**Vertex Form Word Problems:**

1. A red flare is used by some boaters in an emergency. The flight of the flare is modelled by the function  where  is the height (m) of the flare and  is the time (s) that the flare is in flight.
2. Sketch the path of the flare.



b) What is the maximum height reached by the flare?

c) After how many seconds does the flare reach its maximum height?

d) What is the height of the flare after 2 seconds?

e) Find another time that the flare is at the height in part d.

1. At a fireworks display, a firework display, a firework is launched from a height of 2 m above the ground and reaches a maximum height of 40 m at a horizontal distance of 10 m.
2. Determine an equation to model the flight path of the firework.



1. The firework continues to travel an additional 1 m horizontally, after it reaches its maximum height, before it explodes. What is its height when it explodes?
2. At what other horizontal distance is the firework at the same height as in part b)?

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