

## National 5 Maths Solving Quadratic Equations by Factorising

### SQA past paper and specimen paper questions and answers by topic

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Solve the equation

$$2x^2 + 7x - 15 = 0.$$

3

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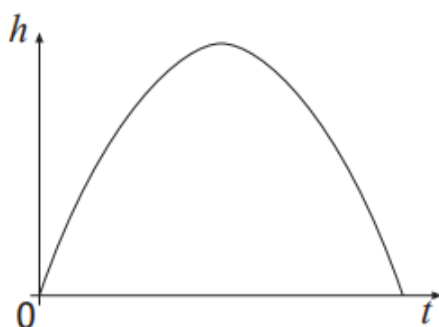
Answer:

$$x = -5 \text{ or } x = \frac{3}{2}$$



The diagram below shows the path of a small rocket which is fired into the air. The height,  $h$  metres, of the rocket after  $t$  seconds is given by

$$h(t) = 16t - t^2$$



- (a) After how many seconds will the rocket first be at a height of 60 metres? **4**
- (b) Will the rocket reach a height of 70 metres?  
Justify your answer. **3**

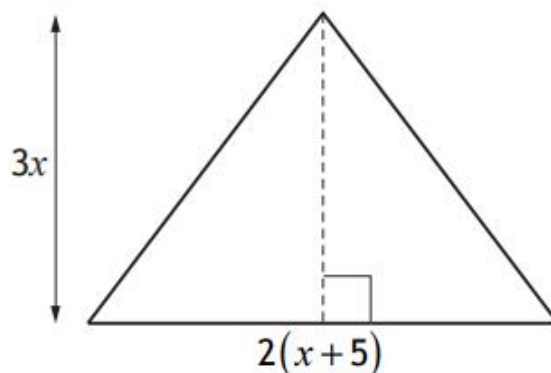
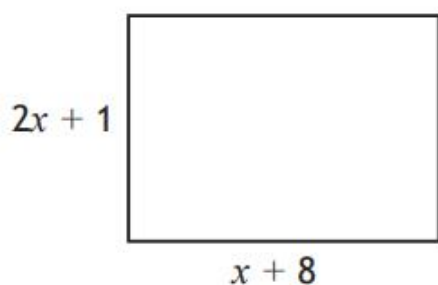
Answers:

- (a) 6 seconds
- (b) No, because its maximum height is 64 metres.



The diagrams below show a rectangle and a triangle.

All measurements are in centimetres.



- (a) Find an expression for the area of the rectangle. 1
- (b) Given that the area of the rectangle is equal to the area of the triangle, show that  $x^2 - 2x - 8 = 0$ . 3
- (c) Hence find, **algebraically**, the length and breadth of the rectangle. 3

Answers:

- (a)  $(2x + 1)(x + 8)$  or equivalent
- (b) Expand area of rectangle, equate to area of triangle and rearrange into required form.
- (c) 12 cm and 9 cm

**National 5 Maths  
SQA 2018 Paper 1  
Question 5**

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Solve

$$x^2 - 11x + 24 = 0.$$

2

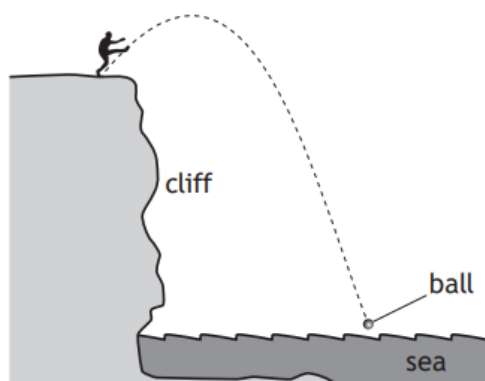
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Answer:

$$x = 3 \text{ or } x = 8$$

National 5 Maths  
SQA 2019 Paper 1  
Question 15

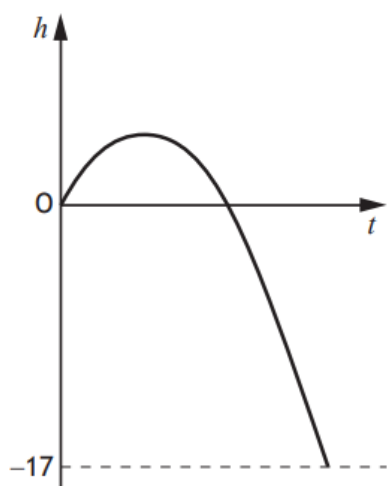
A ball is kicked from a clifftop.



The height,  $h$  metres, of the ball relative to the clifftop after  $t$  seconds is given by  $h = 12t - 5t^2$ .

- (a) Calculate the height of the ball above the clifftop after 2 seconds. 1

The graph below represents the height,  $h$  metres, of the ball relative to the clifftop after  $t$  seconds.



The sea is 17 metres below the clifftop.

- (b) After how many seconds will the ball hit the sea? 4

Answers:

- (a) 4 metres  
(b) 3.4 seconds

Solve the equation by factorising

$$6x^2 + 13x - 5 = 0$$

3

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Answer:

$$x = -\frac{5}{2} \text{ or } x = \frac{1}{3}$$