National 5 Revision I Paper 1 (Based on Credit 2009)

1. Evaluate

$$(846 \div 30) - 1{\cdot}09.$$ 2

2. Evaluate

$$4\tfrac{1}{3} - 1\tfrac{1}{2}.$$ 2

3. Given that

$$f(x) = x^2 + 3,$$

(*a*) evaluate $f(-4)$ 2

(*b*) find t when $f(t) = 52$. 2

4. (*a*) Factorise

$$x^2 - 4y^2.$$ 1

(*b*) Expand and simplify

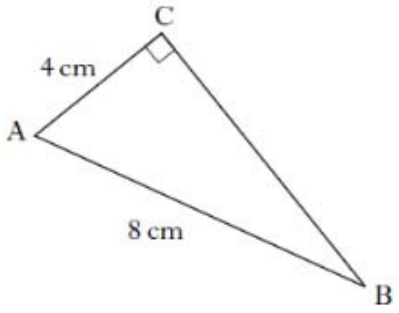
$$(2x - 1)(x + 4).$$ 1

(*c*) Expand

$$x^{\frac{1}{2}}\left(3x + x^{-2}\right).$$ 2

5. In triangle ABC:

- angle ACB = 90°
- AB = 8 centimetres
- AC = 4 centimetres.



3

Calculate the length of BC.

Give your answer **as a surd in its simplest form**.

6. There are 4 girls and 14 boys in a class.

A child is chosen at random and is asked to roll a die, numbered 1 to 6.

Which of these is more likely?

A: the child is female.

OR

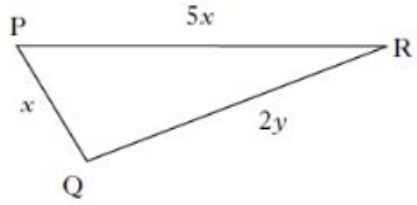
B: the child rolls a 5. **Justify your answer.**

3

7. This year, Ben paid £260 for his car insurance. 3
This is an increase of 30% on last year's payment.

How much did Ben pay last year?

8. In triangle PQR:



- PQ = x centimetres
- PR = $5x$ centimetres
- QR = $2y$ centimetres.

(a) The perimeter of the triangle is 42 centimetres. 2

Write down an equation in x and y to illustrate this information.

(b) PR is 2 centimetres longer than QR. 2

Write down another equation in x and y to illustrate this information.

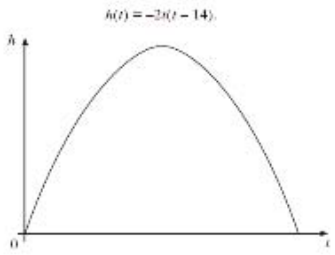
(c) Hence calculate the values of x and y. 3

9. A formula used to calculate the flow of water in a pipe is

$$f = \frac{kd^2}{20}.$$

Change the subject of the formula to d. 3

10. The diagram below shows the path of a rocket which is fired into the air.
The height, h metres, of the rocket after t secon

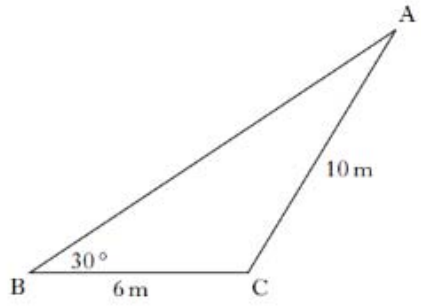


(a) For how many seconds is the rocket in flight? 2

(b) What is the maximum height reached by the rocket? 2

11. In triangle ABC:

- BC = 6 metres
- AC = 10 metres
- angle ABC = 30°.



Given that sin 30° = 0·5, show that sin A = 0·3. 3

12. Find the range of values of k if the equation $kx^2 + 4x + 5 = 0$ has no real roots. 3