Chapter-1

Squares and Square Roots

1. Which of them is a perfect square?

   a) 576 b)941 c)65 d)none

2. Which of the following is not a perfect square?

   a)62500 b)57600 c)90000 d)63147

3. Which of the following will have 4 at units place?

   a)14^2 b)62^2 c)27^2 d)35^2

4. By observing the digits at ones place ,tell which of the following can be perfect square

   a)100 b)927 c)625 d)576

5. If one number of the Pythagorean triplet is 2m then the other two are

   a)m, m^2+1 b)m^2+1,m^2-1 c)m^2,m^2+1 d)m , m^2

6. How many natural numbers lie between 5^2and6^2?

   a)9 b)10 c)11 d)12

7. Which of the following triplets are Pythagorean?

   a)(8,15,17) b)(12,35,38) c) (14,48,51)

8. Which of the following is the square root of 7056?

   a) 86 b) 34 c) 54 d) 84

9. Find the squares of the following numbers

   i)25 ii)30 iii)12

10. Find how many non-square number lie between the following pair of numbers

    i)100 and121 ii)$8^2$and 9^2 iii)30^2and31^2

11. Find the square root of the following numbers by repeated subtraction method

    i) 9 ii)121 iii)225 iv)196

12. Find the square root by prime factorisation

    i) 64 ii)289 iii)36 iv)1764

13. Can a right triangle with sides 6cm, 8cm and 10cm be formed, give reason.

14. Find the smallest number by which 147 must be multiplied so that it becomes a perfect square. Also, find the square root of the number so obtained.

15. A PT teacher wants to arrange maximum possible number of 6000 students in a field such that the number of rows is equal to the number of columns. Find the number of rows if 71 were left out after the arrangement.
16. Find the square root of the following by the long division method.
    i)12544 ii)97344 iii)18225
17. Find the least number which must be subtracted from the following number to make it perfect square i)2361 ii)18265
18. Find the least number which must be added from the following number to make it a perfect square i) 4931 ii)5607
19. Find the greatest number of 4 digits which is a perfect square. Find the square root of this number.
20. 1225 plants are to be planted in such a way that each row contains as many plants as the number of rows. Find the number of plants in a row.
21. There are 500 children in a school. For a PT drill they have to stand in such a way that number of rows is equal to number of column. How many students are left out of the arrangement?
22. Find the square root of
    i) $324/841$ ii) $4\frac{29}{29}$
23. Find the square root of the following numbers in decimal form
    i) 84.8241 ii) .00059049 iii)225.6004
24. Find the side of square whose area is equal to the area of rectangle with sides6.4m and 2.5m.
25. The area of square playground is 256.6404 square meter. Find the length of one side of the playground.
26. Given that $\sqrt{2} = 1.414, \sqrt{3} = 1.732, \sqrt{5} = 2.236, \sqrt{7} = 2.646.$ Evaluate the following
    i) $\frac{144}{7}$ ii)$\frac{2500}{3}$
27. Find the length of side of square if the length of a diagonal is 10cm.
28. By what smallest number should 216 be divided so that quotient is perfect square. Also find the square root of quotient.
29. The product of two numbers is 1575 and their quotient is 9/7. Find the numbers.

Chapter-2

Cubes and Cube Roots

1. The cube of 11 is

   a)1331 b)3113 c)1313 d)3131

2. The number of zeros in the cube of 1000

   a)2 b)4 c)9 d)10

3. The cube of (--21) is

   a)9261 b)—9261 c)—2961 d)—9216

4. The cube roots of 63x73 is

   a)216 b)—42 c)42 d)—216

5. The cube root of $\frac{-64}{125}$ is

   a)$\frac{8}{5}$ b) -$\frac{8}{5}$ c)-$\frac{4}{5}$ d) $\frac{4}{5}$

6. Given that $\sqrt[3]{x} = -6$ then x is

   a)216 b)18 c)—18 d)—216

7. Given that 512=8^3, 3.375= 1.5^3, find the value of $\sqrt[3]{512} \times \sqrt[3]{3.375}$

   a)12 b)9.5 c)8 d)1.5

8. Write the cubes of all natural numbers between 1 and 20 and verify the following statements

   a) Cubes of all odd natural numbers are odd.

   b) Cubes of all even natural numbers are even.

9. Write cubes of 5 natural numbers which are multiples of 3 and verify the cube of natural number, which is multiple of 3 is multiple of 27.

10. Write cubes of 5 natural numbers of the form 3n+1(e.g. 4,7,10) and verify that the cube of natural number of the form 3n+1 is natural number of same form.

11. Which of the following are perfect cube

    i)1728 ii) 106480.

12. Which is the smallest number by which 392 must be multiplied so that the product is a perfect cube?

13. What is the smallest number by which 8640 must be divided so that the quotient is a perfect cube?

14. If one side of a cube is 13 metres, find its volume.

15. Find the cube roots

    i) 343 ii)1000 iii)2744 iv)74088 v)125

16. Multiply 137592 by the smallest number so the product is a perfect cube and also find the cube root of product.

17. The volume of a cube is 343 cubic metres, find one side of cube.

18. Find the cube root of rational number

    i) –64/729

    ii) – 343/–125

19. Divide the number 26244 by the smallest number so that quotient is a perfect cube. Also find the cube root of the quotient

20. The volume of cube 512 cubic metre. Find the length of the side of the cube.

21. Which of the following are cubes of a negative integer

    i)—64 ii)—2197 iii)—1056 iv)—3888.

22. Find the cube roots by prime factorisation

    i)125 ii)—5832 iii)—1728.

23. Find the cube roots of each of the following numbers

    i)8 X 64 ii)—216X 1728 iii)27X(—2744)

    iv) —125X—3375 v)—456533 vi)—5832000

24. Three numbers are in the ratio 1: 2:3. The sum of their cubes is 972. Find the numbers.

25. Difference in two perfect cubes is 189. If the cube root of smaller number is 3. Find the cube roots of the larger number.

26. Evaluate $\sqrt[3]{128\sqrt[3]{32\sqrt[3]{8}}}$

Chapter-3

Exponents and Radicals

1. Simplify, your answer should have only positive component $2^0.2^2.2^3$

   a) $\frac{1}{2}$ b)$-1/2$ c)2^5 d)2^2

2. x raised to power of zero is always

   a)0 b)1 c)itself d)negative

3. Simplify 3^{-3}

   a)-27 b)-9 c) $-\frac{1}{9}$ d) $\frac{1}{27}$

4. $(c^5)(c^3)(c^3)$ is

   a)c^{45} b)$3c^{11}$ c)c^{11} d) $3c^{45}$

5. Multiply $x^2$and x^4

   a)x^6 b)x^8 c)x^2 d)$2x^6$

6. Simplify $x^3.x^5$

   a)x^{15} b)x^8 c)15x d)x^2

7. According the exponents rule, when we multiply the expressions we ____the exponents.

   a)add b)subtract c)multiply d)divide

8. Rewrite in radical form $a^{2/3}$

   a)$(\sqrt[3]{5a})^4$ b)$(\sqrt[4]{a})^3$ c)$(\sqrt{a})^5$ d) $\sqrt[3]{a^2}$

9. Rewrite in exponential form $(\sqrt[4]{10v})^5$

   a)$v^{4/3}$ b)$(6v)^{1/2}$ c)$(3v)^{3/4}$ d)$(10v)^{5/4}$

10. Simplify $(x^{2/3})^{2/5}$

    a)$x^{4/15}$ b)$x^{16/15}$ c)x^6 d)6x

11. Find the value of $(4^0+4^{-1})\times 2^2$

12. Solve 3^{-4} and $(1/2)^{-2}$

13. Simplify the following $(-4)^5\div(-4)^8$

14. Express 4^{-3}as a power with base 2.

15. Evaluate $(\sqrt{4})^{-3}$

16. Find the value of x for which $2^x\div 2^{-4}=4^5$

17. Calculate the value of x in the given expression $(11/9)^3\times(9/11)^6=(11/9)^{2x-1}$

18. A new born bear weighs 4kg. Calculate how many kg a five year old bear weighs if its weight increases by the power of 2 in 5years.

19. Express each of the following in the exponential form

i) $\sqrt[3]{11/3}$ ii) $\sqrt[3]{(4)^{-6}}$

20. Express each of the following as radicals

i) $(15)^{1/8}$ ii) $(36)^{3/4}$ iii) $(2/9)^{1/6}$

21. Express each of the following with positive exponent

i) $y^{-3/4}$ ii) $4/y^{-5/6}$ iii) $(y^{-5})^3$

22. Simplify i) $(x^2)^3$ ii) $x^{-3/2} \times 3\, x^{-1/2}$

23. Find the value of

i) $64^{1/3} \times 25^{-1/2}$ ii) $16^{5/2} — 16^{1/2}/16^{5/2}$

24. Evaluate

i) $(1.44)^{3/2}$ ii) $(.0016)^{3/2}$

25. Evaluate

i) $(16^2 — 8^2)^{1/2}$ ii) $(3^3+4^3+5^3)^{-2/3}$

26. If $5^{x-1}=25$ and $6^{y+2}=216$, find the value of $y/x - x/y$.

27. If $5^x+5^{x-2}=650$ then find the value of x^x.

28. If $9^{x+2}= 240+ 9^x$ then find the value of x.

Chapter-4

Direct and Inverse Variation

1. If A can finish work in n days then the part of work finished in 1 day is

   a)1—n b)1/n c)n—1 d)none of these

2. If an increase in quantity brings about corresponding decrease in the other and vice-versa than the two quantity vary

   a)directly b)inversely c)sometime directly and sometime inversely d)none

3. 'If speed is more than time to cover a fixed distance would be less. This is case of

   a)inverse variation b)direct variation c)none of the above

4. If x and y vary inversely. Then using the table the value of x for y=10 is

X	5
Y	30

a) 10 b)40 c)15 d)20

5. A train is running at a speed of 75 km/hr. What distance will it cover in 20 minutes

   a)15km b)20km c)23km d)25km

6. In direct proportion y=k x, if x=3 when y=9, what is constant of proportionality k=____

   a)12 b)3 c).333 d)none of these

7. In an indirect proportion y=k/x , x=4 when y=2, what is the constant of proportionality k=____

   a)8 b)4 c)2 d)0.5

8. A car travels 14km in 25 minutes. Find out how far the car travels in 5 hours if the speed remains the same.

9. If 15 workers can finish tank in 42 hours. Calculate the number of workers required to complete the same task in 30 hours.

10. If cost of 16 apples is Rs160.Calculate the cost of 14 apples.

11. If x varies inversely as y and x=20 when y=600, find y when x=400.

12. The variable x varies directly as y and x=80 when y=160. Find the value of y when x = 64.

13. In a camp, there is enough flour for 300 persons for 42 days .How long the flour will last if 15 more people join the camp.

14. A contractor undertook a contract to complete a part of stadium in 9 months with a team of 560 workers. Later on, he was required to complete in 5 months. How many extra persons should he employ to complete the stadium?

15. Geeta types 108 words in 6 minutes. How many words would she type in half an hour?

16. It is given l varies directly as m

    i) write an equation which relates l and m.

    ii) Find the constant of proportion (k) when l is 6 then m is 18

    iii) find l when m is 33.

17. If deposit of Rs2000 earns interest of Rs500 in 3 years, how much interest would a deposit of Rs36000 earn in 3 years at the same rate of simple interest?

18. The mass of aluminium rod varies directly with its length. If a 16cm long rod has a mass of 192g. Find the length of rod whose mass is 105gms.

19. If Naresh walks 250 steps to cover a distance of 200m. Find the distance travelled in 350 steps.

20. A car travels a distance of 225km in 25 litres of petrol. How many litres of petrol will be required to cover a distance of 540 km by this car?

21. If a and b varies inversely to each other, then find the value of p, q, r; x, y, z.

i)

a	2	Y	6	10
b	x	12.5	15	z

ii)

a	6	8	Q	25
b	18	P	39	r

22. If the 25 metres of cloth costs Rs 337.50 then

    i) what will be the cost of 40 metres of the same type of cloth?

    ii) what will be length of the cloth bought for Rs 675 ?

23. A swimming pool can be filled in 4 hours by 8 pumps of same type. How many such pumps are required if the pool is to be filled in $2\frac{2}{3}$ hrs?

24. At a particular time, the length of shadow of Minar whose height is 72 m is 80m. What will be the height of an electric pole, the length of whose shadow at the same time is 100m?

Chapter-5

Profit, Loss and discount

1. The profit which a person earns on selling of an article is

   a) C.P+S.P b)S.P –C.P c)S.P+ C.P d)none

2. Geeta bought 12 pens for 240 and sold them for 300, what is the percentage of profit she made?

   a)10% b)25% c)30% d)none

3. Ram bought 8 balls for Rs80 and sold them for Rs 40 , find the percentage of loss he incurred

   a)50% b)20% c)15% d)70%

4. The discount by the shopkeeper is given on

   a)marked price b)cost price c)selling price d)none

5. Amit bought a television for Rs 30,000 and 18% GST was charged on it .How much amount does he pay for the television?

   a)35,400 b)38,000 c)40,000 d)29,000

6. Loss is always calculated on

   a)cost price b)selling price c)marked price d)GST

7. A boy buys 10 apples for Rs9.60 and sells them at 11 for Rs12. Find the profit percentage.

8. If the cost of 20 chairs be equal to selling price of 16 chairs. Find the gain or loss percentage.

9. Shyam sold his motor cycle to Ravi at a loss of 28%. Ravi spent Rs1680 on its repairs and sold the motorcycle to Hitesh for Rs35910 thereby making a profit of 12.5%. Find the cost price of the motor cycle.

10. The marked price of a ceiling fan is Rs 840. During off season it was sold for Rs 780. Find the percentage discount.

11. A lady shopkeeper allows her customers 10% discount on the marked price of the goods and still gets a profit of 25%profit. What is the cost price of the good for her marked at Rs 1250?

12. Rita had purchased a coat for Rs5600 including 12% GST .Find the cost of the coat before GST was added.

13. Tom purchased a cupboard for Rs24, 800 including GST, if the cost price of the cupboard is Rs 21,600. Find out how much GST (in %) has been paid.

14. Find out the amount to be paid if 18% GST is charged on a camera at Rs28,000.

15. A tradesman allows a discount of 15% on the written price. How much above the cost price must he mark the goods to make a profit of 19%?
16. Rita went to a shop and brought a dress for Rs9, 200 for herself and bought trouser for her father for Rs4, 500. If GST was on all goods at 15% on all purchased goods, then what is the total amount Rita has paid?
17. The marked price of an article is Rs4000 and rate of GST is 12%. A shopkeeper allows a discount of 15% and still makes a profit of 10%. Find the original price and the selling price including GST.
18. Nisha goes to the shop to buy a box costing Rs981. The rate of GST is 9%. She tells the shop keeper to allow a discount on the price of box to such an extent that she pays Rs 981 inclusive of GST. Find the discount in the price of the box.
19. I bought a dress at 30% discount on its marked price but later on I sold it on the marked price. Find out how much gain I made.
20. A shopkeeper sold a washing machine at a discount of 20% on the marked price of Rs28,000. The marked price included 28% GST. Did he make a profit or loss and what was its percentage?

Chapter6

Compound Interest

1. The compound interest on Rs10000 for 2 years at 10% per annum is

   a)1400 b)2100 c)2000 d)none

2. Ram borrows x amount of money from Rohit at 10% compound interest computed annually and he lends the same amount to Rohan at the same rate of interest but the interest is compounded half-yearly. The interest Ram gets will be _____than the interest he pays

   a)same b)less c)more d)none

3. The formula for the compound interest is

   a)P x R x T/100 b)P[$(1 + R/100)^n - 1$] c)none

4. The n in the formula of compound interest stands for

   a)time b)principal c)amount d)rate of interest

5. If you want to deposit a sum for two years. What would you opt for

   a) simple interest of 8%

   b) compound interest of 8% compounded annually

   c) compound interest of 8% compounded half yearly.

6. Geeta invests Rs 96000 at 9.6% per annum for 3 years the interest compounded annually, calculate

   i) the amount standing to her credit at the end of second year

   ii) the interest for the third year.

7. Find the compound interest on Rs 6000 for $1\frac{1}{2}$ years at 8% per annum interest being payable half- yearly.

8. Calculate the compound interest on Rs 24000 for six months if the interest is payable quarterly at the rate of 12% per annum.

9. Rohan borrowed Rs30000 from his friend Hitesh at 20% per annum simple interest. He lent it to Aman at the same rate compounded annually. Find his gain after 2 years.

10. Find the difference between the compound interest and simple interest on a sum of Rs 40000 at 12%per annum for 2 years.

11. Find the principal, if the compound interest compounded annually at the rate 8% per annum for 3 years is Rs 420.

12. What sum will become Rs. 4913 in 18 months if the rate of interest is $12\frac{1}{2}$% per annum and the interest is compounded half yearly.
13. The difference between the compound interest and interest on certain sum of money at 10% per annum for 2 years is Rs500. Find the sum when the interest is compounded annually.
14. In what time will Rs1000 amount to Rs 1060 at 6% per annum compounded annually?
15. In what time Rs.64000 amount to 68921 at 5% per annum interest being compounded half-yearly?
16. At what rate percent will Rs12000 amount to Rs14520 in two years, when the interest is compounded annually?
17. The population of town increases at the rate of 6% per annum. What will be the population on this basis after 3 years if the present population is 125000?
18. The population of a town 3 years ago was 72000. Due to migration to cities it decreases at the rate of 5% every year. Find its present population.
19. The population of a city was 150000 two years ago. If it had increased by 2.5% and 4% in the last two years. Find its present population.
20. The population of a village is 15000. If the annual birth rate is 4% and death rate is 1%. Calculate the population after 2 years.
21. 24000 blood donors were registered with a charitable hospital .The number of donors increased at the rate of 5% every six month. Find the time period at the end of which the total number of blood donors becomes 27783.
22. A new car costs Rs480000. Its price depreciates at the rate 8% a year during first two years and at the rate of 20% a year thereafter. What will be price after 3 years?
23. The value of refrigerator which was purchased 2 years ago depreciates at 12% per annum. If its present value is Rs 10648 for how much was it purchased.
24. Ashish started the business with investment of Rs. 400000. In the first year incurred a loss of 3%. However during second year earned a profit of5% and in the third year it rose to 10%. Calculate the net profit for the entire period 3 years.
25. The value of machine depreciates at the rate of 10% per annum. What will be its value 2 years hence, if the present value is Rs100000? Also find the total deprecation during this period.

Chapter-7

Algebraic Identities

1. A statement of equality which holds for all the values of a variable is known as

   a)identity b)exponent c)radical d)power

2. The process of writing a given algebraic expressions as product of 2 or more factors is known as

   a)identity b)factorization c)factor d)none of the above

3. Factorised form of $9x^2+30x+25$ is

   a)(3x+5)(x+5) b)$(3x+5)^2$ c)(3x+5)(x—5) d)none

4. Factorised form of a^2—7a+12 is

   a)(a—3)(a—4) b)(a—3)(a+4) c)$(a—3)^2$ d)$(a+4)^2$

5. One of the side of a rectangle having area x^2+9x+18 sq cm is (x+3)then the other side is

   a)(x+3) b)(x+6) c)$(x+3)^2$ d)none

6. Find the following using identities

   i)$(2x+y)^2$ ii)$(2x+3y)^2$ iii)$(2x—3y)^2$ iv)$(6x—7y)^2$

7. Evaluate the following using identities

   i)$(102)^2$ ii)$(703)^2$ iii)$(992)^2$ iv)$(58)^2$ v)$(78)^2$ vi)$(1092)^2$

8. Find the product using identities

   i)$(6x^2—7y^2)(6x^2+7y^2)$ ii)(2a+3/b)(2a—3/b)

9. Simplify the following products by expressing them as difference of 2 squares.

   i)68x 72 ii)101x 92 iii)67x 73

10. Evaluate the following using identities

    i)$(82)^2—(18)^2$ ii)$(410)^2—(390)^2$

11. Expand the following

    i)$(4a—6b—3c)^2$ ii)$(2x–3y—5)^2$

12. Find the product by using suitable identity

    i)(x+3)(x+6) ii)(y—4)(y—12)

13. Evaluate by using suitable identities

    i)95x 105 ii)1.8x2.2 iii)34x36

14. Evaluate the following products

    i)$(y^2+12)(y^2+6)$ ii)$(x^2+4)(x^2+9)$ iii)(x+1/5)(x+5)

15. Factorisation by using identities

i)$49x^2—64y^2$ ii)$144a^2+192b^2+64b^2$ iii) $25x^2+9y^2—30xy$

iv)$4x^2+y^2+25z^2—4xy –10yz +20yz$ v)$121b^2—88bc—16c^2$

16. Factorise the given expression

i)$x^2–5x –36$ ii)$y^2—y—42$ iii) x^2-2-35

iv)$x^2+7x—60$ v)$4y^2—12y +9$

17. Find the value of y^2+1/y^2, if $y+1/y=12$.

18. Factorise $(l +m)^2—4lm$

19. Factorise i)$25x^2–1—2y –y^2$ ii)$4a^2– (b—c^2)$

20. If $x+1/x= 5$then find the value of $x^2+ 1/x^2$.

Chapter8

Polynomials

1. A polynomial is said to be a _____ if it contains two unlike terms

   a)binomial b)monomial c)trinomial d)constant

2. When $35x^4$ is divided by $-7x^3$ then the quotient is

   a)—5x b)5x c)$5x^2$ d)$7x^2$

3. Which of the following option is not correct, when a polynomial is divided by another polynomial, using Dividend = Divisor x Quotient+ Remainder.

   a) remainder=0

   b) degree of remainder is less than divisor

   c) degree of remainder is more than divisor.

   d) none of the above.

4. Which of the polynomial is in its standard form

   a)$8x^4+6x^5+2x^3+x+5$ b)$6x^5+8x^4+2x^3+x+5$

   c)$2x^3+6x^5+8x^4+x+5$ d)$x+2x^3+6x^5+5+8x^4$

5. Which one is the factor of the given polynomial $3z^2—13z+4$

   a)(z−4) b)(4+z) c)(6+z) d)(5+z)

6. Write the given polynomial in standard form and also write its degree

   i)$x^2+3+6x+5x^4$ ii)$(y^3—2)(y^3+1)$

7. Divide the following monomials by the given monomial

   i)$6x^3y^2z^2$ by $3x^2z$ ii)$—72a^4b^5c^8$by$—9a^2b^2c^2$

8. Divide the polynomial by the monomial

   i)$24x^3y+20x^2y^2—4xy$ by 2xy ii)$2/3a^2b^2c^2+4/3ab^2c^3—1/5ab^3c^2$by1/2abc

9. Divide the polynomial by the monomial by long division method

   i)$4x^{10}—9x^8—9x^5+7x$ by x^5 ii)$5a^3—6a^2+7a$ by 2a

10. Divide the polynomial by a binomial by factor method

    i)$(x^2+5x+6)$by(x+3) ii)$(y^2+7y+12)$by (y+4)

11. Divide the polynomial by a binomial by long division method and also write the quotient and the remainder

    i)$14x^3—5x^2+9x—1$ by 2x—1 ii)$6x^3—x^2—10x—3$by 2x—3

12. Using long division method divide the following polynomial by a binomial and check your answer

i)$3y^5+6y^4+6y^3+7y^2+8y+9$ by $3y^2+1$

ii)$6y^5+15y^4+16y^3+4y^2+10y—35$ by$3y^2+1$

13. Using long division method ,check whether second polynomial is the factor of the first polynomial

i) $x^2—x—42$, $x+6$ ii)$4y^4—10y^3—10y^2+30y –15$, $2y –5$

iii)$4x^2—13x—12$, $4x—1$ iv)$10a^2—9a—5$, $2a—3$

14. Divide the polynomial

i)$x^2—5x+6$ by $x—3$ ii)$ax^2—ay^2$by $a\,x +ay$ iii)$—x^6+2x^4+4x^3+2x^2$ by$\sqrt{2}\,x^2$

15. What must be subtracted from $8x^4+14x^3—2x^2+7x—8$ so that resulting polynomial is exactly divisible by $4x^2+3x–2$.

16. Find the value of b so that $x^4+x^3+8x^2+x+b$ is exactly divisible by x^2+1.

17. Find the value of a, if $x+2$ is a factor of $4x^4+2x^3—3x^2+8x+5a$.

18. What must be added to $x^4+2x^3+2x^2+ x—1$ so that the resulting polynomial is exactly divisible by $x^2+2x—3$.

19. The curved surface area of cylinder is $2\pi(y^2—7y + 12)$ and its radius is $(y—3)$. Find the height of cylinder. (CSA of cylinder = $2\pi rh$)

20. The area of circle is given by the expression $\pi x^2+6x\pi + 9\pi$. Find the radius of the circle.

21. The area of a rectangle is $x^2+ 7x +12$. If the breadth is $(x +3)$, then find its length.

22. The sum of $(x+5)$ observations is $x^4—625$. Find the mean of observation.

Chapter-9

Linear equations in one variable

1. The value of variable which satisfies the equation is known as

   a)solution b)variable c)degree d)none

2. The given equation $\frac{2x-1}{3x+5}$=5 is a

   a)linear equation b)not linear equation c)variable d)none

3. A number 84 is divided into two parts in the ratio2:4 The product of the number is

   a)1600 b)1792 c)1800 d)1568

4. For the given equation $\frac{x}{2}-\frac{x}{3}$=8, the value of x

   a)54 b)48 c)12 d)24

5. A number is such that it is as much greater than 50 as it is less than 70. Find it

   a)40 b)60 c)65 d)50

6. Solve each of the equations and also verify your solution

   i) $9\frac{1}{4}$=y – $1\frac{1}{3}$ ii)$\frac{5x}{3}+\frac{2}{5}$ =1 iii) $\frac{2x}{3}-\frac{3x}{6}=\frac{7}{12}$

   iv)(x+2)(x+3)+(x—3)(x—2)—2x(x+1)=0 v) $\frac{7x-2}{5x-1}=\frac{7x+3}{5x+4}$ vi)$\frac{x+2}{x+5}=\frac{x}{x+6}$

   vii)5x/2x-1= 2 viii)$\frac{5(1-x)+3(1+x)}{1-2x}$ = 8

7. Find the positive value of variable for which given equation is satisfied

   i)$\frac{x}{2}-\frac{x}{3}$=8 ii) $\frac{7}{x}$ +35 = $\frac{1}{10}$ iii)$\frac{Y^2+4}{3Y^2+7}=\frac{1}{2}$

8. A number is such that it is as much greater than 84 as it is less than 108. Find it.

9. A number consists of 2 digits whose sum is 8. If 18 is added to the number digits are reversed. Find the number.

10. The numerator of a fraction is 6 less than denominator. If 3 is added to the numerator, the fraction is equal to 2/3. Find the original fraction.

11. Sunita is twice as old as Geeta. If 6yrs is subtracted from Geeta's age and 4 years added to Sunita's age, then Sunita will be four times Geeta's age. How old were they two years ago?

12. The sum of the ages of Shiva and his father is 100years. When Shiva is as old as his father is now, he will be five times as old as his son Shyam is now. Shyam will be eight years older than Shiva is now, when Shiva is as old as his father. What are their ages now?

13. The distance between two stations is 340 km. Two trains start simultaneously from the stations on parallel tracks to cross each other. The speed of one is greater than that of the other by 5km/hr. If the distance between 2 trains after 2 hours of their start is 30 km. Find the speed of each train.
14. Nita has Rs 10 in fifty paise and twenty five paise coins. She has twice as many twenty five paise as she has fifty paise coins. How many coins of each kind does she have?
15. After 12 years I shall be 3times as old as I was 4 years ago. Find my present age.
16. Hamid has 3 boxes of different fruits. Box A weighs $2\frac{1}{2}$ kg more than B and box C weighs $10\frac{1}{4}$ kg more than box B. The total weight of the boxes is $48\frac{3}{4}$ kg. How many kg does box A weighs?
17. How much pure alkali should be added to 500ml of 10% solution to make the strength 28%.
18. 40 kg of an alloy of Iron and tin contains 50%Iron. How much iron must be melted to make an alloy containing 60% Iron?
19. An altitude of a triangle is five thirds the length of its corresponding base. If the altitude was increased by 4cm and the base is decreased by 2cm, the area of triangle remains same. Find the base and altitude of the triangle.
20. Geeta inherited Rs15000. She invested part of it at 10% and rest at 8% simple interest. Her annual income from these investments is Rs1500. How much did she invest at each rate?
21. Rita takes flowers in a basket and visits three religious places. At each religious place offers one half of the flowers from basket. If she is left with 6 flowers at the end then find the total numbers of flowers she had in the beginning.
22. The volume of water in a tank is twice that in the other. If we draw 20 litres from first and add it to other, the volumes of water in each tank will be the same. Find the volume of water in each tank.
23. The sum of three consecutive even numbers is 192. Find the three numbers and one number which is multiple of 3.
24. A steamer goes downstream and covers the distance between 2 ports in 3 hours and covers the same distance in 5 hrs when goes up stream. If the stream flows at 6 km/hr, then find what is the speed upstream?

Chapter-10

Parallel Lines

1. If two lines lie in the same plane and do not intersect each other are called

   a) parallel b) oblique c)transversal d)equidistant

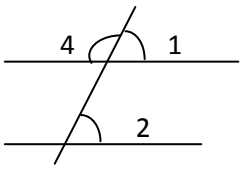
2. Which of the following are not correct about two parallel lines?

   a) they lie in the same plane b)they intersect each other c)if they are cut by transversal than pair of corresponding angles are equal. d)If they are cut by transversal than alternate interior angles are equal

3. A line segment can be divided internally in the given ratio by constructing

   a)angles b)parallel lines c)perpendicular lines d)none

4. In the given figure which angles are equal?



   a)1 and 2 b)2 and 4 c)1 and 4 d)none

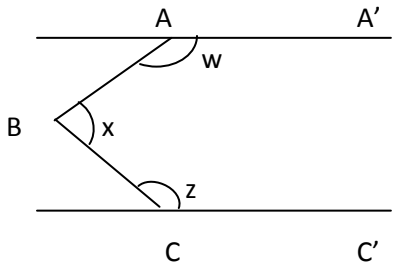
5. A line a makes an angle of $30^{o}$with line b, also line c makes an angle of $30^{0}$with line b. Then
   a) line a is parallel to line c
   b) line a is perpendicular to line b
   c) line a parallel to line b
   d) line a is perpendicular to line c.

6. If a transversal intersect 2 parallel lines , then each pair of corresponding angles are
   a)parallel b)perpendicular c)equal d)different

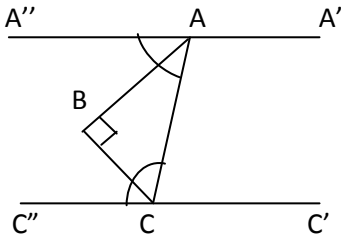
7. If two parallel lines intersected by a transversal then pair of alternate interior angles are
   a)equal b)sum of 2 angles is 360° c)complementary d)supplementary

8. A line that intersects 2 lines in different points is known as
   a)angles b)transversal lines c)vertex d)parallel lines

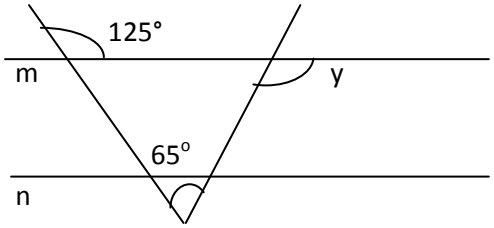
9. In the figure AA'|| CC'. The size w of angle A'AB is equal to 135° and the size z of ∠C'CB is equal to 147°. Find the ∠ABC.



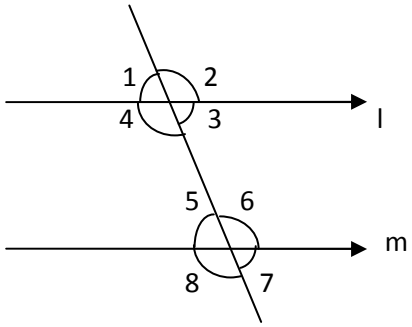
10. In the figure lines A'A'' and C'C'' are parallel. AB is the bisector of ∠ CAA'' and BC is the bisector of ∠ACC''. Show that ∠ABC is 90°.



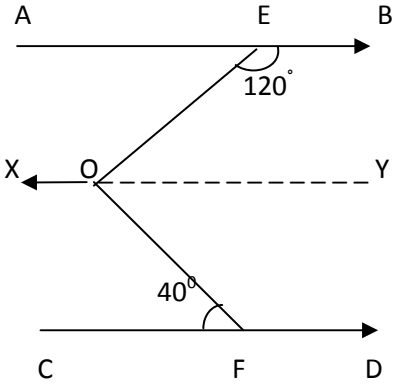
11. Lines m and n are parallel find ∠y



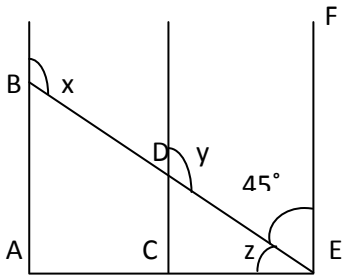
12. In the adjoining figure line l is parallel to m is cut by transversal. If ∠1=70° find the measure of angle 3, 5 and 6.



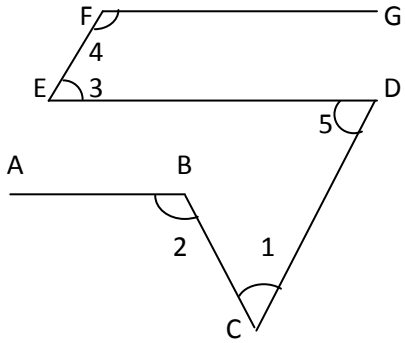
13. In the given figure AB is parallel to CD ∠ BEO= 120°, ∠CFO=40°. Find the ∠EOF.



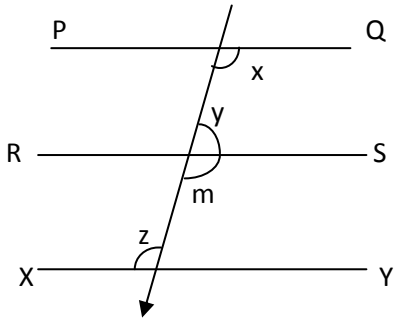
14. In the given figure AB is parallel to CD ||EF and AE is perpendicular to AB, also ∠BAE= 90^0. Find the values of angle x, y and z.



15. In the given figure AB ||ED, ED||FG, EF|| CD, ∠1=60°, ∠3=55°, then find the ∠2, ∠4 and ∠ 5.

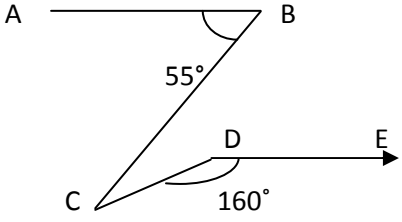


16. In the given figure PQ ||RS ||XY , also y:z =4:5 find the angles



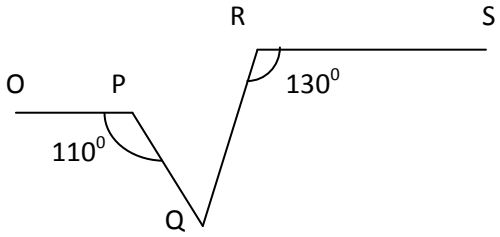
17. If ∠ A=2x, ∠B = 3x these two angles on the same side of the transversal then find the value of x and measure of each angle.

18. In the figure if AB is parallel to DE, ∠ABC=$55^0$and ∠CDE=160^0 then find the measure of ∠ BCD

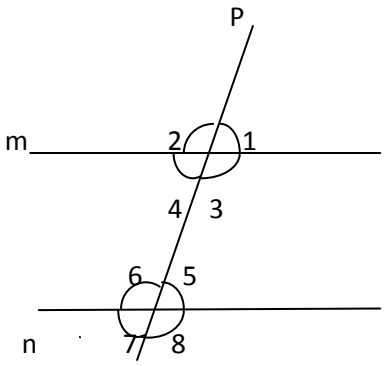


19. Two lines l and m are perpendicular to the same line n, what is the relation between line l and m, give reason for the answer.

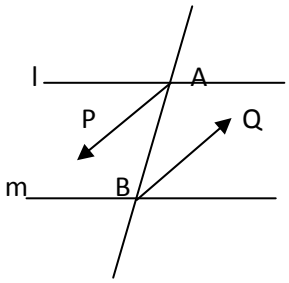
20. In a figure if OP is parallel to RS, ∠OPQ =110° and ∠QRS =130° than find ∠PQR



21. In the figure P is transversal to lines m and n and ∠2 =120°, ∠5=60° .Prove that m is parallel to n.



22. AP and BQ are bisectors of two alternate interior angles formed by the intersection of transversal and with parallel lines l and m in the given figure. Show that AP is parallel to BQ.



23. Draw a line segment AB=6cm divide it internally into 4 equal parts.

24. Draw a line segment of length 6.4 cm, divide it internally in the ratio 3:5.

Chapter 11

Understanding Quadrilaterals

1. A polygon having 4 sides is called

   a) Triangle b) pentagon c)hexagon d)quadrilateral

2. A polygon is a_____ polygon when a line segment joining any two points inside it is completely inside the polygon

   a) concave b)regular c)convex d)none

3. Each_____ of a polygon of n side would be (n-2)x180/n

   a)angle b)side c)diagonal d)none

4. A parallelogram having a pair of adjacent sides equal is

   a)rhombus b)triangle c)quadrilateral d)hexagon

5. Which of the statement is not correct about square

   a) each angle of the square is not a right angle

   b) The diagonals of square are equal.

   c) All the sides are equal.

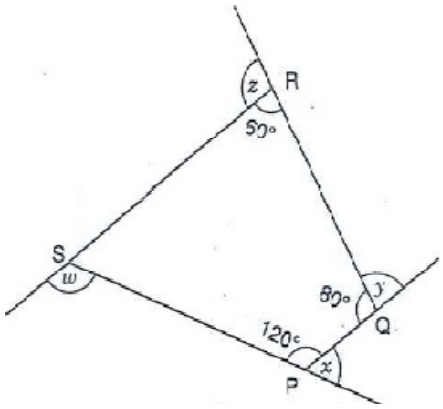
   d) The diagonals bisect each other at right angle.

6. The angles of quadrilateral are 105°, 76°, 56° and x. Find the value of x.

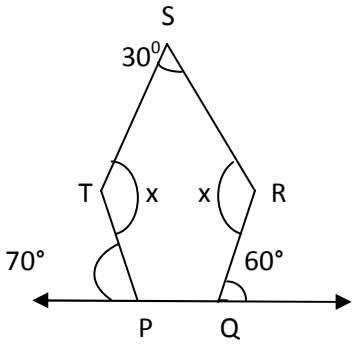
7. Three angles of a quadrilateral are equal and fourth angle is of measure150°. What is the measure of equal angles?

8. The four angles of quadrilateral are as3:5:7:9. Find the angles.

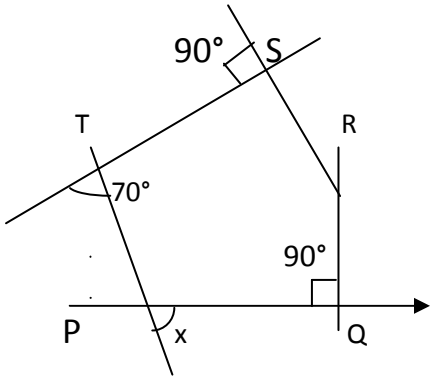
9. In the given figure find x + y + z +w



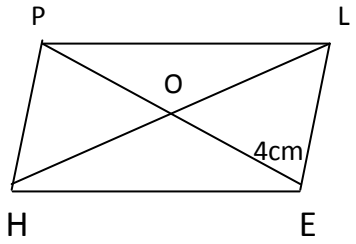
10. Find the value of x in each of the following



11. The measures of 2 adjacent angles of quadrilateral are 125° and 35° and other two angles are equal. Find the measure of each of equal angle.
12. Find the value of x in the given figure



13. How many sides a regular polygon has, each angle of which is of measure 108^0?
14. What is the measure of each angle of a regular hexagon?
15. The exterior angle of regular polygon is one third of its interior angles. How many sides does the polygon have?
16. In a parallelogram RING if ∠R=70°, find all the other angles.
17. In the figure HELP is a Parallelogram, If OE=4cm and HL is 5cm more than PE. Find OH.



18. The ratio of 2 sides of a Parallelogram is 3:5 and its perimeter is 48cm. Find the sides of parallelogram.
19. Diagonals of a parallelogram ABCD intersect at O. AL and CM are drawn perpendicular to BD such that L and M lie on BD. Is AL=CM? Why or Why not?
20. Two adjacent angles of parallelogram are (3x—4)° and (3x+10)° . Find the measure of angles of the parallelogram

21. If the diagonals of rhombus are 12cm and 16cm. Find the length of each side.
22. PQRS is a rhombus whose diagonals intersect at O. Show that triangle POQ and triangle ROS are congruent
23. The sides of rectangle are in ratio 4:5. Find its sides if the perimeter is 90 cm.
24. The measure of 2 adjacent angles of a parallelogram is in the ratio 4:5. Find the measure of each of the angle of parallelogram.
25. A diagonal and a side of rhombus are of equal length. Find the measure of the angle of rhombus.

Chapter 12

Construction of Quadrilaterals

1. Which of the statement is in correct about the requirement for construction of a quadrilateral
   a) The length of all the four sides is given and length of even one diagonal is not given.
   b) The length of three sides and two diagonals is given.
   c) The length of three sides and two included angle is given.
   d) The length of four sides and one angle is given.
2. If for the construction of quadrilateral ABCD you are given the dimension of AB , BC, CD and AD which one more dimension is needed
   a) AC b)CB c)DC d)none
3. The different geometrical instrument that can be used to construct a quadrilateral
   a)ruler only b)compass only c)protractor only d)compass and ruler
4. Can a quadrilateral be constructed if you given three sides and two included angles
   a)yes b)no
5. What is the minimum number of dimensions a person should have to construct a quadrilateral?
   a) 5 b) 4 c) 3 d) 2
6. Construct a quadrilateral ABCD when AB=3cm, CD=3cm, DA=7.5cm, AC=8cm and BD = 4cm.
7. Construct a quadrilateral ABCD such that AB = BC = 5.5 cm, CD= 4cm, DA = 6.3 cm and AC = 9.4 cm. Measure BD.
8. Construct a quadrilateral ABCD given that AB = 4cm, BC=3cm, $\angle A=75°$, $\angle B= 80°$ and $\angle C=120°$.
9. Construct a quadrilateral PQRS where PQ =3.5 cm, QR = 6.5cm, $\angle P = \angle R = 105°$ and $\angle S= 75°$.
10. Construct a quadrilateral ABCD where AB = 6 cm, BC=4cm, CD = 4cm $\angle B = 95°$ and $\angle C =95°$.
11. Construct a quadrilateral BDEF where DE = 4.5 cm, EF =3.5 cm, FB = 6.5 cm, $\angle F = 50°$ and $\angle E =100°$.
12. Construct a rhombus PAIR given that PA=6cm and $\angle A=110°$.
13. Is it possible to construct a quadrilateral ROAM in which RO=4cm OA=5cm, $\angle O=120°$, $\angle R =105°$ and $\angle A =135°$? If not, why?
14. Is it possible to construct a quadrilateral ABCD in which AB=3cm, BC= 4cm, CD=5.4cm, DA=5.9 cm and diagonal AC=8cm? If not, why?

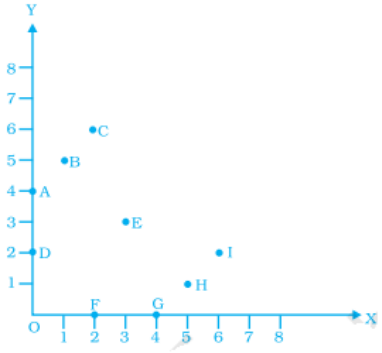
15. Construct a parallelogram, one of whose side is 5.2cm and whose diagonals are of length 6cm and 6.4cm.
16. Construct a rectangle ABCD in which BC= 5.2cm and diagonal BD=6.2cm.
17. Construct a square one of whose diagonals measures 7.1cm.
18. Construct a square with side 5.7cm.
19. Construct a rhombus PQRS in which PR=6cm and RS=8cm.
20. Construct a trapezium ABCD in which AB ||DC, AB=7cm, BC=5cm, AD=6.5cm and measure of $\angle B=60°$.

Chapter 13

Introduction to Graphs

1. (0,y) are the co-ordinates of a point lying on which of the following
   a) x axis b)y axis c) origin d)none of the above
2. Which of the following point(s) lie on x- axis
   a) (3, 0) b) (0 , 3) c) (0, -3) d) (3, -3)
3. The joining of the (-3, -3) (0 , 0) (4, 4) represents
   a) a triangle b)a straight line through origin c) curved line d)none of the above
4. Which of the point lies at shortest perpendicular distance from x- axis
   a) (3, 2) b) (--5,6) c) (2 , 4) d) (--2 , 5)
5. The given points (-4, 8) and (8, - 4) represent
   a) different points b)same point c)origin d)none of the above
6. Plot the points (5, 0) , (5, 1), (5, 8). Do they lie on a line? What is your observation?
7. Write the x- coordinate(abscissa)of each of the given points
   a) (7,3) b) (5,7) c) (0,5)
8. Write the y- coordinate (ordinate) of each of the given points.
   a) (3,5) b) (4,0) c)(2,7)
9. Plot these points in a coordinate plane on a graph sheet.
   i) (1, 4) (2, 4) (3, 4) (4, 4)
   ii) (2, 5) (2, 7) (2, 9) (2, 11)
10. Write the co –ordinates of each of the vertices of the given polygons:

11. Find the co-ordinates of points



12. The following table shows the number of patients discharged from a hospital with dengue diagnosis in different years

Year	2015	2016	2017	2018	2019
No of patients	250	800	1000	1200	220

13. The perimeter P and sides of a square are connected by a relation P =4S .Draw the graph of this relation on a graph paper

Sides	1	2	3	4	5	6	7
Perimeter	4x1=4	4x2=8	4x3=12	4x4=16	4x5=20	4x6=24	4x7=28

14. The quantity of petrol filled in a car and the cost of petrol are given in the following table

Litres of petrol(l)	10	15	20	25
Cost of petrol(Rs)	500	750	1000	1250

Draw a graph representing above data .Also find the cost of 12 litres of petrol using this graph.

15. A car is going for a long journey of 16 hours, starting at 5.00 hrs. The speed of car at different hours is given below.

Time(hrs)	5.00	7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00
Speed(km/hr)	40	50	60	80	70	65	75	60	50

Draw the speed time graph from the above data and find the speed at 10.00 hrs using the graph.

16. Draw temperature time graph from the following data:

Time(hrs)	7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00
Temperature(^{0}F)	100	101	104	102	100	99	100	98

17. Locate the points P (1,2), Q(3,4) and R(5,2) on graph taking suitable axis. Write the coordinates of the fourth point to complete the rhombus PQRS. Measure the diagonals of this rhombus and find whether they are equal or not.

18. Locate the points A (3,4) B(1,0) R(0,4) S(4,1) on a graph sheet and write the coordinates of the point of intersection of the line segment AB and CD.
19. The given table gives the growth chart of a child

Height in cm	75	92	108	118	128
Age in years	2	4	6	8	10

Draw the line graph for the table and answer the question

i. What is the height at the age of 3 years?
ii. How much taller is the child at the age of 8 years than at the age of 4 years?
iii. Between which two consecutive periods did the child grow least in height?

Chapter 14

Mensuration

1. What is the area of trapezium whose two parallel sides are 10 cm and 12 cm and height is 4cm?

   A) $42cm^2$ b) $44\ cm^2$ c) $48cm^2$ d) $46cm^2$

2. What is the volume of a cuboid whose dimension are 5cmx 3cm x 2cm?

   a) $24cm^3$ b)$36\pi cm^3$ c) $30cm^3$ d)$17cm^3$

3. The total surface area of cylinder with diameter of base 5cm and height 30 cm will be

   a)$510.7\ cm^2$ b)$610\ cm^2$ c) $505cm^2$ d)$511cm^2$

4. Two cubes have their volume in the ratio 1:8. Find the ratio of their surface areas

   a) 1: 4 b)7 : 9 c) 1:9 d)5 :3

5. Three cubes whose edges are 3cm, 4cm and 5cm respectively melted without any loss of metal into single cube. The edge of new cube

   a)8cm b)6cm c)9 cm d)7cm

6. ½ (diagonal x sum of altitudes drawn on the diagonal from other two vertices) is the formula of area

   a)trapezium b)quadrilateral c)square d)rectangle

7. If length of side of a cube is doubled then volume of the cube will

   a)increase b)decrease c)remain same d)8 times

8. The surface area of four walls of the room is

   a)l x b x h b)perimeter of floor x height c)$6L^3$ d)none

9. If the radius of two cylinder is same and height of one cylinder is double of the other cylinder than ratio of their volume is

   a) 1 :2 b) 3 : 4 c) 5 : 7 d)2 : 5

10. The name of the given solid is

   a) triangular pyramid b)rectangular pyramid

   c) rectangular prism d) triangular prism

11. Find the area of trapezium with base 15cm and height 8 cm, if the side parallel to the given base is 9cm long

12. Find the height of a trapezium , the sum of the lengths of whose bases(parallel sides) is 60 cm and whose area is 600 cm^2

13. Find the sum of lengths of the bases of trapezium whose area is $42m^2$and whose height is 280 cm.

14. The area of the trapezium is $105cm^2$and its height is 7cm. If one of parallel sides is longer than other by 6cm. Find the two parallel sides.

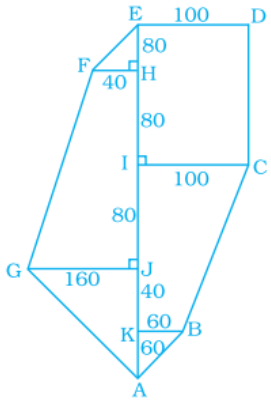
15. The area of a trapezium is 384 cm^2. Its parallel sides are in the ratio 3: 5 and the perpendicular distance between them is 12cm. Find the length of each one of the parallel sides.

16. Mohan wants to buy trapezium field .Its side along the river is parallel and twice the side along the road. If the area of this field is $10500m^2$ and perpendicular distance between the two parallel sides 100m. Find the length of side along the river.

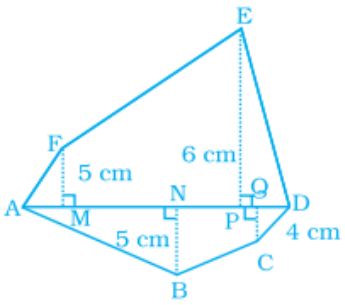
17. The parallel sides of a trapezium are 40cm and 20cm. If its non-parallel sides are both equal, each being 26cm, find the area of the trapezium.

18. The area of a trapezium with equal non- parallel sides is $168m^2$. If the lengths of parallel sides are 36m and 20m, find the length of the non- parallel sides

19. Find the area of the following field .All dimensions are in metres



20. Find the area of polygon ABCDEF, if AD = 18cm, AQ = 14 cm, AP = 12 cm, AN = 8 cm, AM = 4 cm, and FM, EP, QC and BN are perpendiculars to diagonal AD.



21. An aquarium is in the form of Cuboid whose external measures 80cm x 80 cm x 40cm. The bottom, side faces and back faces are to be covered with a paper. Find the area of paper to be needed.
22. The paint in a certain container is sufficient to paint an area equal to 9.375m^2. How many bricks measuring 22.5cm by 10cm by 7.5cm can be painted out of this container?
23. Three equal cubes are placed adjacently in a row. Find the ratio of total surface area of the new cuboid to the surface area of 3 cubes.
24. An agricultural field is in form of a rectangle of length 20 m and width 14m. A pit 6m long, 3m wide and 2.5m deep is dug in the corner of the field and earth taken out of pit is spread uniformly over the remaining area of field. Find the extent to which level of field has been raised.
25. A swimming pool is 20 m long, 15m wide and 3m deep. Find the cost of repairing the floor and wall at the rate of Rs25 per square metre.
26. Find the number of bricks measuring 25 cm x 12.5cm x 7.5cm that are required to construct a wall 6m long, 5m high and 0.5m thick, while the cement and sand mixture occupies 1/20 of volume of the wall.
27. Find the capacity of water tank, in litres, whose dimensions are 4.2m, 3m and 1.8m?
28. External dimensions of a closed wooden box are in the ratio 5:4:3. If the cost of painting its outer surface at the rate of Rs5 per $dm^2$is Rs11,750. Find the dimensions of the box.
29. Find the volume of cube if surface area is 294sq. cm
30. Find the volume of cube if one face of it has area 144 sq.cm
31. Volume of a cube is 3375 cubic cm. Find its total surface area.
32. In a temple there are 25 cylindrical pillars. The radius of each pillar is 28cm and height 4m. Find the cost of painting curved surface area of pillars at the rate of Rs8 per m^2.
33. A rectangular sheet of paper 44cm x 18 cm is rolled along its length and a cylinder is formed. Find the radius and curved surface area of the cylinder.
34. The diameter of a roller is 120 cm, length is 84 cm. If it takes500 complete revolutions to level the ground. Find the area of the play ground.
35. Two cylinder cans have bases of the same size. The diameter of each is 14cm.One of the cans is 10cm high and the other is 20 cm high. Find the ratio of their volume.
36. The radius and height of a cylinder are in the ratio 3:2 and its volume is 19,404cm^3.Find its radius and height.

37. The capacity of a closed cylindrical vessel of height 1m is 15.4L. How many square metres of metal sheet should be needed to make it?

38. A hollow garden roller of 42cm diameter and length 152cm is made of cast iron 2 cm thick. Find the volume of iron used in the roller

39. The radii of 2 right circular cylinder are in the ratio 2:3 and their heights in the ratio 5 : 4. Calculate the ratio of their curved surface areas and also ratio of their volumes.

40. Can a polyhedron have for its faces i) 3 triangles ii) a square and 4 triangles.

41. Using Euler's formula find the unknown

Faces	?	6	20
Vertices	6	?	12
Edges	12	9	?

42. How many faces, edges and vertices does a triangular prism have?

Chapter 15

Statistics and Probability

1. The probability that it will rain tomorrow is0.75. What is the probability that it will not rain tomorrow?

   a) .25 b).145 c) .15 d)none of these

2. When three coins are tossed simultaneously, number of possible outcomes are

   a) 4 b) 5 c) 8 d) 7

3. A letter is chosen at random from the letters of the word 'Assassination'. The probability of letter chosen is a vowel

   a) 6/13 b) 7/13 c) 1 d)4/13

4. The difference between the highest and lowest value of observation

   a) mean b) range c) total frequency d) sum of observation

5. Tally marks are used to find

   a) frequency b) lower limit c) upper limit d) class mark

6. In a given class interval 40-50, 40 is referred to as

   a) lower limit b) upper limit c) class mark d) frequency

7. Number of times an observation occurs in a given data is known as

   a) frequency b) range c) mean d)none of the above

8. What is the probability of choosing a consonant from the alphabets is

   a) 21/26 b) 5/26 c) 1/26 d) 3/26

9. Given below is temperature in degree Celsius for 10 days - –6, −8, 0, 3, 2, 0, 1, 5, 4, 4. What is the range of the given data

   a) 8° C b) 13° C c) 10°C d) 13°C

10. Prepare a frequency table of the following ages (in years) of 30 students of class VIII of your school.

    13, 14, 13, 12, 14, 13, 14, 15, 13, 14, 13, 14, 16, 12, 14, 13, 14, 15, 16, 13, 14, 13, 12, 17, 13, 12, 17, 13, 12, 13,

11. The marks obtained by 40 students of class VIII in an exam is given below

    18, 8, 12, 0, 8, 16, 12, 5, 23, 2, 16, 23, 2, 10, 20, 12, 9, 7, 6, 5, 3, 5, 13, 21, 13, 15, 20, 24, 1, 7, 21, 16, 13,18, 23, 7, 3, 18, 7, 6

    i) Represent the data in form of frequency distribution table using class size 5.

    ii) Prepare a histogram of the data.

12. The following is distribution of weights (in kg) of 52 persons

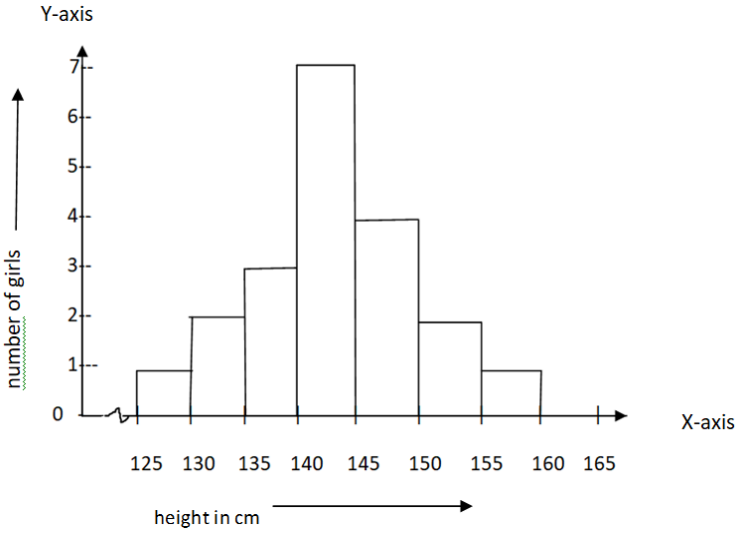
Weight in Kg	Persons
30-40	10
40-50	15
50-60	17
60-70	6
70-80	4

i) What is the lower limit of class 50 – 60?

ii) Find the class mark of classes 40—50, 60 – 70

iii) What is class size of the given class intervals?

13.



i) What information is given by the graph?

ii) Which group has maximum girls?

iii) How many girls have height of 145cm or more?

iv) If we divide the girls in 3 categories, how many would be there in each category

a) 150cm & more-Group A

b) 140cm to less than 150 – Group B

c) Less than 140cm—Group C

14. In the hypothetical sample of 20 people amount of money with them was found to be as follows 114, 108, 100, 98, 101, 109, 107, 119, 126, 131, 136, 143, 156, 169, 182, 195, 207,219, 235, 118. Draw a histogram of frequency distribution taking one of the class interval as 80—100.

15. The following data shows the number of students opting different subjects in a college.

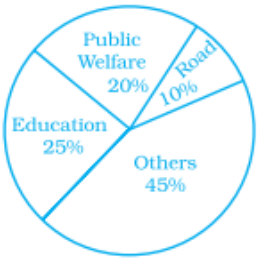
Subject	English	Maths	Physics	Chemistry	Economics	Commerce
No. of Student	45	60	20	30	10	15

Construct a pie-diagram to represent the above data

16. Draw a pie-diagram for the following data of the investment pattern in a 5 year plan

Agriculture	Irrigation & Power	Small Industries	Transport	Social service
15%	30%	40%	10%	5%

17. The following pie chart depicts the expenditure of a state government under different heads.

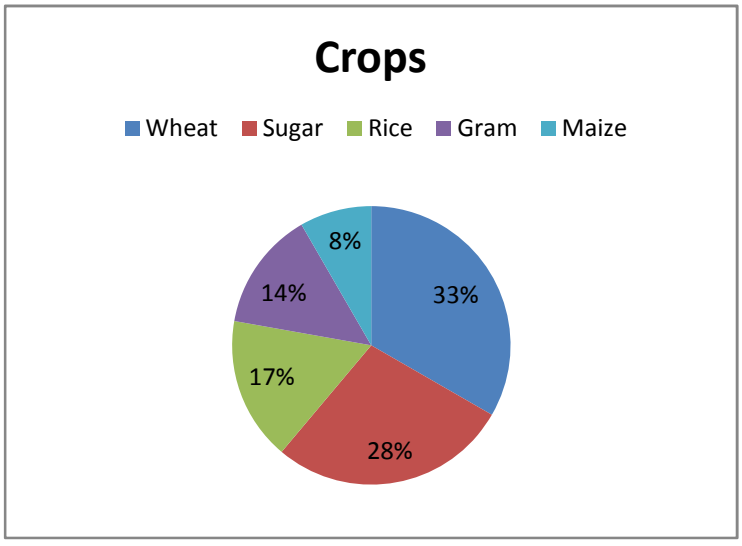


i. If the total spending is 10 crores, how much money was spent on roads?
ii. How many times is the amount of money spent on education compared to the amount spent on roads?
iii. What fraction of the total expenditure is spent on both roads and public welfare together?

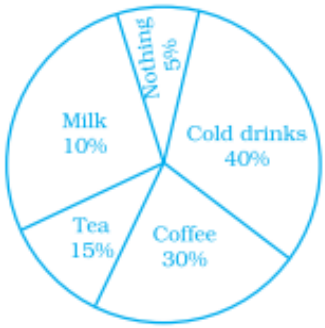
18. Following is the breakup of expenditure of family on different items of consumption
Construct a pie- chart for the following data and also find the percentage of the expenditure on food.

Items	Food	Clothing	Rent	Education	Fuel	Medicine	Misc.
Expenditure	1600	200	600	150	100	80	270

19. The pie- chart given in the figure shows the annual agricultural production of Indian state. If the total production of all commodities is 81000 tonnes , find the production in tonnes i)wheat ii)sugar iii)rice iv)gram v)maize



20. A survey was carried out to find the favourite beverage preferred by a certain group of young people. The following pie chart shows the findings of this survey. From this pie chart answer the following:
(i) Which type of beverage is liked by the maximum number of people.
(ii) If 45 people like tea, how many people were surveyed?



21. A bag contains 5red marbles, 6 white marbles and 5 green marbles. What is the probability if one marble is taken out of the bag at random, it will be i) red ii) white iii) green.
22. What is the probability of a number selected from the numbers 1, 2, 3 - - - - - - -15 is multiple of 4?
23. If 2 dices are thrown simultaneously , what is the probability of getting
i) 8 as the sum ii) a doublet of prime number iii) a doublet of odd numbers
24. A card is drawn at random from pack of cards. Find the probability that card drawn is
i)a black king ii)queen iii)the seven of clubs iv) a card of heart
25. If in a class there are 20 boys and 5 girls, which carries a higher probability that a copy belongs to girl or boy. Give its value.
26. Radha has a bag containing yellow and white balls. The probability of choosing a white ball is 2/5. If the total number of balls is 25. Find the number of yellow balls in the bag.
27. From numbers 1 to 40. Find the probability of getting multiple of 5.
28. In a single throw of 3 coins, find the probability of i) all three heads ii) at least three heads.
29. In a box of 50 batteries, it is known there are five defective batteries, what is the probability of drawing out i) defective batteries ii) not defective batteries.

Chapter 16

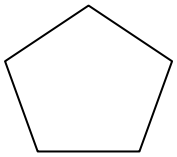
Rotational Symmetry

1. What is the angle of rotation needed to rotate the octagon on itself

   a) 45, 135 b) 90, 180 c)both a and b d)none of the above

2. What are the angle of rotation needed to rotate this pentagon on to itself

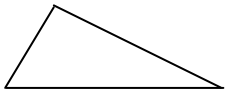
   a) 72^0 b)144^0 c)$72^0$and 144^0 d)none of the above



3. What is (are) the angle of rotation needed to rotate the right angled triangle onto itself

   a)60^0 b)120^0 c)180^o d)none of the above

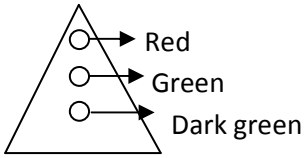
4. What is the order of rotational symmetry of the given figure



   a) 1 b) 0 c) 3 d) 4

5. Which of the following has rotational symmetry of the order 4?

   a)



   b)

   c)

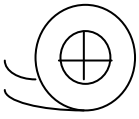
6. What is the order of symmetry of the figure?

   a) 3 b) 2 c) 4 d) 1

7. Which figure has the highest order of rotational symmetry?

   a) Regular hexagon b) Equilateral triangle c)Square d)Regular Octagon

8. Does the given figure have rotational symmetry



   a) Yes b) No

9. A regular hexagon has which order of rotation
   a) 3 b) 4 c) 6 d) 2
10. Which of the following letters have both horizontal and vertical lines of symmetry?
11. a)X b)E c) M d)K
12. Which of the following letters of English alphabets have more than 2 lines of symmetry?
    a)Z b)O c)E d)H
13. The order of rotational symmetry in the figure given is
    a) 4 b)2 c)1 d)infinitely many

14. In the word 'English' which letter show rotational symmetry and of order more than 1?
15. 
    Find the angle and order of rotation of the given figure
16. Find the order of rotation of figure having 120^0as the angle of rotation.
17. What will be angle of rotation of figure whose order of rotation is i) 4 ii) 5
18. What is the angle of rotation of a rhombus about its point of intersection of its diagonal?
19. What is the order of rotation of alphabet M?
20. Find the angle and order of rotation for the following figures: square, rectangle, parallelogram, semi circle, isosceles triangle, equilateral triangle, regular octagon.