

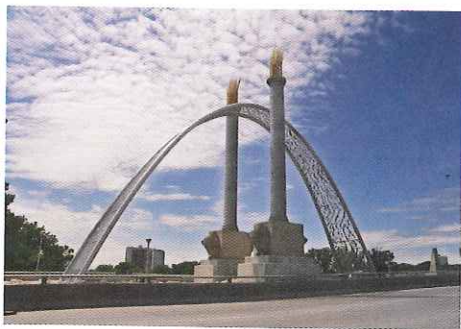
## PRACTISING

### Lesson 6.1

- Graph the following quadratic functions without using technology.
  - $f(x) = x^2 - 6x + 8$
  - $g(x) = -2(x + 1)(x - 3)$
  - $h(x) = 0.5(x + 4)^2 - 2$

### Lesson 6.2

- Monish is taking a design course in high school. He wants to create a model of Winnipeg's River Arch digitally by placing one of the bases of this arch at the origin of a graph on a coordinate grid. He knows that the arch spans 23 m. Explain how to determine the equation of the axis of symmetry for his model.



- The points  $(-2, -41)$  and  $(6, -41)$  are on the following quadratic function:

$$f(x) = -3x^2 + 12x - 5$$

Determine the vertex of the function.

- Trap shooting is a sport in which a clay disk is launched into the air by a machine. Competitors are required to shoot the disk with a shotgun while the disk is in the air. The height,  $h(t)$ , in metres, of one clay disk after it is launched is modelled by the function

$$h(t) = -5t^2 + 30t + 2$$

where  $t$  represents time after launch, in seconds.

- Determine the maximum height of the disk.
- State the domain and range for this function.

- In the photograph, the fisherman is holding his fishing rod 0.5 m above the water. The fishing rod reaches its maximum height 1.5 m above and 1 m to the left of his hand.



- Determine the quadratic function that describes the arc of the fishing rod. Assume that the  $y$ -axis passes through the fisherman's hand and the  $x$ -axis is at water level.
  - State the domain and range for the function that models the fishing rod.
- Determine, to the nearest hundredth, the coordinates of the vertex of the following quadratic function:

$$q(x) = 0.4x^2 + 5x - 8$$

### Lesson 6.3

- Rewrite the following quadratic function in factored form:

$$f(x) = 2x^2 - 12x + 10$$

- Identify the zeros of the function, and determine the equation of the axis of symmetry of the parabola it defines.
  - State the domain and range of the function.
  - Graph the function.
- Determine the  $x$ -intercepts of the graph of this quadratic function:

$$f(x) = 2x^2 - 5x - 12$$