MATHS

BOOKS - V PUBLICATION

POLYNOMIALS

Question Bank

1. In rectangle with one side 1cm shorter than the other , take the length of the shorter side as x cm.

i) Taking their perimeters as p(x) cm, write the relation between p(x) and x as an equation.

ii) Taking their areas as a(x) sq.cm, write the relation between a(x) and x as an equation.

iii) Calculate p(1),p(2),p(3),p(4),p(5). Do you see any pattern?

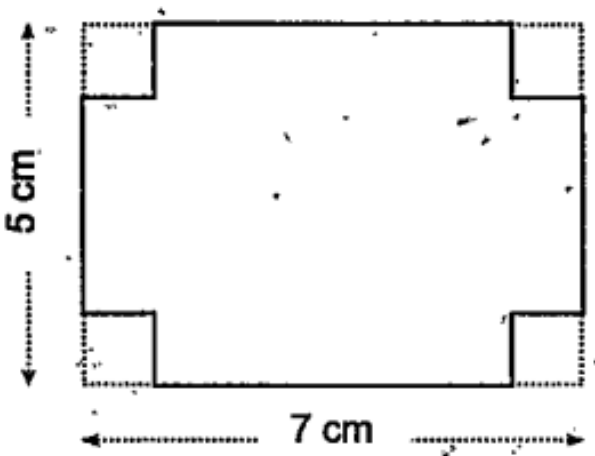iv) Calculate a(1),a(2),a(3),a(4),a(5).Do you see any pattern?

▶ Watch Video Solution

2. From the four corners of a rectangle, small squares are cut off and the sides are folded up to make a box, as shown below:(fig)

i) Taking a side of the square as x cm, write the dimensions of the boxin terms of x.

ii) Taking the volume of the box as v(x) cubic cm, write the relation between v(x) and x as an equation.

3. Consider all rectangles that can be made with a 1m long rope. Take one of its side as x cm and the area enclosed as a(x) sq.cm.

i) Write the relation between a(x) and xas in equation

ii) Why are the numbers a(10) and a(40) equal?

iii) To get the same number as a(x), for two different numbers as x, what must be the relation between the numbers?
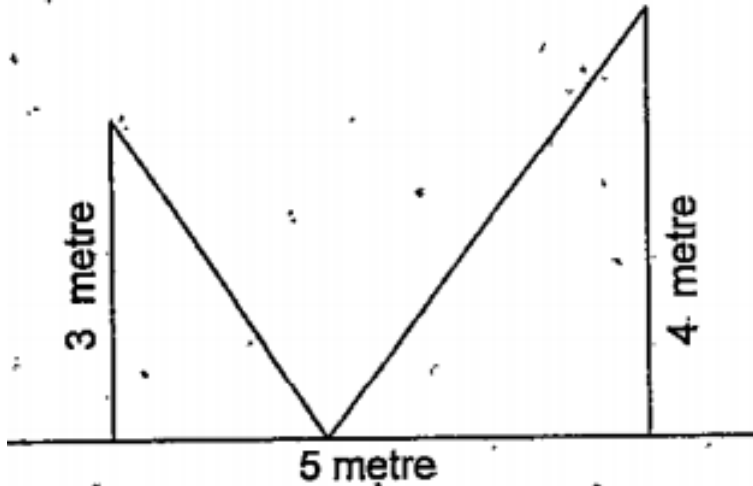
4. Write each of the relations below in algebra and see if it gives a polynomial. Give reasons for your conclusions also.

i) A 1m wide path goes around a square ground. The relation between the length of a side of the ground and the area of the path.

ii) A liquid contains 7 litres of water and 8 litres of acid. More acid is added to it. The relation between the amount of acid added and the change in the percentage of acid in the liquid.

iii) Two poles of heights 3m and 4 m are erected upright on the ground,

5m apart. A rope is to be stretched from the top of one pole to some point on the groundand from there to the top of the other pole(fig).The relation between the distance of the point on the ground from the foot of a pole and the total length of the rope.

5 metre

3 metre

4 metre

5. Write each of the operations below as algebraic expressions, find out which are polynomials and explain why.

i) Sum of a number and its reciprocal.

ii) Sum of a number and its square root.

iii) Product of the sum and difference of a number and its square root.

6. Find p(1) and p(10) in the following polynomials.

i) p(x)= 2x+5

ii) p(x)=$3x^2 + 6x + 1$

iii) p(x)=$4x^3 + 2x^2 + 3x + 7$

7. Find p(0), p(1) and p(-1) in the following polynomials.

i) p(x)= 3x+6

ii)p(x)= $3x^2 + 6$ x + 1

8. Find polynomial p(x) satisfying each set of conditions below.

i) First degree polynomial with p(1)=1 and p(2) =3.

ii) First degree polynomial with p(1) =-1 and p(-2)=3.

9. Write down the algebraic expression to find out each of the following.

Discuss whether each is a polynomial and why?

The perimeter and area of a rectangle in which the length is 1cm more than the width?

The surface area and volume of a rectangular block in which the length is 1 cm more than the width and the height is 1cm more than the length.

10. What is the algebraic expression denoting the hypotenuse of a right angled triangle when enlarging by increasing the perpendicular sides of length 4cm and 3cm equally?

11. The area of a rectangle is 50 sq.cm. Write down the algebraic expression denoting the perimeter of such rectangles when changing its length and breadth without changing area?

12. For p(x)=$2x^2 - 3x + 1$, find p(0),p(1),p(-1)

13. If p(x)=$3x^2 - ax + 1$and we want p(1) =2 what number should we take in the place of a?

14. If p(x)=$2x^3 + ax^2 - 7x + b$ and we want p(1)=3 and p(2)=19 what should be a and b?

15. A ball is thrown upwards with a speed of 40m/cm loses speed at the rate of 10m/cm every second. Write down the algebraic expression which gives the speed of the ball after x seconds? Find the speed when x=1,2,3....?

16. In the polynomial p(x)= $2x^3 - 3x^2 - 11x - 6$ find p(3),p(-2) and p(2). What is its peculiarity?

17. For p(x)= $ax^3 + bx^2 + c$ x + d .If p(1)=p(-1) prove that a+c=0

18. a) If p(x) =4x-4, find the numbers p(1) and p(2).

b) Write a first degree polynomial q(x) where q(1)=1 and q(2)=5.

19. $100 \times 17 = 1700$, isn't it? So, when 1700 is divided by 100 will get quotient 11.

What if 1718 is divided by 100?

Quotient 17 and remainder 18 will get. Similarly product of the polynomial

x+1 and x+2 ix2+ 3 x + 2 . $So 1 added \rightarrow the polynomial$ x 2 + 3 x + 2

$is \div dbyx + 1 will \geq t the quotient x + 2$ and $rema \in der 1. a) W\hat{i}s the quo$

x   2   +   3   x   +   2 $gives the polynomial$ x   2   +   3   x

$? c) W\hat{s}ho\underline{d}betherema \in derwhen$ x   2   +   3   x

$is \div dbyx + 1? d) W\hat{p}olynomials ho\underline{d}beadded \rightarrow$ x 2 + 3 x + 2 $will \geq t$

x 2 + 4 x + 3 $? e) W\hat{i}s the quotientwhen$ x 2 + 4 x + 3 `is divided by x+1?

20. The expression given below, which of them are polynomials.

i)$x^3 + 12x^2 + 2x - 5$

ii) x^2+12x−2

iii)x^2+√x−3

iv) -3x+7

v) z^2+12z

21. In the polynomial p(x)=$2x^3 - 3x^2 - 7x + 3$, find p(-1),p(-2),p(0),p(2). Of these which is the largest?

22. In the polynomial p(x)=$ax^3 + bx^2 + cx + d$ if p(2)=p(-2), prove that 4a+c=0.

23. Write down two third degree equations such that p(1)=p(-1).

24. Length of a rectangle is one less than two times its breadth.

a) If length is x, write its breadth.

b) Write the polynomial indicating its area and perimeter.