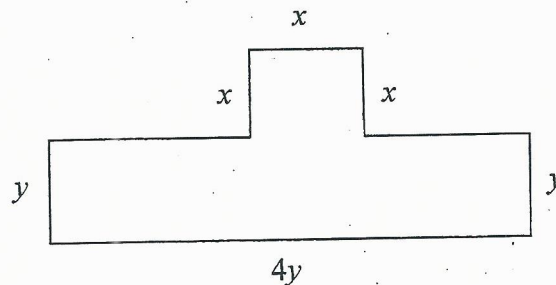


- The general equation of a thrown object is given by  $h = h_0 + v_0t - 5t^2$ , where the values of  $h_0$  and  $v_0$  represent the initial height and initial speed of the object.
  - Determine the equation representing the height of a rock that is thrown upward from a cliff that is 15 m high, at an initial speed of 10 m/s.
  - Determine the maximum height of the rock.
- A ball is thrown from an apartment building. Its height, in metres, after  $t$  seconds, is given by  $h = -5t^2 + 10t + 35$ .
  - Determine the initial height of the ball.
  - Determine the maximum height of the ball.
  - Determine the length of time it takes for the ball to reach that height.
- Two numbers differ by 8. Their product is to have the least value possible. Determine the numbers.
- The sum of the base and the height of a triangle is 15 cm. What is the greatest possible area for a triangle having this property.
- A rectangular lot is bordered on one side by a stream and on the other three sides by fencing. If there is 600 metres of fence available, determine the dimensions of the lot with the greatest area.
- A rectangular field is enclosed by a fence and divided into two lots by another section of fence parallel to two of its sides. If the 600 metres of fence that is used must enclose a maximum area, what are the dimensions of the field?
- A fence is to be built around the area shown in the diagram. Determine the values of  $x$  and  $y$  that would produce a minimum area if the perimeter is 300 metres.



### Answers

- $h = -5t^2 + 10t + 15$ ; max height is 20 m
- 35 m; 40 m; 1 s
- 4, -4
- $\frac{225}{8}$  or 28.125
- 150 by 300 m; 45 000 m<sup>2</sup>
- 100 by 150 m
- $(\frac{750}{29}, \frac{600}{29})$