

# Worksheet Level 2: Writing Linear Equations

## Goals:

I have mastered level 2 when I can:

Write an equation given the slope and y-intercept

Write an equation from a table

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

1) Slope =  $\frac{9}{4}$ , y-intercept = -4  
 $y = \frac{9}{4}x - 4$

2) Slope =  $-\frac{7}{4}$ , y-intercept = 5  
 $y = -\frac{7}{4}x + 5$

3) Slope = 2, y-intercept = 4  
 $y = 2x + 4$

4) Slope =  $-\frac{1}{2}$ , y-intercept = -2  
 $y = -\frac{1}{2}x - 2$

Write an equation in slope-intercept form for each table below. Show how you found the slope and y-intercept.

i.

x	y
0	0
1	2.5
2	5
3	7.5
4	10

$\Delta y = 2.5 = 2.5$   
 $\Delta x = 1 = 1$   
 $y = 2.5x$

ii.

x	y
0	6
1	7
2	8
3	9
4	10

$\Delta y = 1 = 1$   
 $\Delta x = 1 = 1$   
 $y = x + b$

iii.

x	y
0	-1.5
1	1.5
2	4.5
3	7.5
4	10.5

$\Delta y = 3 = 3$   
 $\Delta x = 1 = 1$   
 $y = 3x - 1.5$

iv.

x	y
0	3
1	-1
2	-5
3	-9
4	-13

$\Delta y = -4 = -4$   
 $\Delta x = 1 = 1$   
 $y = -4x + 3$

v.

x	y
1	1
2	5
3	9
4	13
5	17

$\Delta y = 4 = 4$   
 $\Delta x = 1 = 1$   
 $y = 4x - 3$

Write a linear equation for each table relating x and y.

a.

x	0	3	6	10
y	2	8	14	22

$\Delta y = 6 = 6$   
 $\Delta x = 3 = 3$   
 $y = 2x + 2$

b.

x	0	3	6	10
y	20	8	-4	-20

$\Delta y = -12 = -12$   
 $\Delta x = 3 = 3$   
 $y = -4x + 20$

c.

x	2	4	6	8
y	5	8	11	14

$\Delta y = 3 = 3$   
 $\Delta x = 2 = 2$   
 $y = \frac{3}{2}x + b$   
 $5 = \frac{3}{2}(2) + b$   
 $5 = 3 + b$   
 $b = 2$   
 $y = \frac{3}{2}x + 2$

d.

x	0	3	6	9
y	20	11	2	-7

$\Delta y = -9 = -9$   
 $\Delta x = 3 = 3$   
 $y = -3x + 20$

Determine if the table represents a linear relationship, if yes, write an equation in slope-intercept form.

a.

x	2	4	6	8	10	12	14
y	-1	0	1	2	3	4	5

$\Delta y = 1 = 1$   
 $\Delta x = 2 = 2$   
 $y = \frac{1}{2}x - 1$

b.

x	1	2	3	4	5	6	7
y	0	3	8	15	24	35	48

$\Delta y = 3 = 3$   
 $\Delta x = 1 = 1$   
 $y = 3x + b$   
 $0 = 3(1) + b$   
 $0 = 3 + b$   
 $b = -3$   
 $y = 3x - 3$

c.

x	1	4	6	7	10	12	16
y	2	-1	-3	-4	-7	-9	-13

$\Delta y = -3 = -3$   
 $\Delta x = 3 = 3$   
 $y = -x + b$   
 $2 = -1 + b$   
 $2 = -1 + b$   
 $b = 3$   
 $y = -x + 3$

Not linear, there is no constant slope between all the points.