40 // \end{aligned}$$

Question ID e40b7bdc

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: e40b7bdc

Keenan made 32 cups of vegetable broth. Keenan then filled  $x$  small jars and  $y$  large jars with all the vegetable broth he made. The equation  $3x + 5y = 32$  represents this situation. Which is the best interpretation of  $5y$  in this context?

- A. The number of large jars Keenan filled Y
- B. The number of small jars Keenan filled X
- X The total number of cups of vegetable broth in the large jars 5y
- D. The total number of cups of vegetable broth in the small jars 3x

Question ID dcdceae

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: dcdceae

In the  $xy$ -plane, line  $p$  has a slope of  $-\frac{5}{3}$  and an  $x$ -intercept of  $(-6, 0)$ . What is the  $y$ -coordinate of the  $y$ -intercept of line  $p$ ?

$$y = -\frac{5}{3}x + c$$

$$0 = -\frac{5}{3}(-6) + c$$

$$c = -10 //$$

# Question ID 1cc52a1f

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 1cc52a1f

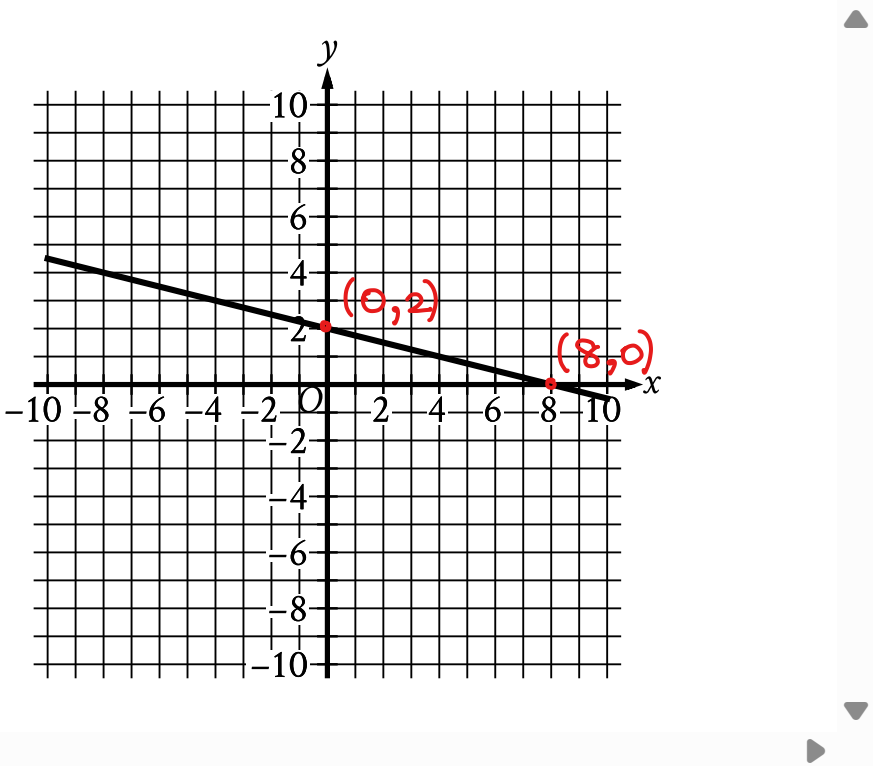
A certain apprentice has enrolled in 85 hours of training courses. The equation  $10x + 15y = 85$  represents this situation, where  $x$  is the number of on-site training courses and  $y$  is the number of online training courses this apprentice has enrolled in. How many more hours does each online training course take than each on-site training course?

$$\begin{aligned} |10 - 15| &= 5 // \\ |15 - 10| &= 5 // \end{aligned}$$

Question ID a8e43ae3

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: a8e43ae3



The graph of  $y = \underline{f(x)} + 14$  is shown. Which equation defines function  $f$ ?

- ~~A.  $f(x) = -\frac{1}{4}x - 12$~~
- B.  $f(x) = -\frac{1}{4}x + 16$
- C.  $f(x) = -\frac{1}{4}x + 2$
- D.  $f(x) = -\frac{1}{4}x - 14$

$$-\frac{1}{4}x + 2 = f(x) + 14$$
$$f(x) = -\frac{1}{4}x - 12 //$$

Question ID beb54560

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: beb54560

Line  $p$  is defined by  $4y + 8x = 6$ . Line  $r$  is perpendicular to line  $p$  in the  $xy$ -plane. What is the slope of line  $r$ ?

$$\text{Slope}_r \times \text{Slope}_p = -1$$
$$\frac{4}{8} \times -\frac{8}{4} = -1$$
$$\rightarrow \frac{1}{2} \text{ or } 0.5 //$$

| Assessment | Test | Domain  | Skill                             | Difficulty |
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ID: c73c84cc

The graph of  $9x - 10y = 19$  is translated down 4 units in the  $xy$ -plane. What is the  $x$ -intercept of the resulting graph?

1  
ให้

$$y = \frac{9}{10}x - \frac{19}{10}$$
$$y = \frac{9}{10}x - \frac{19}{10} - 4$$
$$0 = \frac{9}{10}x - \frac{19}{10} - 4$$
$$x = \frac{59}{9} //$$

→ = 6.5556 //

ให้ desmos (4 decimal points)

~~$y = 0, x = \frac{19}{9}$~~

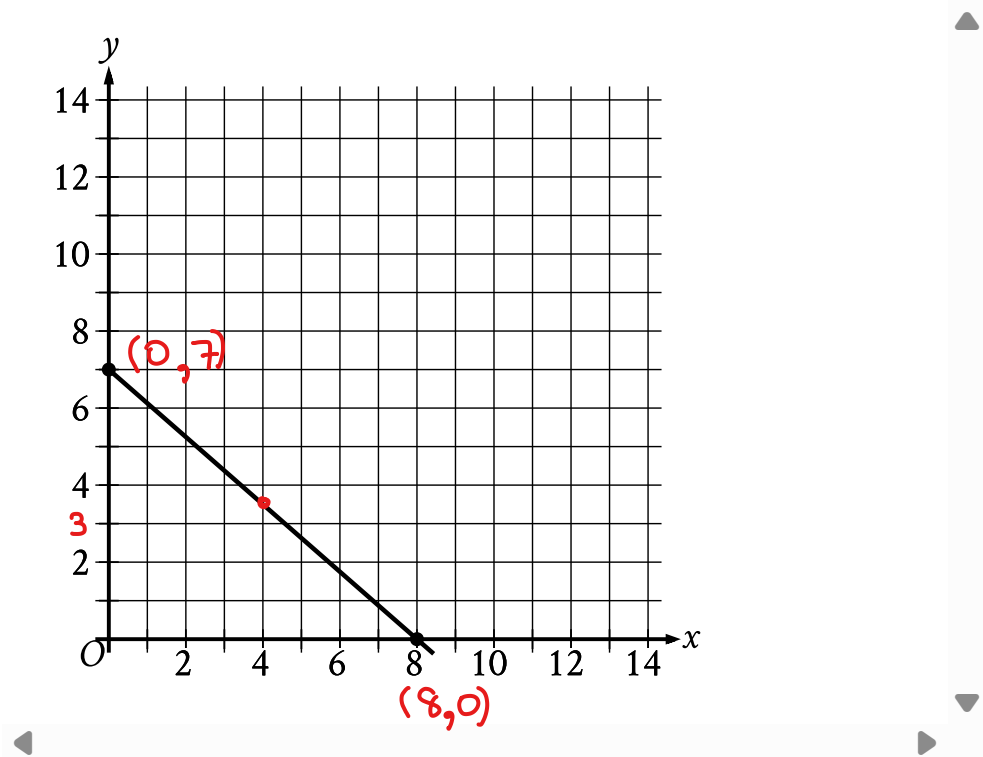
~~$\frac{19}{9} + 4 = \frac{55}{9}$~~

~~$\frac{19}{9} - 4 = -\frac{17}{9}$~~

Question ID 35978b89

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 35978b89



The point with coordinates  $(d, 4)$  lies on the line shown. What is the value of  $d$ ?

- A.  $\frac{7}{2}$
- B.  $\frac{26}{7}$
- ~~C.  $\frac{24}{7}$~~
- D.  $\frac{27}{8}$

Desmos  $\rightarrow y = -0.875x + 7$   
 $4 = -0.875x + 7$   
 $x = \frac{24}{7} //$

Slope =  $\frac{7-0}{0-8} = -\frac{7}{8}$   
 $y = -\frac{7}{8}x + 7$   
 $4 = -\frac{7}{8}x + 7$   
 $x = \frac{24}{7} //$

Question ID 9a67367f

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 9a67367f

| $x$     | $y$ |
|---------|-----|
| $k - 5$ | 13  |
| $k + 7$ | -15 |



The table gives the coordinates of two points on a line in the  $xy$ -plane. The  $y$ -intercept of the line is  $(k - 5, b)$ , where  $k$  and  $b$  are constants. What is the value of  $b$ ?

Slope =  $\frac{-15 - 13}{k + 7 - k} = -4$

$y = -4x + c$

$13 = -4(5) + c$

$c = 33 //$

Desmos  $\rightarrow y = -4x + 33 //$

Question ID 95cc0b50

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 95cc0b50

The graph of  $7x + 2y = -31$  in the  $xy$ -plane has an  $x$ -intercept at  $(a, 0)$  and a  $y$ -intercept at  $(0, b)$ , where  $a$  and  $b$  are constants. What is the value of  $\frac{b}{a}$ ?

- A.  $-\frac{7}{2}$
- B.  $-\frac{2}{7}$
- C.  $\frac{2}{7}$
- ~~D.  $\frac{7}{2}$~~

$7a + 2(0) = -31$   
 $a = \frac{-31}{7}$   
 $7(0) + 2b = -31$   
 $b = \frac{-31}{2}$   
 $\frac{b}{a} = \frac{-31}{2} \div \frac{-31}{7}$   
 $= \frac{\cancel{-31}}{2} \times \frac{7}{\cancel{-31}}$   
 $= \frac{7}{2} //$

Question ID e4db4454

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: e4db4454



Line  $h$  is defined by  $\frac{1}{5}x + \frac{1}{7}y - 70 = 0$ . Line  $j$  is perpendicular to line  $h$  in the  $xy$ -plane. What is the slope of line  $j$ ?

- A.  $-\frac{7}{5}$
- B.  $-\frac{5}{7}$
- C.  $\frac{7}{5}$
- ~~D.  $\frac{5}{7}$~~

$$\text{Slope } j \times \text{Slope } h = -1$$
$$\text{Slope } j \times \left(-\frac{1}{5} \times \frac{7}{1}\right) = -1$$
$$\frac{5}{7} \times -\frac{7}{5} = -1$$

//

Question ID 0e1dbc1d

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 0e1dbc1d

Line  $\ell$  is defined by  $3y + 12x = 5$ . Line  $n$  is perpendicular to line  $\ell$  in the  $xy$ -plane. What is the slope of line  $n$ ?

$$\text{Slope}_n \times \text{Slope}_\ell = -1$$

$$\left[ \frac{3}{12} \times -\frac{12}{3} = -1 \right]$$

$$\rightarrow \frac{1}{4} \text{ or } 0.25 //$$

# Question ID 1ad71c23

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 1ad71c23

| $x$   | $y$   |
|-------|-------|
| $-18$ | $-48$ |
| $7$   | $52$  |



The table shows two values of  $x$  and their corresponding values of  $y$ . In the  $xy$ -plane, the graph of the linear equation representing this relationship passes through the point  $(\frac{1}{7}, a)$ . What is the value of  $a$ ?

- A.  $-\frac{4}{11}$
- B.  $-\frac{4}{77}$
- C.  $\frac{4}{7}$
- D.  $\frac{172}{7}$

Question ID 8d7fb037

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 8d7fb037

| $x$ | $y$ |
|-----|-----|
| 18  | 130 |
| 23  | 160 |
| 26  | 178 |

Desmos  $\rightarrow y = 6x + 22$   
9.18.21  
 $y = 6x + 22 - 5$   
 $0 = 6x + 17$   
 $x = \frac{-17}{6} //$



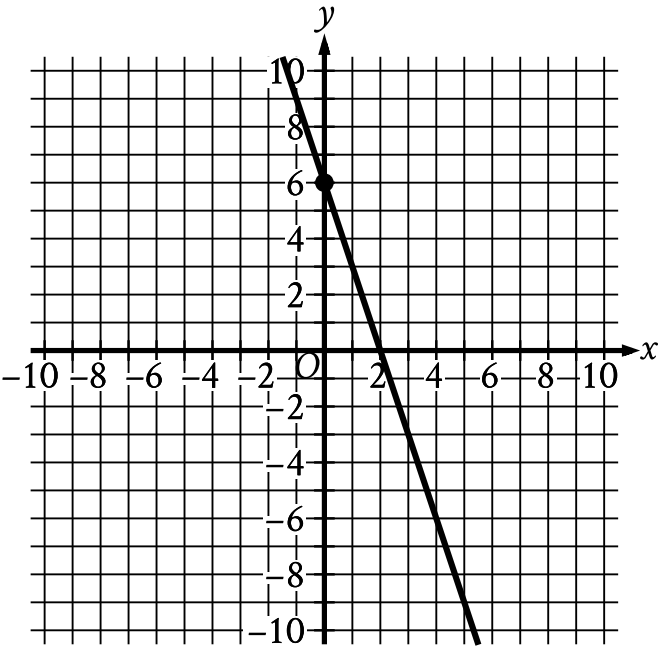
For line  $h$ , the table shows three values of  $x$  and their corresponding values of  $y$ . Line  $k$  is the result of translating line  $h$  down 5 units in the  $xy$ -plane. What is the x-intercept of line  $k$ ?

- A.  $(-\frac{26}{3}, 0)$
- B.  $(-\frac{9}{2}, 0)$
- C.  $(-\frac{11}{3}, 0)$
- ~~D.  $(-\frac{17}{6}, 0)$~~

Question ID 8a1fb433

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 8a1fb433



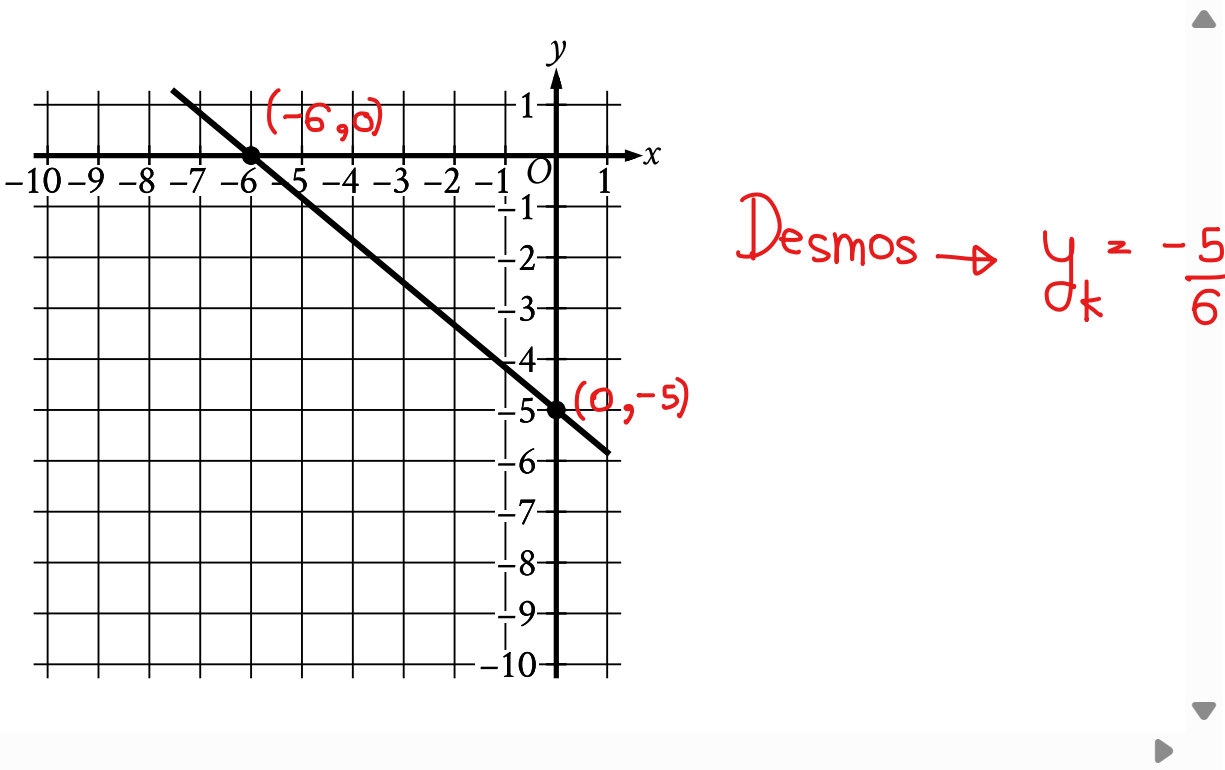
The graph shows a linear relationship between  $x$  and  $y$ . Which equation represents this relationship, where  $R$  is a positive constant?

- A.  $Rx + 18y = 36$
- B.  $Rx - 18y = -36$
- C.  $18x + Ry = 36$
- D.  $18x - Ry = -36$

Question ID 3dcde9ed

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 3dcde9ed



Line  $k$  is shown in the  $xy$ -plane. Line  $j$  (not shown) is perpendicular to line  $k$ . What is the slope of line  $j$ ?

$$\text{Slope } j \times \text{Slope } k = -1$$
$$\frac{6}{5} \times -\frac{5}{6} = -1$$
$$1.2 //$$

# Question ID ec0fe2b2

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: ec0fe2b2

In the  $xy$ -plane, line  $\ell$  passes through the point  $(0, 0)$  and is parallel to the line represented by the equation  $y = 8x + 2$ . If line  $\ell$  also passes through the point  $(3, d)$ , what is the value of  $d$ ?

$$\text{Slope}_\ell = \text{Slope}_a$$

$$y = 8x$$

$$d = 8(3)$$

$$d = 24$$

Question ID 228bd68a

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: 228bd68a

What is the y-coordinate of the y-intercept of the graph of  $\frac{3x}{7} = -\frac{5y}{9} + 21$  in the  $xy$ -plane?

$$\frac{3}{7}(0) = -\frac{5y}{9} + 21$$
$$y = \frac{189}{5} \text{ or } 37.8$$

//                      //

Question ID a83cf688

| Assessment | Test | Domain  | Skill                             | Difficulty |
|------------|------|---------|-----------------------------------|------------|
| SAT        | Math | Algebra | Linear equations in two variables | Hard       |

ID: a83cf688

| $x$   | $y$ |
|-------|-----|
| $-2s$ | 24  |
| $-s$  | 21  |
| $s$   | 15  |

$(-4, 24)$   
 $(-2, 21)$   
 $(2, 15)$

Slope =  $\frac{15 - 21}{s - (-s)} = \frac{-6}{2s} = -\frac{3}{s}$

สมมติ  $s = 2$  ก็ได้

The table shows three values of  $x$  and their corresponding values of  $y$ , where  $s$  is a constant. There is a linear relationship between  $x$  and  $y$ . Which of the following equations represents this relationship?

- A.  $sx + 3y = 18s$  ✗
- ~~B.  $3x + sy = 18s$~~
- C.  $3x + sy = 18$
- D.  $sx + 3y = 18$  ✗

$3(2) + 2(15) = 18(2) = 36 //$   
 $3(2) + 2(15) = 18 \times$