ASSIGNMENT -1

Q.1 Solve:

a) $8x + 3 = 27 + 2x$

b) $\frac{7y}{5} = y - 4$

c) $9x + 5 = 4(x - 2) + 8$

d) $\frac{9x}{7-6x} = 15$

e) $\frac{2x}{3} + 1 = \frac{7}{3}$

f) $\frac{y+6}{4} + \frac{y-3}{5} = \frac{5y-4}{8}$

g) $6(3m - 1) + 3(2m + 3) = 1 - 7m$

h) $\frac{7y+4}{y+2} = \frac{-4}{3}$

Q.2 Two numbers are in the ratio of 8:7. If 2 is subtracted from both the numbers, the ratio changes to 7:6. Find the numbers.

Q.3 The sum of digits of a two digit number is 13. If the number formed by reversing the digits is less than the original number by 27, find the original number.

Q.4 5 years ago, Kantabai was 4 times as old as her daughter Rukku. 5 years later, her age will be 6 more than 2 times Rukku's age. How old are they now?

Q.5 Find three consecutive even numbers whose sum is 234.

Q.6 The denominator of a rational number is greater than its numerator by 3. If 3 is subtracted from the numerator and 2 is added to its denominator, the new number becomes $\frac{1}{5}$. Find the original number.

Q.7 Two numbers are in the ratio of 5:8. If the sum of the numbers is 182, find the numbers.

Q.8 Two years ago, Dilip was three times as old as his son and two years hence, twice his age will be equal to five times that of his son. Find their present ages.

Q.9 A loaded truck travels 14km in 25 minutes. If the speed remains the same, how far can it travel in 5 hours?

Q.10 An electric pole, 14 metres high, casts a shadow of 10 metres. Find the height of a tree that casts a shadow of 15 metres under similar conditions.

Q.11 A farmer has enough food to feed 20 animals in his cattle for 6 days. How long would food last if there were 10 more animals in his cattle?

Q.12 Two persons could fit new window in a house in 3 days.

(i) One of the them fell ill before the work started. How long would the job take now?

(ii) How many persons would be needed to fit the window in one day?

Q.13 Rajan can do a piece of work in 24 days while Amit can do it in 30 days. In how many days can they complete it, if they work together?

Q.14 A, B and C can do a piece of work in 6 hours, 8 hours and 12 hours respectively. How long will they take, if they are working together?

Q.15 A, B and C working together can finish a piece of work in 8 hours. A can alone do it in 20 hours and B can alone do it in 24 hours. In how many hours will C alone do the same work?

ASSIGNMENT 2

Q.1 A bag contains 4 white and 5 blue balls. They are mixed thoroughly and one ball is drawn at random. What is the probability of getting:

(i) a white ball

(ii) a blue ball?

Q.2 A letter is chosen at random from the word "NUMBER". What is the probability of getting a vowel?

Q.3 From a well-shuffled deck of 52 cards, one card is drawn at random. What is the probability that the card drawn is:

(i) a diamond

(ii) an ace

(iii) 5 of club

(iv) a red card?

Q.4 In a single throw of two coins, find the probability of getting:

(i) two tails

(ii) at least 1 tail

(iii) 1 head

Q.5 A die is thrown at random. Find the probability of getting:

(i) 2

(ii) an even number

(iii) a number less than 3

(iv) a composite number

'Q.6 A box contains 19 balls bearing numbers 1,2,3…..,19 respectively. A ball is drawn at random from the box. Find the probability that the number on the ball is

    (i)   A prime number
    (ii)   A number divisible by 3.

Q.7 The units digit of a two-digit number is 3 and seven times the sum of the digits is the number itself. Find the number.

Q.8 The sum of the digits of a two-digit number is 15. The number obtained by interchanging its digit exceeds the given number by 9. Find the original number.

Q.9 Test the divisibility of each of the following numbers by 2, 3 and 5

(i) 16785

(ii) 367200

(iii)   2398

Q.10 Plot each of the following points on the graph paper and mention the quadrant to which it belongs:

(i) A (5,2)   (ii) B (-2,4)   (iii) C (-4,-6)   (iv) D (4,-3)   (v) E (0,0)   (vi) F (-3,5)

Q.11 (a) Draw the graph of the function y = 3x.

(b) From the graph, find the value of y, when

(i) x = 3   (ii) x = 5   (iii) x = 6

Q.12 The following table gives the distance covered in kilometre and its cost in rupees

Distance covered (km)	3	5	7	8
Cost in Rs.	15	25	35	40

ASSIGNMENT 3

Q.1 Check if the following numbers can be perfect squares by seeing the digit in the unit's place.

(a) 6287   (b) 2025   (c) 9801   (d) 2500

Q.2 Without adding, find the sum:

(a) 1+3+5+7

(b) 1+3+5+7+9+11+13+15+17+19

(c) 1+3+5+7+9+11+13+15+17+19+21+23

Q.3 Using the property of squares, find the value of the following:

(a) $15^2 - 14^2$ (b) $22^2 - 21^2$ (c) $12^2 - 11^2$

Q.4 How many numbers lie in between:

(a) 10^2 and 11^2 (b) 15^2 and 16^2

Q.5 In the following, identify the Pythagorean triplet.

(a) (6,7,8)   (b) (3,4,5)   (c) (8,15,17)

Q.6 Find the smallest number by which 9075 should be multiplied so that the product is a perfect square. Also, find the square root.

Q.7 Find the square root of each of the following by prime factorisation:

(a) 3025   (b) 4225   (c) 7056   (d) 1296

Q.8 Find the smallest number by which 7350 must be divided so as to get a perfect square. Also, Find the square root of the perfect square.

Q.9 Find the square root of the following by long division method:

(a) 4761   (b) 105625   (c) 19600

Q.10 Find the least number that should be subtracted from 99880 to make it a perfect square.

Q.11 Find the least number that should be added to 1293 to get a perfect square. Also, find its square root.

Q.12 Find the greatest 5 digit number which is a perfect square. Also, find its square root.

Q.13 Find the square root of:

(a) $\frac{1225}{2601}$ (b) $\frac{784}{961}$ (c) 0.0441   (d) 39.0625

Q.14 Find the cube roots of the following:

(a) 729   (b) 5832   (c) 9261   (d) 1728

Q.15 Find the smallest natural number by which 2304 should be multiplied so that the product is a perfect cube. Also, find the cube root,

Q.16 What is the smallest number by which 12288 should be divided so that the quotient is a perfect cube? Also, find its cube root.

Q.17The students of a class contributed money for a relief camp. Each child contributed as many rupees as the number of children in the class. If the total collection is Rs. 5184, find the strength of the class.

ASSIGNMENT -4

Q.1 The area of a trapezium is 180cm² and its height is 9cm. if one of the parallel sides is longer than the other by 6cm, find the two parallel sides.

Q.2 In the given figure, PQRS is a trapezium in which PQ ‖ RS, $\angle$PSR = 90°, PQ = 8cm, RS = 12cm and PR = 13cm. Find the area of the trapezium.
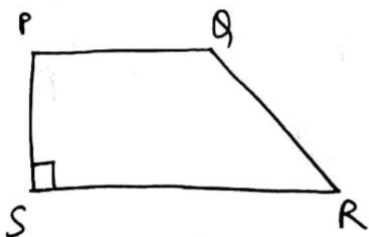
Q.3 Find the area of the following polygons:

a)

b)
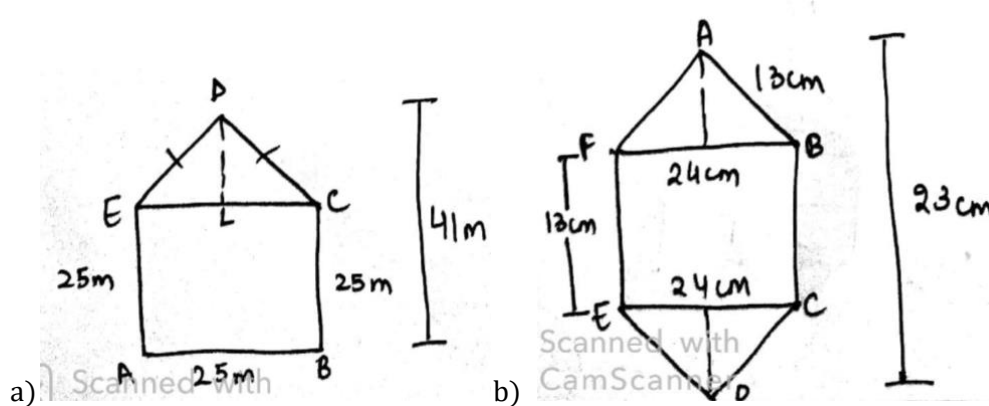
Q.4 If each side of a cube is tripled then how much is its volume increased?

Q.5 The volume of a rectangular tank is 182m3. If the length and the breadth be 8m and 6.5m respectively, find its depth.

Q.6 A cardboard box is 1.2m long, 72cm wide and 54cm high. How many bars of soap can be put into it if each bar measures 6cm × 4.5cm × 4cm?

Q.7 The circumference of the base of the cylinder is 88cm and its height is 60cm. find the volume of the cylinder and its curved surface area.

Q.8 Find the curved surface area and total surface area of a cylinder whose radius is 10cm and height is 7cm.

Q.9 Find the radius of the circular cylinder whose curved surface area is 352cm² and height is 14cm.

Q.10 An almirah 1.2m × 40cm × 2m is made up of iron sheet. Find the area of the sheet used in it.

Q.11 Two cubes each of edge 10cm are joined face to face. Find the total surface area of the cuboid thus formed.

Q.12 How much tin sheet has been used to make a box measuring 80cm x 80cm x 80cm? What will be its cost at the rate of Rs. 300 per metre square.
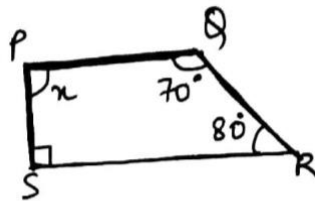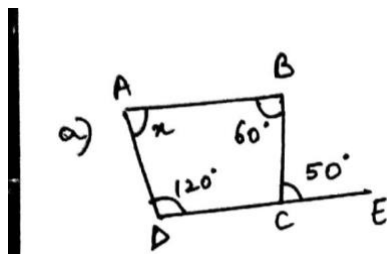
Q.13 The radius of a roller is 0.7m and it is 2m long. How much area will it cover in 10 revolutions?

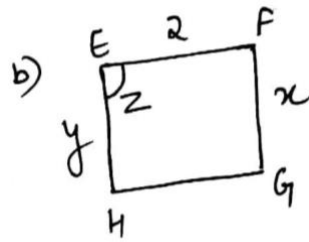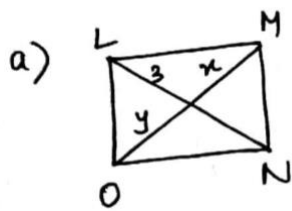Q.14 In the adjoining figure, ABCD in a parallelogram in which ∠BAD = 75° and ∠DBC = 60°. Calculate (i) ∠CDB and (ii) ∠ADB.
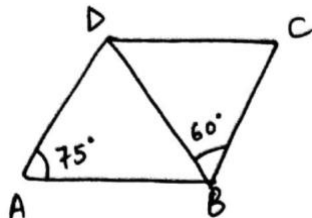
Q.15 ABCD is a parallelogram in which ∠A= 110. Find the measure of remaining angles.

Q.16 Find the value of the unknown in the following quadrilateral:

Q.17 Find the value of the variable in these squares:

a) [figure with L, M, O, N and labels 3, x, y]

b) [figure with E, F, G, H and labels 2, z, y, x]

Q.18 The angles of a quadrilateral are in the ratio of 2:3:3:4. Find the measure of all the angles.

Q.19 Construct a quadrilateral ABCD given that AB= 6.5cm, BC= 6cm, AD= 5cm, ∠A= 75° and ∠B= 90°.

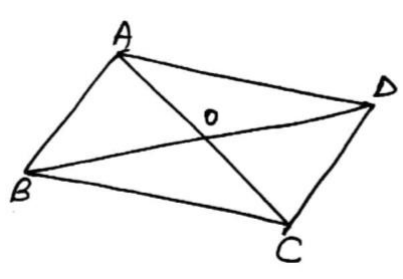Q.20 Construct a Quadrilateral EFGH given that EF= 6.2cm, FG= 4cm, EG= 5cm, EH= 4cm and FH= 7.3cm.

Q.21 If sides of a rhombus LMNO is x+5 and side LM is 2x-9, what is the value of x? Also, find the value of each side.
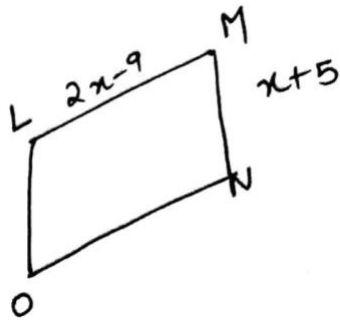
Q.22 What is the value of x if ∠BCA= 3x-2 and ∠ACD=12+x, where ABCD is square?
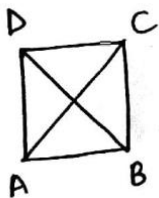
Q.23 Find the value of x and y in the following figures:

(a) Where ABCD is a parallelogram.

AO = 5y+1
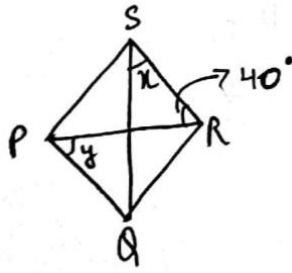
BO = 3x-1

CO = 6y-1

DO = 2(x+1)

(b) Where PQRS is a rhombus.

ALGEBRAIC EXPRESSIONS AND FACTORISATION

Q1. Find the sum of the following :

a) $2xy - 5yz$, $4xy - 4yz$, $-3xy + 8yz$

b) $x^2 + xy + y^2$, $2x^2 - 2xy + y^2$, $3x^2 + \dfrac{xy}{2} - 3y^2$

Q2. Subtract first polynomial from second :

a) $x^3 - x^2 y^2 + y^3$ from $x^4 - x^2 y^2 + y^4$

b) $2x^2 - y + 2z$ from $3x^2 - 2y + 3z$

Q3. Simplify the following :

a) $(5x^4 - 12x^2 y^2 + y^4) - (x^4 - 8y^2 x^2 + 6y^4)$

b) $(7a^2 + 3ab + 4b^2) + (a^2 - ab) + (-4a^2 + 5b^2)$

Q4. From the sum of $3x^2 + 5x - 7$ and $5x^2 + 2x + 9$, subtract the sum of $2x^2 - 3x + 8$ and $3x^2 + 4x + 7$.

Q5. Find the product of the following :

a) $(7xy^2)(3x^2 y^2)$

b) $(x-2)(3x^2 - 5x - 7)$

c) $abc(bc + ca - ab)$

d) $(4x + 3y)(y + 5)$

e) $7y(2y+1)$

Q6. The perimeter of a triangle is $5x^2 + 7x + 9$ and two of its sides are $2x^2 - 2x - 1$ and $x^2 + x + 2$. Find the third side of the triangle.

Q7 Divide the following:

a) $2x^2 + 3x + 1$ by $(x+1)$

b) $(x^2 - 4x + 4)$ by $(x-2)$

c) $(x^2 - 4)$ by $(x+2)$

Q8. Expand (using identity):

a) $(7x + 2y)^2$

b) $(9x - 10)^2$

Q9. Find the product of the following:

a) $(2x + 5)(2x - 5)$

b) $\left(\dfrac{4x}{5} - \dfrac{5y}{3}\right)\left(\dfrac{4x}{5} + \dfrac{5y}{3}\right)$

Q10. Using suitable identity to evaluate the following:

a) $(103)^2$

b) $(999)^2$

c) $(97)^2$

Q11. Find the value of:

a) 102×98

b) 197×203

Q12. Divide:

a) $\dfrac{24x^2y^3}{3xy}$

b) $\dfrac{36xyz^2}{-9xz}$

c) $(5m^3 - 30m^2 + 45m)$ by $5m$

d) $(12x^4 + 8x^3 - 6x^2)$ by $-2x^2$

Q13. Factorise:

a) $9n - 12n^2$

b) $15ab^2 - 20a^2b$

c) $5x(x-4) - 7(x-4)$

d) $x^2 - xz + xy - yz$

e) $12x^2y^3 - 21x^3y^2$

f) $ab^2 - bc^2 - abt c^2$

g) $x^2 - ax - bx + ab$

h) $9x^3 - 6x^2 + 12x$

Q14. Factorise :

a) $49x^2 - 16y^2$

b) $9a^2b^2 - 25$

c) $63a^2b^2 - 7$

d) $x^3 - 64x$

e) $(l+m)^2 - (l-m)^2$

f) $3x^5 - 48x^3$

Q15. Factorise :

a) $x^2 + 14x + 49$

b) $4y^2 + 20y + 25$

c) $z^2 + z + \frac{1}{4}$

d) $1 - 6x + 9x^2$

e) $x^2 - 20x + 100$

f) $a^2b^2 - 6abc + 9c^2$

g) $m^4 + 2m^2n^2 + n^4$

Q16. Factorise by middle term splitting :

a) $x^2 + 5x + 6$

b) $y^2 - 21y + 90$

c) $2x^2 + 9x + 10$

d) $6x^2 + 7x - 3$

e) $4n^2 + 8n - 3$

f) $x^2 - 22x + 117$

g) $6p^2 + 11p - 10$