

## 5.2 Direct variation (Notes)

\* relationship that can be represented by a function

\* formula:  $y = kx$

$y$ -coordinate  $\rightarrow$   $x$ -coordinate

Slope  
(constant of variation)

$$* K = \frac{y}{x}$$

\*  $y$ -intercept is zero

\*  $(0, 0)$ , origin is an ordered pair.

#1 from 5-2 wkshet (see attached wkshet)

\* Rewrite equation in  $y = kx$

$$\frac{-8y}{-8} = \frac{2x}{-8}$$

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

\* Since the equation can be written in the formula  $y = kx$ , it is a direct variation

\*  $k$  is the constant of variation

Final Answer:

Yes,  $-\frac{1}{4}$


## # 2 on wksht

\* Rewrite equation in  $y=kx$

$$\begin{array}{r} 3x + 4y = -5 \\ -3x \quad -3x \end{array}$$

$$\frac{4y}{4} = \frac{-3x - 5}{4}$$

$$y = -\frac{3}{4}x - \frac{5}{4}$$

\* Since the equation can not be written as  $y=kx$ , because it has a constant of  $-\frac{5}{4}$ , the final answer is 

## # 7 on wksht


1) Use the formula  $y=kx$  and what is given to write the equation

$$y=kx, y=10 \text{ \& } x=2$$

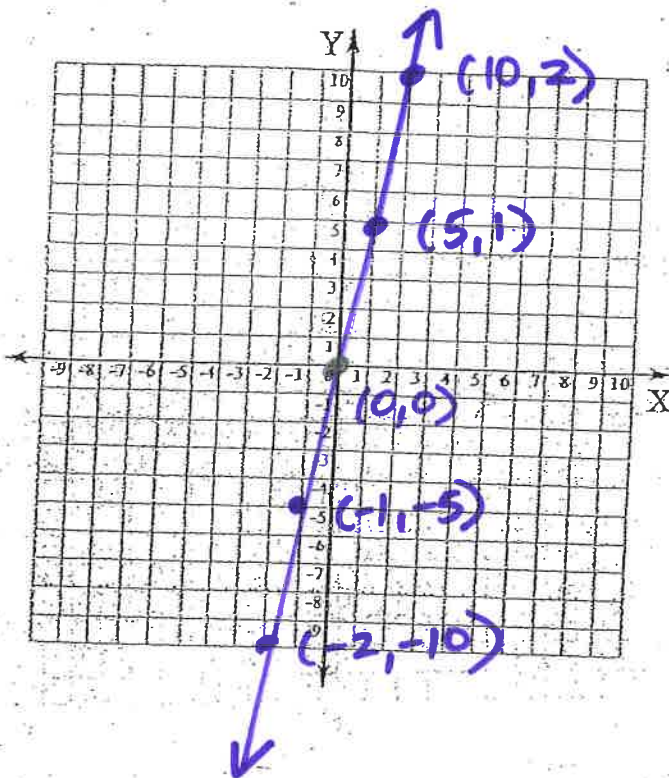
$$\frac{10}{2} = \frac{k(2)}{2}$$

$$k=5$$

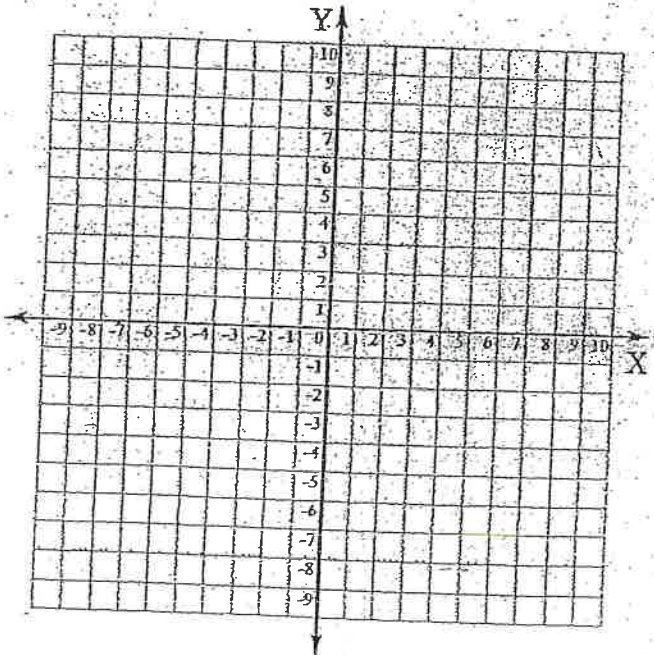
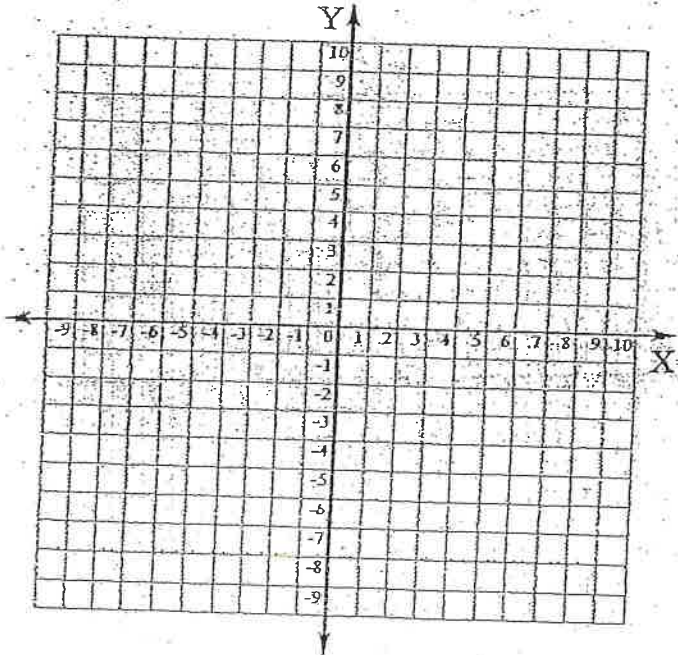
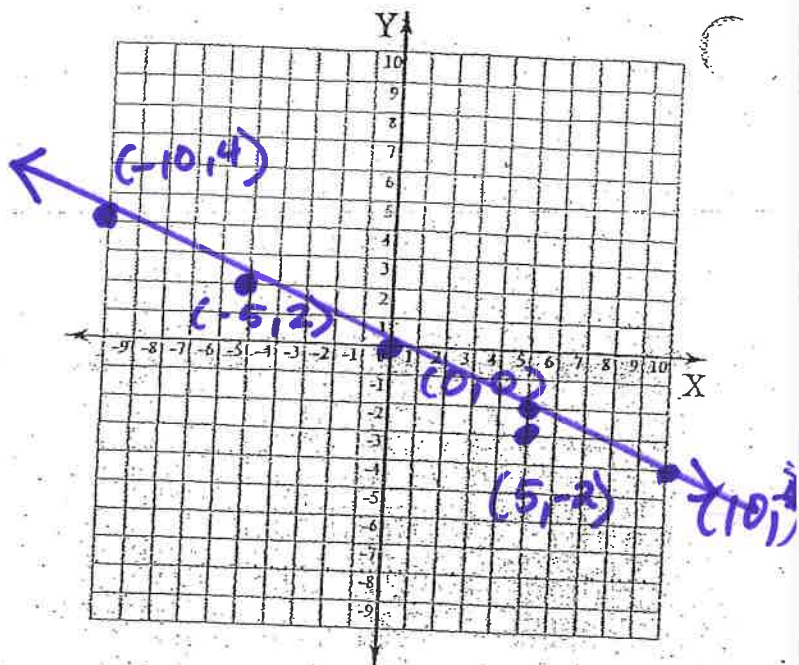

$$y=5x$$

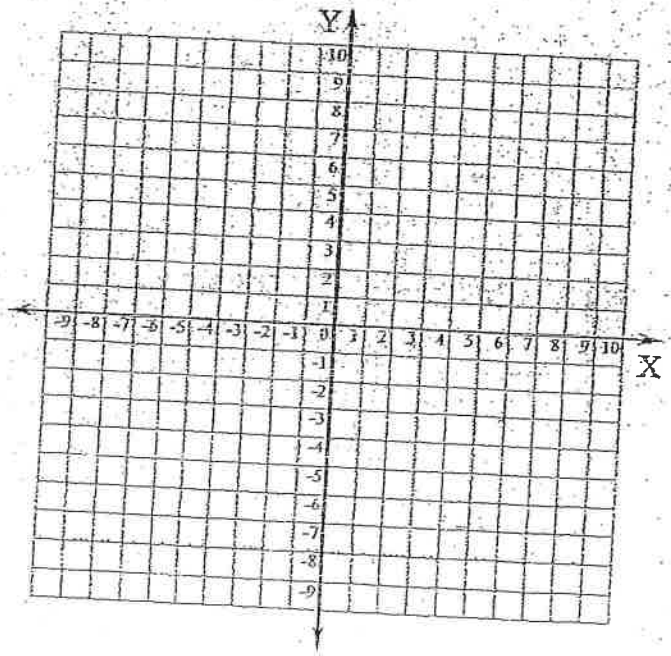
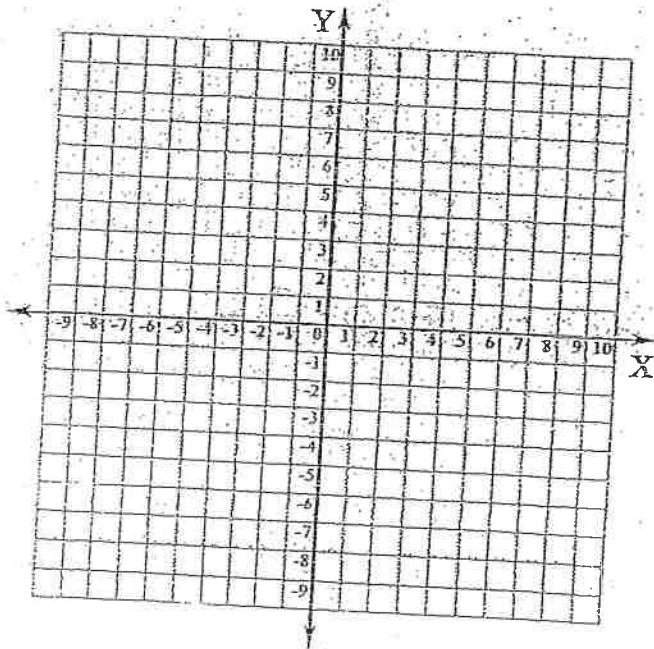
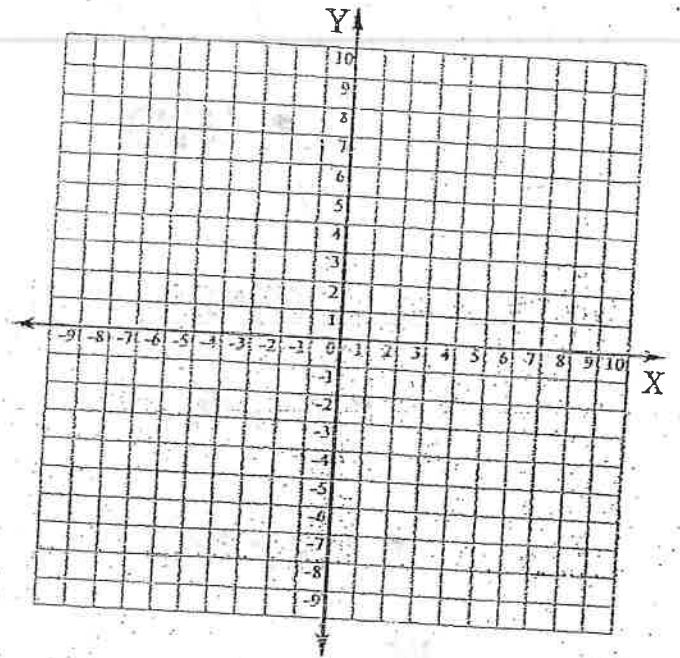
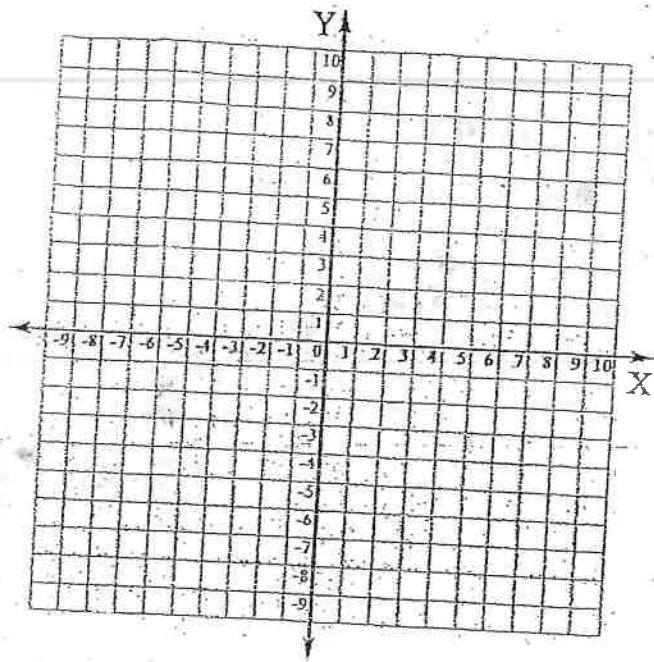
2) Use  $y=5x$ ,  $y=5(8)$   


#13)  $y = 5x$



#14)  $y = -\frac{2}{5}x$





## 5-2

## Practice (continued)

Form G

## Direct Variation

For the data in each table, tell whether  $y$  varies directly with  $x$ . If it does, write an equation for the direct variation.

$x$	$y$
2	-2.5
-7	8.75
5	-6.25

18.

$x$	$y$
9	10.8
12	14.4
-3	3.6

19.

$x$	$y$
-6.5	-19.5
-5.2	-15.6
4.8	14.4

20.

Suppose  $y$  varies directly with  $x$ . Write and graph a direct variation equation that relates  $x$  and  $y$ .

21.  $y = -6$  when  $x = 3$ .

22.  $y = -\frac{4}{3}$  when  $x = -4$ .

23.  $y = \frac{5}{8}$  when  $x = \frac{1}{2}$ .

Tell whether the two quantities vary directly. Explain your reasoning.

24. the total number of miles run and the number of miles you run per day when training for a race
25. Jackson's age and Dylan's age
26. a recipe that calls for 2 cups of sugar for each cup of flour
27. **Writing** In a direct variation equation, describe how the slope of the graph of the line is related to the constant of variation.
28. Janine gets paid \$16.75 per hour at her job. Write a direct variation equation where  $h$  represents the number of hours she works and  $d$  represents the amount of money she earns. Graph the equation.

## 5-2

## Practice

Form G

## Direct Variation

Determine whether each equation represents a direct variation. If it does, find the constant of variation.

1.  $-8y = 2x$

2.  $3x + 4y = -5$

3.  $12x = -36y$

4.  $-7 + 9y + 7 = 2x$

5.  $y - 12 = 12x$

6.  $5x + 12.5y = 0$

Suppose  $y$  varies directly with  $x$ . Write a direct variation equation that relates  $x$  and  $y$ . Then find the value of  $y$  when  $x = 8$ .

7.  $y = 10$  when  $x = 2$ .

8.  $y = 6$  when  $x = 18$ .

9.  $y = 2$  when  $x = 5$ .

10.  $y = 9.92$  when  $x = 12.8$ .

11.  $y = 1.85$  when  $x = 0.925$ .

12.  $y = 1\frac{2}{9}$  when  $x = 3\frac{2}{3}$ .

Graph each direct variation equation.

13.  $y = 5x$

14.  $y = -\frac{2}{5}x$

15.  $y = \frac{3}{4}x$

16. An equilateral triangle is a triangle with three equal sides. The perimeter of an equilateral triangle varies directly with the length of one side. What is an equation that relates the perimeter  $p$  and length  $l$  of a side? What is the graph of the equation?

17. The amount  $a$  you fill a tub varies directly with the amount of time  $t$  you fill it. Suppose you fill 25 gallons in 5 minutes. What is an equation that relates  $a$  and  $t$ ? What is the graph of the equation?