Chapter 6 Review

6.1 Explore Non-Linear Relations

1. Graph the relation.

x	y
–2	4
–1	1
0	0
1	1
2	4

2. The first four figures of a pattern are shown below.

a) Complete the table below for the first seven figures in the pattern.

Figure	Number of Rectangles
1	3
2	
3	
4	
5	

b) Graph the data.
c) Draw a curve of best fit.

6.2 Model Quadratic Relations

3. Ray is on the track and field team. He is practicing his standing long jump. The table shows his vertical height from the moment he jumped to the moment he landed back on the ground.
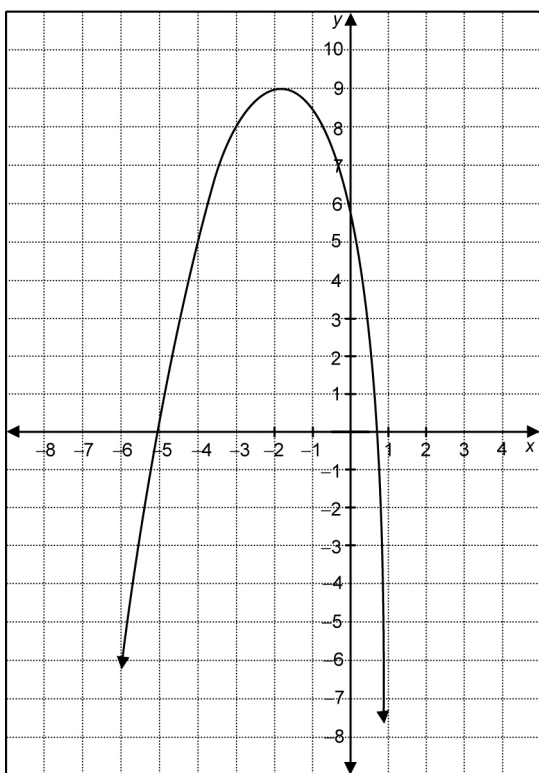

Time (s)	Height (m)
0	0
0.2	0.25
0.4	0.29
0.6	0.45
0.8	0.81
1.0	1.45
1.2	0.81
1.4	0.45

a) Draw a scatter plot of the data.
b) Find the equation of the curve of best fit.

6.3 Key Features of Quadratic Relations

4.

For the graph, identify
a) the coordinates of the vertex
b) the equation of the axis of symmetry
c) the y-intercept
d) the x-intercepts

5. Willa was sketching a picture of the sun setting over the horizon. The sun and the horizon resembled a parabola defined by the quadratic relation $y = 25 - 2x^2$.

a) Complete the table of values.

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

b) Graph the data and join the points with a smooth curve.
c) Identify the y-intercept, the x-intercepts, the coordinates of the vertex, and the equation of the axis of symmetry.

6.4 Rates of Change in Quadratic Relations

6. The shape of the lid covering a picnic basket can be represented by the equation $h = -0.2w^2 + 4.2$, where h is the height of the lid, in centimetres, from the top of the basket sides, w is the width in centimetres, from the centre of the lid to the basket sides.

a) Make a table of values from $w = -3$ to $w = 3$.
b) Determine the first and second differences.
c) Determine the shape of the lid based on your answers from part b)
d) Use a graphing calculator to verify your findings.