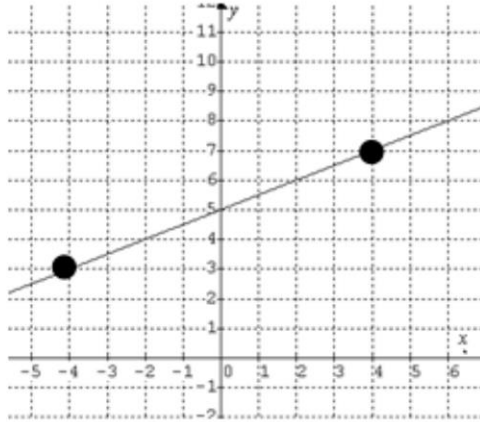


CHAPTER 3 REVIEW

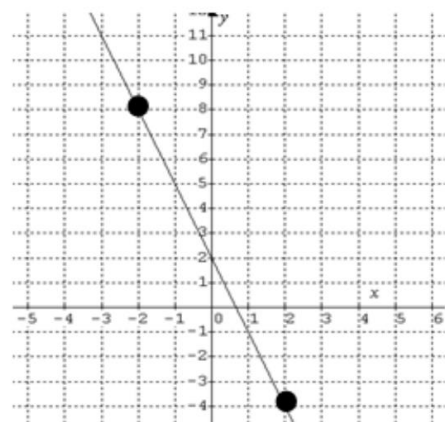
3.1 – SLOPE AS A RATE OF CHANGE

1. For each graph, calculate the **slope** of the line using $m = \frac{\text{RISE}}{\text{RUN}}$

(a)



(b)



2. Complete the **table of values** for each linear relation

(a)

$$y = 5x - 4$$

x	y
-2	
-1	
0	
1	
2	

(b)

$$y = -x$$

x	y
-2	
-1	
0	
1	
2	

(c)

$$y = 1 - 4x$$

x	y
-2	
-1	
0	
1	
2	

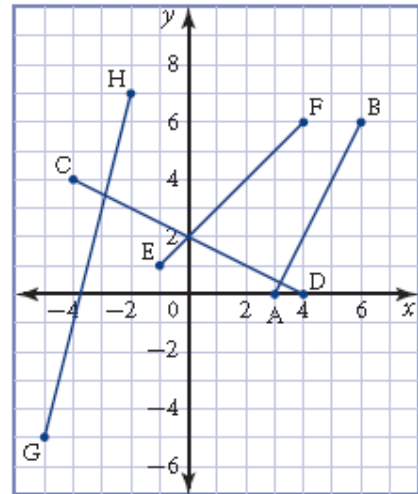
3. Calculate the **slope** for each line segment using $m = \frac{RISE}{RUN}$

AB =

CD =

EF =

GH =



4. Complete the **table of values** and determine the **rate of change** for each linear relation

(a)

$$y = 3x + 4$$

x	y	Rate of change
-2		
-1		
0		
1		
2		

(b)

$$y = -5x + 3$$

x	y	Rate of change
-2		
-1		
0		
1		
2		

(c)

$$y = -2x$$

x	y	Rate of change
-2		
-1		
0		
1		
2		

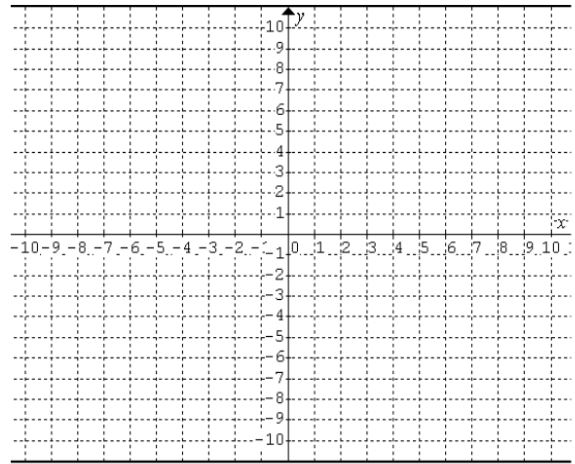
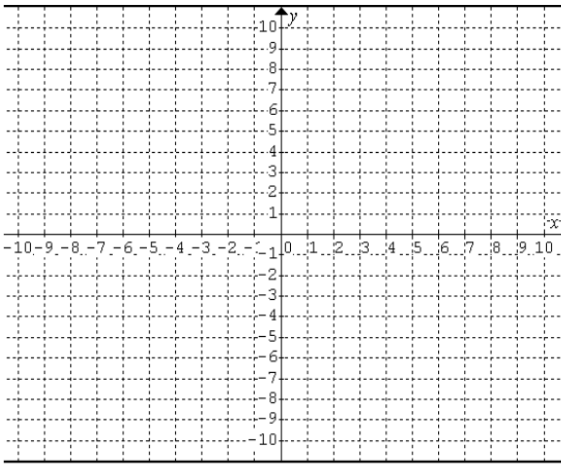
5. **Graph** each relation and calculate the slope using $m = \frac{RISE}{RUN}$

(a)

x	y
-2	2
-1	1
0	0
1	-1
2	-2

(b)

x	y
-4	-8
-2	-4
0	0
2	4
4	8



3.2 – INVESTIGATE SLOPE and y-INTERCEPT

1. Identify the **slope (m)** and **y-intercept (b)** for each linear relation

(a) $y = 10x - 1$ $m = 10$ $b = -1$

(b) $y = -3x + 12$ $m =$ $b =$

(c) $y = -4x$ $m =$ $b =$

(d) $y = \frac{5}{6}x + 2$ $m =$ $b =$

(e) $y = 0.5x + 1.2$ $m =$ $b =$

2. Write the equation for each line given the **slope (m)** and **y-intercept (b)**

(a) Slope = 5 y-intercept = 6 Equation: $y = 5x + 6$

(b) Slope = 0.6 y-intercept = 2 Equation:

(c) Slope = $\frac{3}{5}$ y-intercept = -3 Equation:

(d) Slope = -8 y-intercept = 0 Equation:

3. For each line, write the equation by determining the **slope (m)** and **y-intercept (b)**

Slope (m)			
y-intercept (b)			
Equation ($y = mx + b$)			

3.3 – PROPERTIES OF SLOPES OF LINES

1. For each equation of the line, determine if the **slope** is *positive*, *negative* or *zero*

- (a) $y = x + 9$ **POSITIVE** (b) $y = -2x + 1$ **NEGATIVE**
(c) $y = 4$ **ZERO** (d) $y = -5x - 3$ _____
(e) $y = 7x - 1$ _____ (f) $y = -9$ _____

2. Write an **equation of a line** that has a *steeper* slope than the given line

- (a) $y = 4x + 1$ **$y = 5x + 1$** (Slope = 5 and 5 is further away from 0)
(b) $y = -3x - 2$ _____ (c) $y = x + 3$ _____
(d) $y = 0.5x + 9$ _____

3. Write an **equation of a line** that is *less steep* than the given line

- (a) $y = -7x$ **$y = -4x$** (Slope = -4 and -4 is *closer* to 0)
(b) $y = 6x$ _____ (c) $y = -x + 4$ _____
(d) $y = 0.75x - 2$ _____

4. Determine if the lines in each pair are **parallel** (Parallel lines have the same slope)

- (a) $y = 3x + 2$ and $y = 3x - 1$ **YES** (slope = 3 and are the same)
(b) $y = 4x - 1$ and $y = -4x + 1$ **NO** (slopes are different)
(c) $y = \frac{1}{3}x$ and $y = -\frac{1}{3}x$ _____
(d) $y = 5x$ and $y = 2x$ _____
(e) $y = x - 3$ and $y = -x - 3$ _____

5. Write an equation that is **parallel** to the given equation (Parallel lines have the same slope)

(a) $y = 2x + 4$ $y = 2x - 3$ (same slope of $m = 2$)

(b) $y = -3x - 2$ _____ (c) $y = \frac{3}{5}x - 2$ _____

* (d) $y = 7$ _____

6. For each table of values, calculate the **first differences** and determine if the lines are parallel

(a)

x	y	Rate of change
-2	5	
-1	8	
0	11	
1	14	
2	17	

x	y	Rate of change
-2	-8	
-1	-5	
0	-2	
1	1	
2	4	

(b)

x	y	Rate of change
0	1	
1	6	
2	11	
3	16	
4	21	

x	y	Rate of change
0	1	
1	2	
2	4	
3	8	
4	16	



4.4 – CONVERT LINEAR EQUATIONS FROM STANDARD FORM

1. Write each equation in **slope y-intercept form** ($y = mx + b$). State the **slope (m)** and **y-intercept (b)** for each

(a) $4x + y - 2 = 0$
 $y = -4x + 2$

$m = -4$
 $b = 2$

(b) $5x + y + 4 = 0$

(c) $x + y + 2 = 0$

(d) $2x - y + 3 = 0$
 $\frac{-y}{-1} = \frac{-2x - 3}{-1}$

$y = 2x + 3$

$m = 2$
 $b = 3$

(e) $2x - y - 1 = 0$

(f) $x - y + 3 = 0$

(g) $4x + 2y + 6 = 0$
 $\frac{2y}{2} = \frac{-4x - 6}{2}$
 $y = -2x - 3$

$m = -2$
 $b = -3$

(h) $6x - 2y - 4 = 0$

(i) $3x + 3y + 6 = 0$

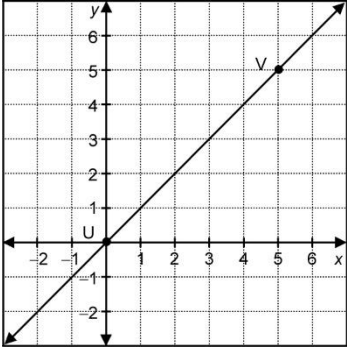
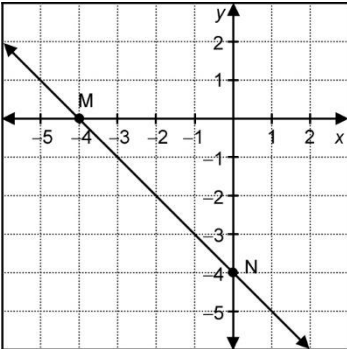
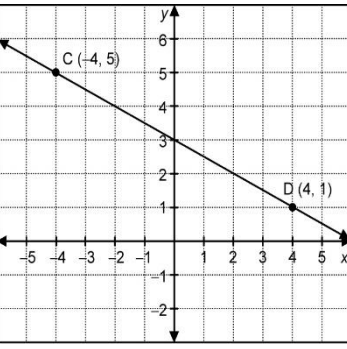
2. The line $6x + 8y + C = 0$ passes through the point **(2, 4)**. Determine the value of **C**

3. The line $Ax + 2y - 2 = 0$ passes through the point **(3, 4)**. Determine the value of **A**



3.4 – DETERMINE THE EQUATION OF A LINE

1. For each graph, determine the **slope**, **y-intercept** and write the equation of the line in the form $y = mx + b$

	Slope (m)	y -intercept (b)	Equation ($y = mx + b$)
(a) 			
(b) 			
(c) 			

2. Write the equation for each line in the form $y = mx + b$, given the **slope (m)** and **y-intercept (b)**

- (a) slope = -1 , y-intercept = 2 $y = -x + 2$
- (b) slope = 3 , y-intercept = -5 _____
- (c) slope = -6 , y-intercept = 4 _____
- (d) slope = $\frac{1}{4}$, y-intercept = 7 _____

3. Determine the equation for each line in the form $y = mx + b$ given the **slope (m)** and a **given point (x, y)**

- (a) $m = 2$, $A(4, 1)$ (b) $m = 3$, $B(2, -4)$
- (c) $m = -7$, $C(-1, 10)$ (d) $m = -4$, $D(0, 5)$

4. Write an equation of the line in the form $y = mx + b$ and passes through the given pair of points (Recall $slope(m) = \frac{y_2 - y_1}{x_2 - x_1}$)

- (a) $A(2, 5)$ and $B(6, 17)$ (b) $C(-2, 9)$ and $D(3, -6)$



(c) $E(-4, -6)$ and $F(5, 3)$



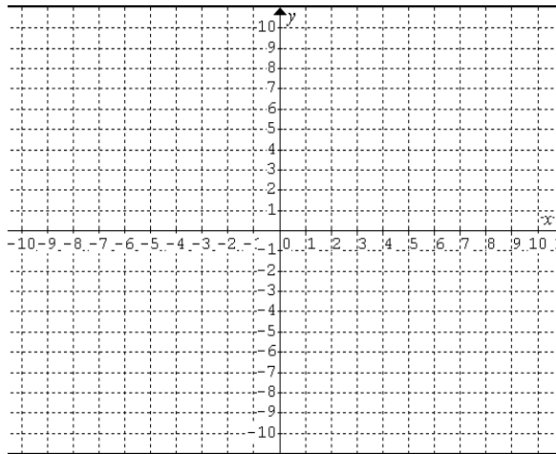
3.5 – GRAPH LINEAR RELATIONS BY HAND

1. For each equation, identify the **slope (m)** and **y-intercept (b)** and graph the line on the grid provided

(a) $y = 9x - 6$

Slope =

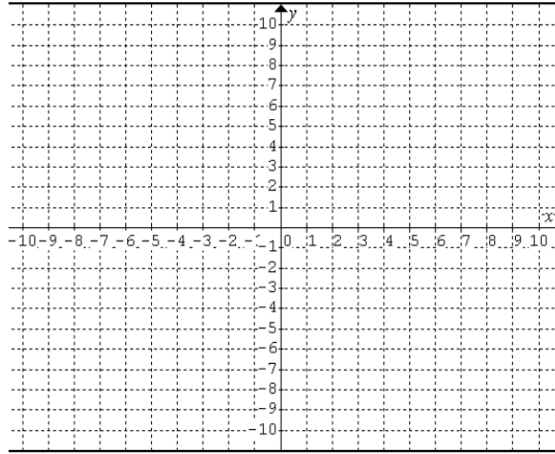
y-intercept =



(b) $y = 3x - 4$

Slope =

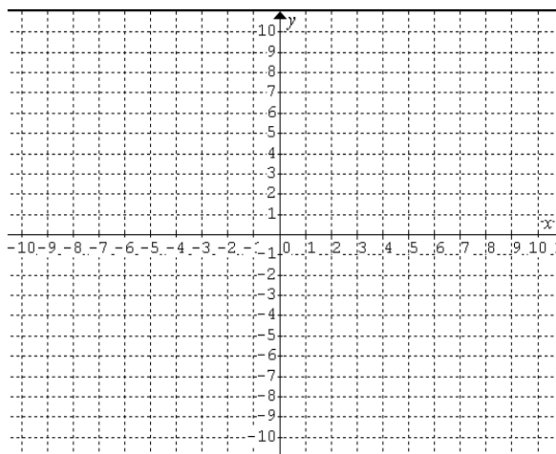
y-intercept =



(c) $y = -2x - 5$

Slope =

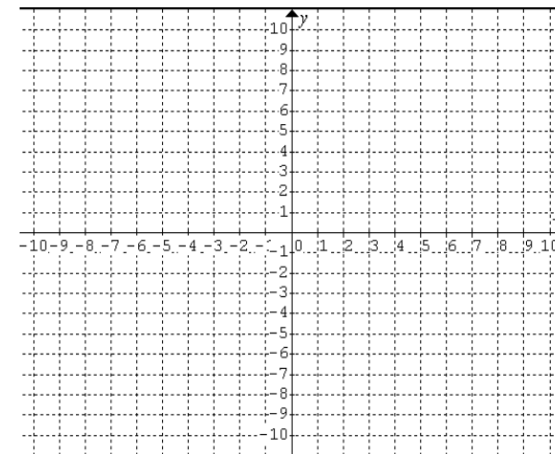
y-intercept =



(d) $y = 4x$

Slope =

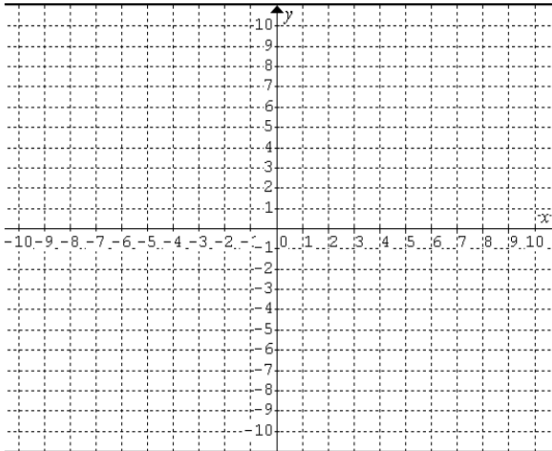
y-intercept =



(e) $y = \frac{2}{5}x - 4$

Slope =

y-intercept =



2. Solve for **y** given the value of **x**

(a) $y = \frac{2}{5}x + 1$ when **x = 10**

(b) $y = -\frac{1}{3}x - 9$ when **x = -6**

SOLUTIONS

3.1

1. (a) $1/2$ (b) -3

2.

(a) $y = 5x - 4$

x	y
-2	-14
-1	-9
0	-4
1	1
2	6

(b) $y = -x$

x	y
-2	2
-1	1
0	0
1	-1
2	-2

(c) $y = 1 - 4x$

x	y
-2	9
-1	5
0	1
1	-3
2	-7

3. $AB = 2$, $CD = -1/2$, $EF = 1$, $GH = 4$

4.

(a) $y = 3x + 4$

x	y	Rate of change
-2	-2	3
-1	1	
0	4	
1	7	
2	10	

(b) $y = -5x + 3$

x	y	Rate of change
-2	13	-5
-1	8	
0	3	
1	-2	
2	-7	

(c) $y = -2x$

x	y	Rate of change
-2	4	-2
-1	2	
0	0	
1	-2	
2	-4	

5. (a) Slope = - 1 (b) Slope = 2

3.2

1. (b) $m = - 3$ $b = 12$ (c) $m = - 4$ $b = 0$
(d) $m = 5/6$ $b = 2$ (e) $m = 0.5$ $b = 1.2$
2. (b) $y = 0.6x + 2$ (c) $y = \frac{3}{5}x - 3$ (D) $y = - 8x$
3. (a) $m = 2, b = - 4, y = 2x - 4$ (b) $m = - 3, b = 7, y = - 3x + 7$
(c) $m = \frac{3}{4}, b = - 1, y = \frac{3}{4}x - 1$

3.3

1. (d) Negative (e) Positive (f) Zero
2. Answers vary
3. Answers vary
4. (c) No (d) No (e) No
5. Answers vary
6. (a) Parallel (b) Not parallel

4.4

1. (b) $y = - 5x - 4; m = - 5, b = - 4$ (c) $y = - x - 2; m = - 1, b = - 2$
(e) $y = 2x - 1; m = 2, b = - 1$ (f) $y = - x - 3; m = - 1, b = - 3$
(h) $y = 3x - 2; m = 3, b = - 2$ (i) $y = - x - 2; m = - 1, b = - 2$
2. $C = - 44$
3. $A = - 2$



3.4

1. (a) $m = 1, b = 0, y = x$ (b) $m = -1, b = -4, y = -1x - 4$
- (c) $m = -\frac{1}{2}, b = 3, y = -\frac{1}{2}x + 3$
2. (b) $y = 3x - 5$ (c) $y = -6x + 4$ (d) $y = \frac{1}{4}x + 7$
3. (a) $y = 2x - 7$ (b) $y = 3x - 10$ (c) $y = -7x + 3$
- (d) $y = -4x + 5$
4. (a) $y = 3x - 1$ (b) $y = -3x + 3$ (c) $y = x - 2$

3.5

2. (a) 5 (b) -7