

6: Given $\frac{1}{2}(y - 3) = (x + 5)^2$

write this function in Standard form

write the General form

write the Mapping rule

State the coordinates of the vertex

Find the y intercept

$$y = 2(x + 5)^2 + 3$$

$$y = 2x^2 + 12x + 21$$

$$(x, y) \rightarrow (x - 5; 2y + 3)$$

$$(-5, 3)$$

$$(0, 21)$$

7. A triangular shaped garden has one of its legs 7 m longer than the other. The longest side measures 13m. What are the dimensions of the garden?

5m by 7m by 13m

8. A small rocket is projected vertically upward. Its height, 'h', in metres above the ground, after time, 't', in seconds, is given by the formula $h = -3t^2 + 90t$.

- after how many seconds will the rocket reach its maximum height above ground
- what is the maximum height?
- How long is the rocket airborne?
- What is its average velocity between 4 and 8 seconds?
- At precisely 23 seconds how fast is the rocket moving?

a) 15s b) 675m c) 30s d) 54m/s e) - 48m/s or falling at 48m/s

9. In an arithmetic sequence, the first term is 7 and the 20th term is 64.

- Find the sequence in the form $t_n = t_1 + (n - 1)d$
- Find the 200th term in the sequence.

$$\begin{aligned} a &= 7; \quad d = 3 \\ t_n &= 3n + 4 \\ t_{200} &\text{ is } 604 \end{aligned}$$

10. Quadratic applications

- i) Two numbers are 7 units apart. The sum of their squares is 389. Find the numbers.

The numbers are -17, 10

- ii) The sum of the squares of 3 consecutive positive even integers is 116. Find the numbers.

The numbers are 4, 6, 8

- iii) A backyard ice rink is built for kids such that the length is 4m more than the width. It covers a surface area of 525m². What are the dimensions (length/width)

The dimensions are 21m by 25m