MATHS

BOOKS - CAMBRIDGE MATHS (KANNADA ENGLISH)

QUADRATIC EQUATION

Exercise 10 1

1. Check whether the following are quadratic equations :

$(x+1)^2 = 2(x-3)$

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2. Represent the following situations in the form of quadratic equations :

The area of a rectangular plot is $528m^2$ The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot.

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Exercise 10 2

1. Find the roots of the following quadratic equations by factorisation:

(i) $x^2 - 3x - 10 = 0$

(ii) $2x^2 + x - 6 = 0$

(iii) $\sqrt{2}x^2 + 7x - 5\sqrt{2} = 0$

(iv) $2x^2 - x + \frac{1}{8} = 0$

(v) $100x^2 - 20x + 1 = 0$

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2. Solve the problems.

John and Jivanti together have 45 marbles .Both of them lost 5 marbles each, and the product of the number of marbles they now have is 124. We would like to find out how many marbles they had to start with.

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3. Find two numbers whose sum is 27 and product is 182.

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4. Find two consecutive positive integers , sum of whose squares is 365.

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5. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find the other two sides.

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6. A cottage industry produces a certain number of pottery articles in a day . It was observed on a particular day that the cost of production of each article (in rupees) was 3 more than twice the number of articles produced on that day. If the total cost of production on that day was 90 , find the number of articles profit and the cost of each article.

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Exercise 10 3

1. Find the roots of the following quadratic equations if they exist, by the method of completing the square:

(i) $2x^2 - 7x + 3 = 0$

(ii) $2x^2 + x - 4 = 0$

(iii) $4x^2 + 4\sqrt{3} + 3 = 0$

(iv) $2x^2 + x + 4 = 0$

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2. Find the roots of the quadratic equations given in Q. 1 above by applying the quadratic formula.

(i) $2x^2 - 7x + 3 = 0$

(ii) $2x^2 + x - 4 = 0$

(iii) $4x^2 + 4\sqrt{3}x + 3 = 0$

(iv) $2x^2 + x + 4 = 0$

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3. Find the roots of the following equations :

$x - \frac{1}{x} = 3, x \neq 0$

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4. The sum of the reciprocals of Rehman's ages

, (in years) 3 years ago and 5 years from now is

$\frac{1}{3}$. Find his present age .

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5. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English , the product of their marks would have been 210. Find her marks in the two subjects.

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6. The diagonal of a rectangular filed is 60 meters more than the shorter side. If the

longer side is 30 meters more than the shorter side, find the side of the field.

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7. The difference of squares of two number is 180. The square, of smaller number is 8 times the larger number find the two number.

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8. A train travels 360 km at a uniform speed. If the speed had been 5 km /h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

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9. Two water taps together can fill a tank is $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank

separately. Find the time in which each tap can separately fill the tank.

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10. An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11km/h more than that of

the passenger train , find the average speed of the two trains.

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11. Sum of the areas of two squares is $468m^2$. If the difference of their perimeters is 24 m, find the sides of the two squares.

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Exercise 10 4

1. Find the nature of the roots of the following quadratic equations. If the real roots exists, find them: (i) $2x^2 - 2x + 5 = 0$

(ii)$3x^2 - 4\sqrt{3x} + 4 = 0$

(iii)$2x^2 - 6x + 3 = 0$

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2. Find the values of k for each of the following quadratic equations, so that they have two equal roots.

(i) $2x^2 + kx + 3 = 0$

(ii) $kx(x - 2) + 6 = 0$

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3. Is it possible to design a rectangular mango grove whose length is twice its breadth, and the area is $800m^2$? If so, find its length and breadth.

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4. Is the following situation possible? If so, determine their present ages. The sum of the ages of two friends is 20 years.

Four years ago, the product of their ages in years was 48.

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5. Is it possible to design a rectangular park of perimeter 80 m and area $400m^2$? If so, find its length and breadth.

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