

CHAPTER 6 REVIEW

6.1 – EXPLORING NON-LINEAR RELATIONS

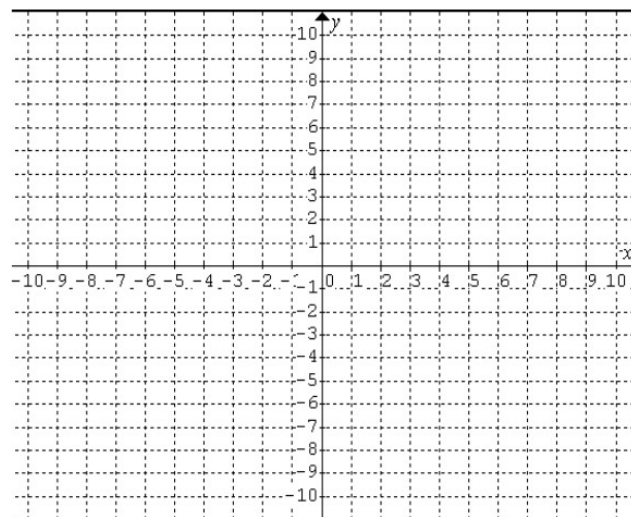
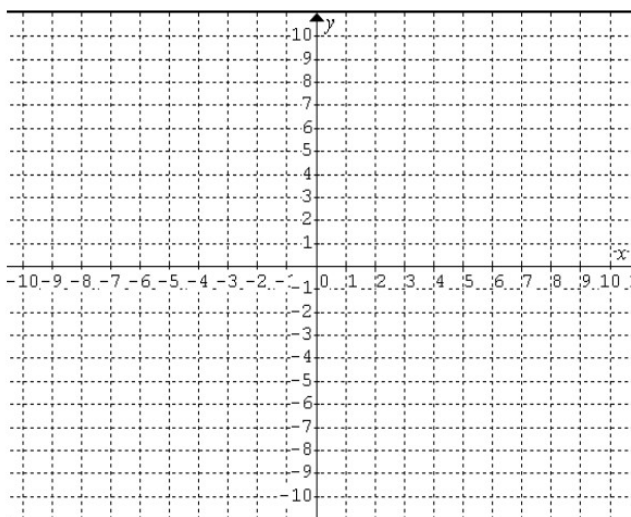
1. Graph the relation in each table of values

(a)

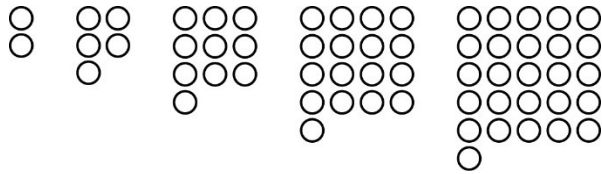
x	y
-2	4
-1	1
0	0
1	1
2	4

(b)

x	y
-2	3
-1	0
0	-1
1	0
2	3

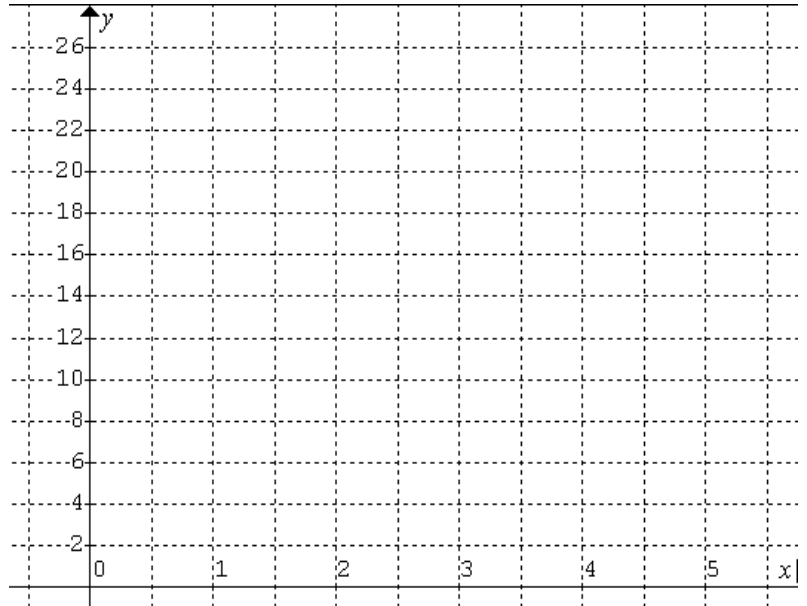


2. The first five figures of a pattern are shown



Complete the table below for the first five figures then graph the data. Draw a *curve of best fit*

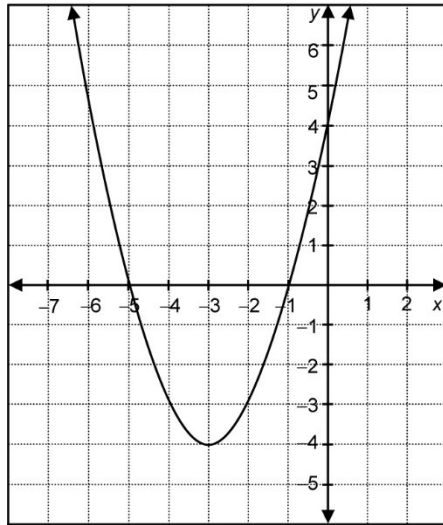
Figure	# of circles
1	2
2	5
3	
4	
5	



6.3 – KEY FEATURES OF QUADRATIC RELATIONS

1. For each graph, identify the key features

(i)



(a) Coordinates of the **vertex** _____

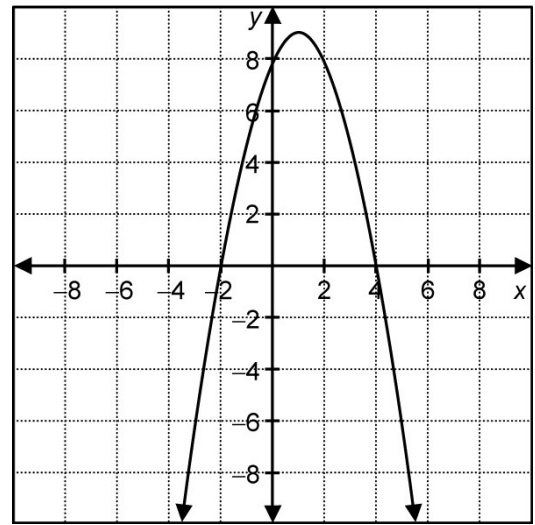
(b) The equation of the **axis of symmetry** _____

(c) The **y-intercept** _____

(d) The **maximum** or **minimum** value _____

(e) The **x-intercepts** _____

(ii)



(a) Coordinates of the **vertex** _____

(b) The equation of the **axis of symmetry** _____

(c) The **y-intercept** _____

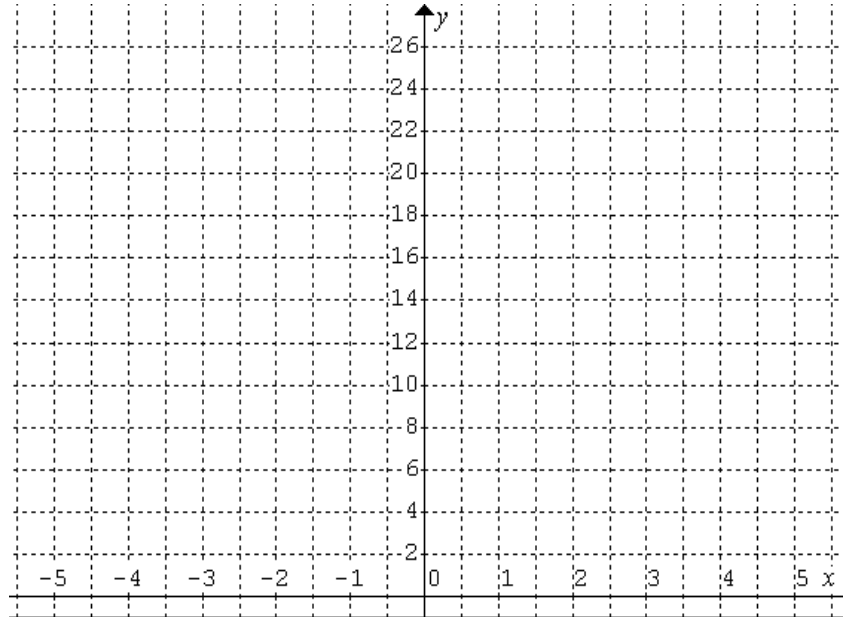
(d) The **maximum** or **minimum** value _____

(e) The **x-intercepts** _____

2. The shape of the small wooden bridge over Lake Walker can be modelled by the quadratic relation $y = 25 - x^2$

(a) Complete the table of values and graph the data. Join the points with a *curve of best fit*

x	y
-5	0
-3	16
-1	
0	
1	
3	
5	



(b) Identify the following

(a) Coordinates of the **vertex** _____

(b) The equation of the **axis of symmetry** _____

(c) The **y-intercept** _____

(d) The **maximum** or **minimum value**

(e) The **x-intercepts** _____

6.4 – RATES OF CHANGE IN QUADRATIC RELATIONS

1. Complete the **table of values** for each relation and use **first and second differences** to determine if the relation is **linear** or **quadratic**

(a) $y = 3x - 1$

x	y	1 st Dif.	2 nd Dif.
-2	-7		
-1	-4		
0			
1			
2			

Linear Quadratic

(b) $y = x^2 + 2x + 1$

x	y	1 st Dif.	2 nd Dif.
-2	1		
-1	0		
0			
1			
2			

Linear Quadratic

2. Identify whether the relation is **linear** or **quadratic**

(a)

x	y	1 st Dif.	2 nd Dif.
-2	-5		
-1	-2		
0	1		
1	4		
2	7		

Linear Quadratic

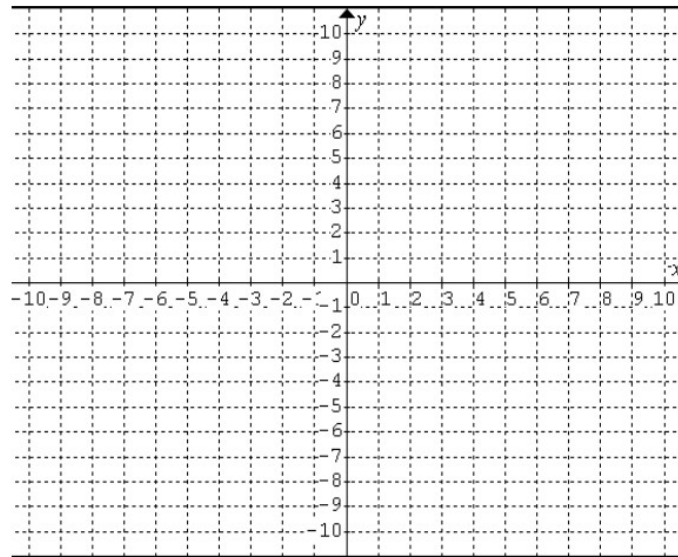
(b)

x	y	1 st Dif.	2 nd Dif.
-2	8		
-1	2		
0	0		
1	2		
2	8		

Linear Quadratic

3. Using the grid provided, **sketch** and **label** a **parabola** with these features

- (a) **Vertex** at **(6, 3)**
- (b) Equation of the **axis of symmetry** is **$x = 6$**
- (c) The **maximum value** is **3**
- (d) The **x-intercepts** are **2** and **10**



SOLUTIONS

6.3

- i) (a) $(-3, -4)$ (b) $x = -3$ (c) $y = 4$
 (d) Minimum value = -4 (e) $x = -5$ and $x = -1$
- ii) (a) $(1, 9)$ (b) $x = 1$ (c) $y = 8$
 (d) Maximum value = 9 (e) $x = -2$ and $x = 4$
2. (a) $(0, 25)$ (b) $x = 0$ (c) $y = 25$
 (d) Maximum value = 25 (e) $x = -5$ and $x = 5$

6.4

1. (a)

x	y	1 st Dif.	2 nd Dif.
-2	-7	3	
-1	-4		
0	-1		
1	2		
2	5		

Linear

(b)

x	y	1 st Dif.	2 nd Dif.
-2	1	-1 1 3 5	2
-1	0		
0	1		
1	4		
2	9		

Quadratic

2. (a) Linear (b) Quadratic