Direct Variation Equation

$y = kx$

- y: y coordinate
- x: x coordinate
- k: constant

* $y = kx$

Ex) Find the constant.

$y = \frac{1}{2}x \quad k = \frac{1}{2}$

$y = 10x \quad k = 10$

$y = 3.5x \quad k = 3.5$

Write an equation from the table.

x	y	
1	7	$\frac{7}{1} = 7$
2	14	$\frac{14}{2} = 7$
3	21	$\frac{21}{3} = 7$
4	28	$\frac{28}{4} = 7$

$y = 7x$

x	3	6	9	12
y	1	2	3	4

$\frac{1}{3}$ $\frac{6}{2}=\frac{1}{3}$ $\frac{9}{3}=\frac{1}{3}$ $\frac{12}{4}=\frac{1}{3}$

Write an equation with the known Constant.

$y = \frac{1}{3}x$

$\frac{y}{x}$ = constant

X	Y
1	3.5
2	7
3	10.5
4	14

$\frac{3.5}{1} = 3.5$

$\frac{7}{2} = 3.5$

$\frac{10}{3} = 3.5$

$\frac{14}{4} = 3.5$

$$3\overline{)10.5}\ 3.5 \quad -9 \quad 15 \quad -15 \quad 0$$

$$2\overline{)7.0}\ 3.5 \quad -6 \quad 10 \quad -10 \quad 0$$

$y = 3.5x$

Complete the table using direct variation equation. $y = kx$

1. Complete the table. $y = \underset{(k)}{4}x$

x	0	1	2	3	4
y					

$y = 4(0)$ $y = 4(1)$ $y = 4(2)$ $y = 4(3)$ $y = 4(4)$

$y = 0$ $y = 4$ $y = 8$ $y = 12$ $y = 16$

2) $y = 2.5x$

x	y	
0	0	
4	10.0	$y = 2.5(4)$
8	20.0	$y = 2.5(8)$
12	30.0	$y = 2.5(12)$

3) $y = 0.75x$

x	y	
0	0	
3	2.25	$y = .75(3)$
6	4.5	$y = .75(6)$
9	6.75	$y = .75(9)$

$$\begin{array}{r} .75 \\ \times\ 3 \\ \hline 2.25 \end{array} \qquad \begin{array}{r} {}^{3} \\ .75 \\ \times\ 6 \\ \hline 4.50 \end{array} \qquad \begin{array}{r} {}^{4} \\ .75 \\ \times\ 9 \\ \hline 6.75 \end{array}$$

1) Using $y = 5x$, find the value of x if $y = 105$.

$y = kx$

$\frac{105}{5} = \frac{5x}{5}$

$21 = x$

$5\overline{)105}$ → -10 → 5 → -5 → 0

2) Find x if $y = 57$ using $y = 9.5x$

$y = kx$

$\frac{57}{9.5} = \frac{9.5x}{9.5}$

$x = 6$

$9.5\overline{)57.0}$ → -570 → 0