Contents

QUADRATIC AND FRACTIONAL EQUATIONS

In the expression $x^2 + bx + c$, if $c = \left(\dfrac{b}{2}\right)^2$, then the expression is a perfect square.

Exercise:

1. Which of the following expressions are perfect squares?

   (i) $x^2 + 4x + 4$

   (ii) $x^2 + 3x + 4$

   **(iii)** $x^2 + 8x + 12$

6. A fast truck takes 2 hours less than a slow car in covering a journey of 300 km. If the speed of car is 5 km/h less than that of the truck, find the speed of the car and that of the truck.

7. The perimeter of a right angled triangle is 60 cm. Its hypotenuse is 25 cm. Find the area of the triangle.

8. The sum of the squares of two consecutive numbers is 85. Find the numbers.

17. The height of a ball thrown into the air with an initial velocity of 4 m/sec from a height of 6 m above ground is given by $h = -4t^2 + 8t + 6$

(i) Copy and complete the following table.

t	0	1/4	1/2	3/4	1	5/4	3/2	7/4	2
$y = h$									

(ii) Plot the graph representing this information
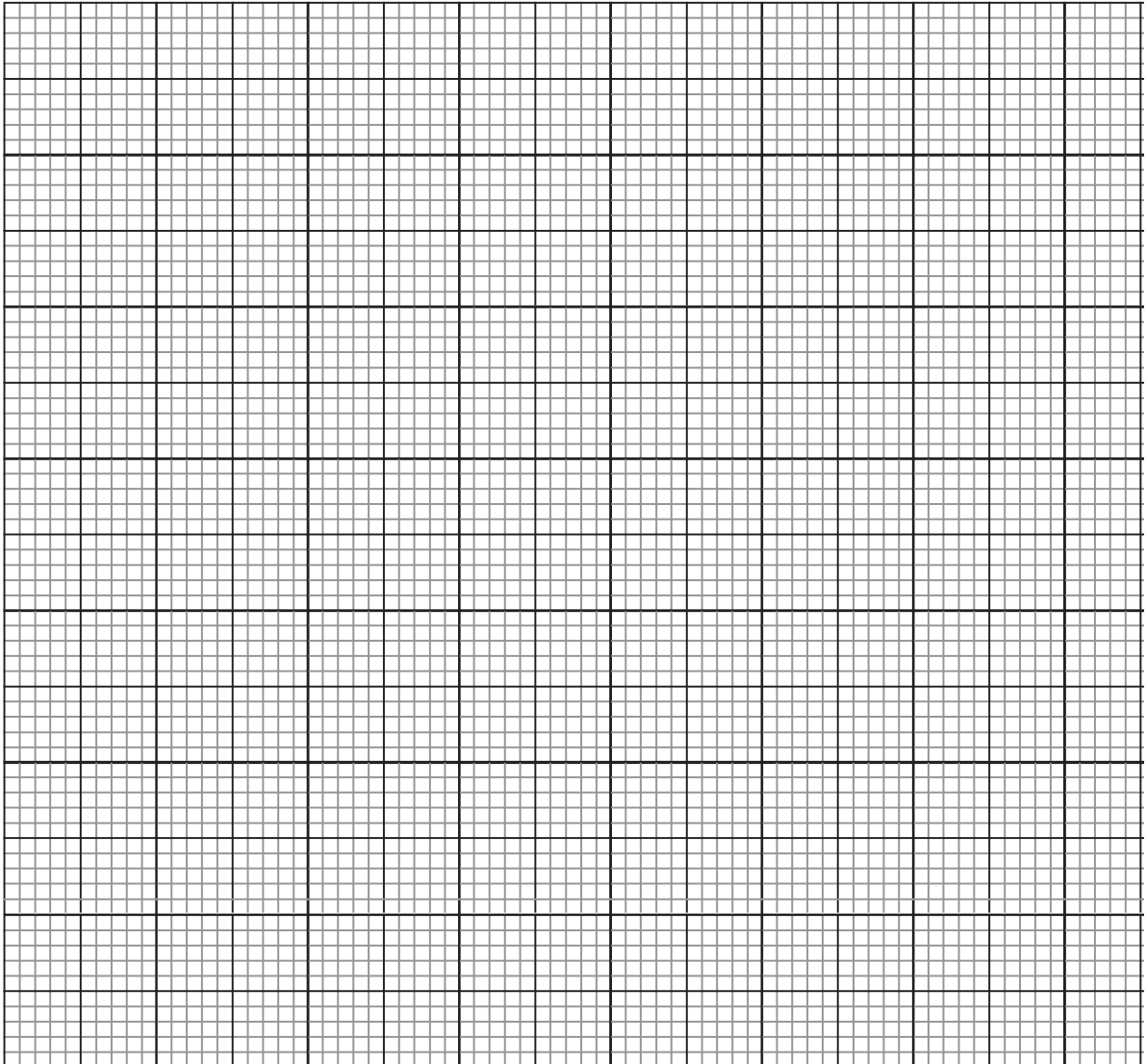
(iii) After how many seconds would the ball be at a height of 9 m?

12. $\dfrac{5-2x}{3} < \dfrac{x}{6} - 5$

Solve the following simultaneous linear inequalities.

13. $3x - 6 \geq 0$
$4x - 10 \leq 6$

14. $2x - 7 < 5 - x$
$11 - 5x \leq 1$

15. $x - 2 > 0$
$3x < 18$

PAPER 1   (Marks 50)   **Time: 1 hour 15 minutes**

1. (a) Evaluate $4^{-3} + \left[\dfrac{1}{2}\right]^{6}$.   [1]

(b) Factorise.

   (i) $12x^2 + 5x - 2$.   [1]

   (ii) $a^6 - b^4$.   [1]

(c) Is the expression $4x^2 + 12x + 9$ a perfect square?   [1]