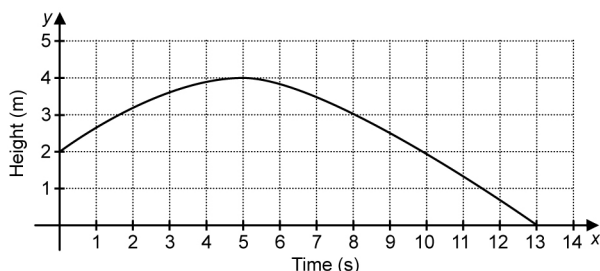# Chapter 8 Test

Multiple Choice

1. The path of water from a sprinkler system can be modelled by the graph shown. What is the maximum height reached by the stream of water?

   A 25 cm   B 50 cm
   C 15 cm   D 60 cm

2. The table shows the height and horizontal distance of a football after it was kicked.

Horizontal Distance (m)	Height (m)
0	0
5	2.5
10	5.5
15	2.5
20	0

   What horizontal distance had the ball travelled when it reach its maximum height?
   A 5 m   B 10 m
   C 15 m   D 20 m

3. What are the zeros of the quadratic relation $y = (x + 2)(x - 3)$?
   A 2, –3   B –2, 3
   C 2, 3   D –2, –3

4. What are the zeros of the quadratic relation $y = x^2 - 3x - 10$?
   A 5, –2   B –5, –2
   C 5, 2   D –5, 2

5. What is the y-intercept of the quadratic relation $y = x^2 - 16x + 39$?
   A –16   B 16
   C – 39   D 39

6. What is the y-intercept of the quadratic relation $y = x^2 + 5x - 15$?
   A – 5   B 5
   C – 15   D 15

7. The path of a ball thrown in the air can be represented by the relation $h = -4t^2 + 64$, where h represents the height in centimetres of the ball above the ground, and t represents time in seconds. From what height was the ball thrown?
   A 2 cm   B 4 cm
   C 8 cm   D 64 cm

Short Responses

8. The table shows the height and the horizontal distance of a soccer ball after it was kicked.

Horizontal Distance (m)	Height (m)
0	0
1	0.25
2	0.75
3	1.75
4	0.75

a) Use a graphing calculator to graph the data. Sketch the graph.
b) Find the equation of the curve of best fit.
c) Determine the distance travelled by the ball when it reached its maximum height.

9. The table shows the height of a car over time as it travels over a bridge.

Time (s)	Height (m)
0	0
10	2
20	4
30	5
40	4

a) Use a graphing calculator to graph the data.
b) Find the equation of the curve of best fit.
c) What is the maximum height of the bridge?
d) How long did it take the car to travel from one side of the bridge to the highest point?

10. Find the zeros of each relation, without graphing.
a) $y = (x + 4)(x - 2)$
b) $y = (x - 3)(x + 5)$
c) $y = x^2 + 6x + 8$
d) $y = x^2 - 16x + 63$

11. Consider the relation $y = x^2 - 16x + 39$
a) Does the relation have a maximum or a minimum value? What is the maximum or minimum value?
b) Identify the y-intercept.
c) Identify the zeros of the relation.

Extended Response

12. A clothing store has daily expenses that can be modelled by the quadratic relation $C = 3t^2 - 15t + 21$, where C represents the total cost in dollars, and t represents the time in hours that the store is open.
a) What is the minimum cost of running the store each day?
b) What is the number of hours the store is open for this minimum cost?
c) What is the cost per day when the store is not open for business?

13. Lori is swimming under water at a local pool. As she surfaces, the equation showing how her depth, d, in metres is related to time, t, in seconds is $d = 0.35t^2 - 35$.
a) How deep is the pool?
b) How long does it take Lori to surface?

14. A rock band sells concert tickets for $10. Ticket sales decrease by 100 tickets each time the price is increased by $1.00. The revenue in dollars, R, is related to the number of times the prices increases by $1.00, n, by the relation $R = -50m^2 + 1000m + 10\,000$.
a) What is the maximum revenue?
b) How many times does the ticket price have to be increased to reach the maximum revenue?
c) What ticket price results in the maximum revenue?