



# DAV PUBLIC SCHOOL, JHARSUGUDA

## CLASS - VIII

### CHAPTER 1 TO 16

### CH-1. SQUARES AND SQUARE ROOTS

#### 1Mark Questions

1. The least numbers which must be subtracted from 4360 to make it a perfect square is \_\_\_\_.
2. If  $140\sqrt{x}+315=1015$ , then x is equal to \_\_\_\_.
3. The value of  $(0.9)^2 - (0.1)^2$  is \_\_\_\_.
4. The greatest number of 4 digit which is a perfect square is \_\_\_\_.
5. The least square number which is exactly divisible by 10,12,15 and 18 is \_\_\_\_.
6. How many non-square numbers are there between  $20^2$  and  $21^2$  ?
7. How many square numbers are there between 1 and 50 .
8. How many zeroes are there in the cube of 1000?
9. What is the value of  $\sqrt{176 + \sqrt{2401}}$
10. What is the sum of first six odd natural number?

#### 2Marks Questions

1. Find the square root of 144 by the method of repeated subtraction.
2. The area of a square field is  $8281 \text{ m}^2$ . Find the length of its side.
3. Find the square root of  $4\frac{53}{169}$
4. Simplify  $(\sqrt{81} + \sqrt{0.81} + \sqrt{0.0081}) \times \sqrt{10000}$
5. Find a Pythagorean triplet corresponding to  $n=5$ .
6. Is 900 a perfect square? How?

#### 3Marks Questions

1. Find the smallest number by which 1800 must be multiplied so that it becomes a perfect square. Also find the square root of the perfect square so obtained.
2. Is 2352 a perfect square? if not, find the smallest number by which 2352 must be multiplied so that the product is a perfect square. Find the square root of new number.
3. 1225 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.

4. Find the smallest number by which 3645 should be divided so as to get a perfect square. Also, find the square root of the number so obtained.

5. Find the square root of 7744 by prime factorization method.

6. Find the square root of 39204.

7. Find the greatest four digit number which is a perfect square.

8. For each of the following numbers, find the smallest number by which we divide it so as to get a perfect square. Also find the square root of the square numbers so obtained.

(a)37845

(b)2800

(c) 45056

9. The students of Class VIII of a school donated Rs 2401 for Prime Minister National Relief Fund. Each student donated as many rupees as the number of students in the Class. Find the number of students in the Class.

10. There are 500 children in a school. For a P.T. drill they have to stand in such a manner that the number of rows is equal to number of columns. How many children would be left out in this?

11. Using prime factorization, find the square root of 7056.

12. Find the greatest number of 6 digits which is a perfect square plot.

13. Find the square root of 7 upto 3 decimal places.

14. Find the square root of  $2\frac{1}{12}$  correct to 3 decimal places.

15. Find the square root of: 0.00126736 by division method.

16. A school collected Rs 2304 as fees from its students. If each student paid as many rupees as there were students in the school, how many students were there in the school?

17. 2025 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.

18. 10404 students are sitting in a lecture room in such a manner that there are as many students in a row as there are rows in a lecture room. How many students are there in each row of a lecture room?

19. Find a Pythagorean triplet corresponding to  $n=5$ .

20. Find the least number of 5 digits which is a perfect square.

21. Find the approximate length of the side of a square whose area is equal to the area of a rectangle, with sides 15cm and 16cm.

22. The area of a square field is  $2\frac{113}{256}$  square metres. Find the length of the side of the field.

### 4Marks Questions

1. Find the square of 2.5 correct upto 3 decimal places.

2. Find the square root of  $2\frac{1}{12}$  correct to 3 decimal places.

3. Find the square root of 90 by Estimation method.

4. The area of a square field is  $5184\text{ m}^2$ . A rectangular field, whose length is twice of its breadth, has its perimeter equal to the perimeter of the square field. Find the area of the rectangular field.

5. The cost of leveling a square field at Rs.15 per square metre is Rs.19935. Find the cost of fencing the field at Rs.22 per metre.

6. If  $\sqrt{2}=1.414$ ,  $\sqrt{3}=1.732$ ,  $\sqrt{5}=2.236$ , find the value of i)  $\sqrt{72} + \sqrt{48}$  ii)  $\sqrt{\frac{125}{64}}$

7. The product of two numbers is 1296. If one of the numbers is 16 times the other, find the numbers.

8. Find the three numbers in the ratio 2:3:5, the sum of whose squares is 608.

## CH-2. CUBES AND CUBE ROOT

### 1Mark Questions

1. Show that 46656 is a perfect cube.
2. What is the ones digit in the cube of 38 ?
3. Find the sides of a cubical box whose volume is  $64 \text{ cm}^3$ .
4. How many perfect cubes are there between 1 and 1000?.
5. Is the cube of 4913 an odd number? Why?
6. Volume of a cube is  $9261 \text{ cm}^3$ . Find its edge.
7. Find the cube root of 0.064.
8.  $1 \text{ km}^3 = \text{_____} \text{ cm}^3$ .
9. The cube of any multiple of 3 is always divisible by \_\_\_\_\_.
10. Find the cube of 0.2.
11. Is 9000 a perfect cube?
12. Write all the digits that would appear as the last digits of their respective cubes.

### 2Marks Questions

1. By which smallest number should 42592 be divided so that the quotient is a perfect cube?
2. By which smallest number should 704 be divided to obtain a perfect cube?
3. Show that 384 is not a perfect cube.
4. By which smallest number should 648 be multiplied so that the product is a perfect cube?
5. Find the number whose cube is 27000.
6. Find the cube root of  $-3375$ .
7. Find the cube root of the number 614125 using prime factorization method.
8. Find the cube of square of 0.2

### 3Marks Questions

1. Find the smallest natural number by which 392 must be multiplied so that the product is a perfect cube .
2. Find the cube root of  $27 \times (-2744)$
3. Show that 0.001728 is a cube root of a rational number
4. Multiply 10584 by the smallest number so that the product is a perfect cube.
5. The volume of a cube is  $4096 \text{ cu.m}$  . Find the length of the side of cube.
6. Find the cube root of the number 110592 by the estimation method.
7. Evaluate:  $\sqrt[3]{3375 \times (-729)}$
8. Find the volume of a cube, one face of which has an area of  $81 \text{ m}^2$ ?
9. If the surface area of a cube is  $486 \text{ cm}^2$ , find its volume.
10. Find volume of a cube whose surface area is  $96 \text{ cm}^2$  .
11. Find the number by which 68600 must be multiplied to get a perfect cube.
12. What is the smallest number by which 288 must be multiplied so the product is a perfect cube?
13. Show that if a number is doubled, then its cube becomes eight times the cube of the given number.
14. Which smallest natural number should divide 1188 so that the quotient is a perfect cube?
15. Is 292 a perfect cube? If not, find the smallest natural number by which it must be multiplied so that the product is a perfect cube.

### 4 Marks Questions

1. Find the smallest number which multiplied with 3600 will make the product a perfect cube. Further, find the cube root of the product.
2. Find the approximate length of the side of a cube whose volume is equal to a cuboid having dimensions 100m, 11m and 9m ?
3. Divide the number 52728 by the smallest number so that the quotient is a perfect cube. Also find the cube root of the quotient.

4. Prove that if a number is tripled, then its cube is 27 times the cube of the given number.

5. Evaluate :  $\sqrt[3]{\frac{0.008}{0.027}} \div \sqrt[3]{\frac{729}{512}} \times \frac{27}{16}$

6. Difference of two perfect cube is 189. If the cube root of the smaller of the two number is 3, find the cube root of the larger number.

7. Three numbers are in the ratio 1:2:3 and the sum of their cubes is 4500. Find the numbers.

8. Find the area of one face of a cube if its volume is  $512 \text{ cm}^3$ .

## CH-3.EXPONENTS AND RADICALS

### 1Mark Questions

1. Evaluate  $[(1/2)^{-1} - (1/3)^{-1}]^{-1}$ .
2. What is the value of  $(-1)^{-1}$ ? (1)
3. What is the reciprocal of  $(-3/4)^0$ ?
4. What is the multiplicative inverse of  $2^7$ ?
6. Find x if  $2^{2x-1} = \frac{1}{8^{x-3}}$
7. What is the value of  $\sqrt[3]{8}$ ?
8. The value of  $(512)^{-2/9}$
9. Find  $10^y$ , if  $10^{2y} = 25$
10. Find the value of  $5^{-3} \times \left(\frac{1}{5}\right)^3$ .
11. Simplify  $2^5 / 2^{-6}$ .
12. Express  $4^{-3}$  as a power with base 2.
13. Find the value of  $(2/3)^{-2}$ .

### 2Marks Questions

1. Simplify:  $(5/8)^{-7} \times (8/5)^{-5}$ .
2. Find the value of m for which  $5^m \div 5^{-3} = 5^5$
3. Find m if  $(\sqrt{3})^5 \times 92 = 3m \times 3\sqrt{3}$
3. Compare  $7 \times 10^{-6}$  and  $129 \times 10^{-7}$
4. Simplify :  $\left(\frac{4}{3}\right)^{2/3} \times \left(\frac{4}{3}\right)^{1/3}$
5. Evaluate:  $\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{-5}$
6. Find value of  $(3^0 + 4^{-1}) \times 2^2$
7. Simplify  $(-4)^{-10} \times (-4)^5$
8. Evaluate:  $(5^{-1} \times 8^2) / (2^{-3} \times 10^{-1})$ .
9. Find the value of 'm' for which  $6^m / 6^{-3} = 6^5$ .
10. Simplify:  $(-3)^5 \times (5/3)^5$ .
11. The size of a plant cell is 0.00001275 m. express it in standard form.
12. Simplify:  $(13)^{\frac{4}{3}} \div (13)^{\frac{1}{3}}$
13. Find the value of:  $\left(\frac{1}{4}\right)^{-2} + \left(\frac{1}{3}\right)^{-3} + \left(\frac{1}{2}\right)^{-4}$

14. Simplify:  $\left[\left(\frac{-4}{5}\right)^{-2}\right]^2$

### 3Marks Questions

15. Simplify:  $\left(\frac{x^b}{x^c}\right)^{b+c-a} \cdot \left(\frac{x^c}{x^a}\right)^{c+a-b} \cdot \left(\frac{x^a}{x^b}\right)^{a+b-c}$

16. If the thickness of a paper sheet is 0.0016 cm, find the thickness of 100 sheets. Express the answer in standard form. (4)

17. Evaluate :  $\left(\frac{27}{125}\right)^{-2/3} \times \left(\frac{27}{125}\right)^{-4/3}$

18. Evaluate:  $\left[\left\{\left(625\right)^{-1/2}\right\}^{1/4}\right]^2$

19. If  $a=2$  and  $b=3$ , then find the value of  $a^b + b^a$

20. Find value of  $27^{\frac{2}{3}} \times 27^{\frac{1}{3}-y} \times 3^{3y} \times 27^{\frac{-4}{3}}$

21. Find  $x \left(\frac{-7}{8}\right)^{\frac{3}{2}} \left[\left(\frac{-7}{8}\right)^{\frac{2}{3}} \div \left(\frac{-7}{8}\right)^{\frac{-1}{3}}\right] = \left(\frac{-7}{8}\right)^{2+x}$

23. Find the value of x so that  $(2^{-1}+4^{-1}+6^{-1}+8^{-1})^x = 1$

24. The cells of a bacteria double in 30 minutes. A scientist begins with a single cell. How many cells will be there after 12 hours ?

## CH-4. DIRECT AND INVERSE VARIATION

### 1Mark Questions

1. Do x and y vary directly in the given table?

X	4	20	30	40	60	80
Y	2	8	10	15	20	25

2. If y is directly proportional to  $1/x$  and  $x=2$  when  $y=20$  what is the value of x when  $y=1.25$ ?
3. If x and y vary inversely and  $y=45$ . Find x when constant of variation=9
4. What do you mean by direct and inverse variation?
5. If  $x=5y$ , then x and y vary \_\_\_\_\_ with each other.
6. If  $xy=10$ , then x and y vary \_\_\_\_\_ with each other.
7. x and y are in direct variation. If  $y=10$  then  $x=5$ . Find the value of y when  $x=10$ .
8. Time taken to cover a distance by a car and speed of the car are said to be in ---- variation.
9. x and y are in inverse proportion. If  $y=15$  then  $x=3$ , find the value of y when  $x=9$ .
10. Time taken to cover a distance by a car and speed of the car are said to be in ---- variation.

### 3Marks Questions

1. If 12m of a uniform iron rod weights 42 kg. What will be the weight of 6m of same rod?
2. A train 360m long is running at a speed of 45 km/hr. What time will it take to cross a 140m long bridge?
3. A train 210m long took 12 seconds to pass a 90 m long tunnel. Find the speed of the train.
4. 68 boxes of certain commodity require a shelf- length of 13.6 m. How many boxes of the same commodity would occupy a shelf- length of 20.4 m?
5. 11 men can dig 6.75m long trench in one day. How many men should be employed for digging 27m long trench of the same type in one day?
6. A worker is paid Rs.210 for 6 days work. If his total income of the month is Rs. 875, for how many days did he work?
7. If 12m of a uniform iron rod weights 42 kg. What will be the weight of 6m of same rod?
8. If the speed of a train be 92.4 km/h, how many meters would it cover in 20 minutes
9. 5 bags of rice weigh 150 kg. How many such bags of rice will weigh 900 kg?
10. If 20 men can reap a field in 8 days, then 16 men will reap the same field in how many days?
11. 6 pumps working together empty a tank in 28 minutes. How long will it take to empty the tank if 4 pumps working together?
12. Walking at the  $\frac{3}{4}$ th of his usual speed a man is late by  $2\frac{1}{2}$  hours . Find his usual time?
13. If a train 120m long crosses a man in 15 seconds .Then find the speed of the train.
14. A train 210m long took 12 seconds to pass a 90m long tunnel. Find the speed of the train.

### 4Marks Questions

1. 120 men had food provisions for 200 days. After 5 days, 30 men die due to an epidemic. How long will the remaining food last?
2. A car can finish a certain journey in 10 hours at the speed of 48km/hr. By how much should its speed be increased so that it may take only 8 hours to cover the same distance?
3. In a hostel of 50 girls, there are food provisions for 40 days. If 30 more girls join the hostel, how long will these provisions last?

4. A train 400m long is running at a speed of 72km/hr. How much time does it take to cross a telegraph post?
5. If 5 men or 7 women can earn Rs. 875 per day, how much would 10 men and 5 women earn per day ?
6. The cost of 16 packets of salt, each weighing 900 g, is Rs 84. Find the cost of 27 packets of salt, each weighing 1kg.
7. If 3 persons can weave 168 shawls in 14 days, how many shawls will be woven by 8 persons in 5 days?
8. If the cost of transporting 160kg of goods for 125 km is Rs 60. What will be the cost of transporting 200kg of goods for 400km?
9. 6 oxen and 8 cows can graze a field in 28days. How long would 9 oxen and 2 cows take to graze the same field?
10. 6 men working 8 hours a day, earn Rs 8400 per week. What will be the earning per week of 9 men who work for 6 hours a day?
11. A motor boat covers 20 km in 4 hours. What distance will it cover in 7 hours (speed remaining the same) ?

12. Find 'a' in the following table. When

X	2	5
Y	10	a

- (i)  $x, y$  vary directly (ii)  $x, y$  vary inversely
13. A train is moving at a uniform speed of 72 km/h .How far will it travel in 25 minutes? Find the time required to cover a distance of 216 km?
  14. A school has 8 periods a day each of 45 minutes duration. How long would each period be , if the school has 9 periods a day, assuming the number of school hours to be the same.
  15. A garrison of 500 men had provision for 60 days. A reinforcement of 500 men arrived, the food will now last for how many days.
  16. A fort had provision for 300men for 90days. After 20days, 50men left the fort. How long would the food last at the same rate?
  17. A certain number of men finish a piece of work in 100 days. If however there were 10 men less, it would take 10 days more for the work to be finished. How many men were these originally?
  18. How long a train 120m long take to clear a platform 130m long, if its speed is 50km|h?
  19. A shopkeeper has enough money to buy 40 books, each costing Rs125. How many books he can buy if he gets a discount of Rs25 on each book?
  20. Ravi starts for his school at 8:20a.m. on his bicycle. If he travels at a speed of 10 km/hr, then he reaches his school late by 8 minutes but on travelling at 16 km/hr he reaches the school 10 minutes early. At what time does the school start ?
  21. Ms. Amisha has to drive from Jhareda to Ganwari. She measures a distance of 3.5 cm between these village on the map. What is the actual distance between the villages if the map scale is 1 cm = 10 km ?

## CH – 5 PROFIT, LOSS AND DISCOUNT

### 1Mark Questions

1. **The** marked price of a book is Rs.250 and 5% discount is given. Find the selling price of the book.
2. By selling a bag for Rs180, a shopkeeper loses Rs.20. Find the cost price of the bag.
3. C.p. of a pair of shoes is Rs350. If VAT is Rs.50, find the S.P. of the a pair of shoes.
4. If S.P. of a shirt is Rs.500 and loss is Rs.50, Find the C.P. of the shirt.

### 2Marks Questions

- 1 If by selling an article for Rs100, a man gains Rs15 then find his gain percent.

- 2 Marked price of a frock is Rs220.A discount of 20% is announced on it. What is the amount of discount.
- 3 A towel is marked at Rs50 and VAT charged on it is 5%.Find the selling price of towel.
- 4 What is the loss percent if a man loses Rs.10 on selling an article for Rs100?
- 5 Reena purchased a dress for Rs5400 including 8% VAT. Find the price of the dress before VAT was added.
- 6 Find the rate of discount when M.P. =Rs1000 and S.P. =Rs750 .

### 3Marks Questions

- 1 When a commodity is sold for Rs.174, there is a loss of 25%. What is the cost price of the commodity ?
  - 2 Henry sold a bicycle at 8% gain. Had it been sold for Rs 75 more, the gain would have been 14 %. Find the cost price of the bicycle.
  - 3 Mike sold a watch at a loss of 5%. Had he sold it for Rs 104 more, he would have gained 8%. Find the selling price of the watch.
  - 4 A reduction of 20% in the price of sugar enables Mrs. Jones to buy an extra 5 kg of it for Rs 320.
  - 5 Calvin purchased some candles at 3 for Rs 5 and sold them at 5 for Rs. 12. Thus, Calvin gained Rs 143 in all. How many candles did Calvin purchase?
  - 6 A carpenter gets Rs 470 more if instead of selling a Chair at a loss of 10%, it is sold at a gain of 10%. Find the cost price of the Chairs.
  - 7 A cycle was sold at a gain of 10%. Had it been sold for Rs 65 more, the gain would have been 14%. Find the cost price of the cycle.
  - 8 If the selling price of an air conditioner is equal to  $\frac{11}{3}$  of its cost price, find the gain per cent.
9. By selling an umbrella for Rs 115.20, Ken loses 10%. At what price must he sell it to gain 5%?
10. By selling a table for Rs 322, a carpenter gains 15%. At what price should he sell it to gain 25%?
11. A television is sold for Rs 3120 at a loss of 4%. Find the gain or loss percent if the television is sold for Rs. 3445.
22. If cost price of 18 mangoes is the same as the selling price of 16 mangoes , find the gain percent.

### 4Marks Questions

1. Lucy sold two skirts for Rs 2185 each. On one she lost 5%, while on the other she gained 15%. Find her gain or loss per cent in the whole transaction.
  2. A person sold two refrigerators for Rs 990 each. In one refrigerator he gains 10% and on the other refrigerator he loses 10%. Calculate his gain or loss per cent in the whole transaction.
  3. A grocer bought tea which cost Rs 4500. He sold one-third of tea at a gain of 10%. At what gain per cent must the remaining tea be sold to have a gain of 12% on the whole?
  4. Aaron buys a plot of land for Rs 96000. He sells  $\frac{2}{5}$  of it at a loss of 6%. At what gain percent should he sell the remaining part of the plot to gain 10% on the whole?
5. By selling a bed sheet for Rs 640, a shopkeeper earns a profit of 28%. How much did it cost the shopkeeper ?
5. A fruit seller purchases oranges at the rate of 3 for Rs.5 and sells them at 2 for Rs.4. Find his profit percent.
  6. Pradeep bought 2 horses at Rs40, 000 each. He sold one horse at 15% gain. But he had to sell the second horse at a loss. If he had suffered a loss of Rs3600 on the whole transaction ,find the selling price of the second horse.
  7. Nick purchased two hand bags for Rs 750 each. He sold these bags, gaining 6% on one and losing 4% on the other. Find his gain or loss per cent in the whole transaction.
  8. Sam buys 40 kg of wheat at Rs 6.25 per kg and 30 kg of wheat at Rs 7 per kg. At what rate per kg should he sell the mixture to gain 5% on the whole?
9. Labbo allows a discount of 10% on his goods and still makes a profit of 20%. Find the cost price of an item whose marked price is Rs1700.
  10. A tricycle is sold at gain of 16%. Had it been sold for Rs100 more , the gain would have been 20%. Find the cost price of the tricycle.
  11. Find the marked price of a washing machine which is sold at Rs8400 after allowing a discount of 16%.

12. The difference between two selling prices of a shirt at profit of 4% and 5% is Rs.6 . Find (a) C.P. of the shirt (b) the two selling prices of the shirt.
13. A man sold two cows for Rs2970 each. On one he gains 10% while on the other he loses 10%. How much percent does he gain or lose on whole transaction?
14. A cycle merchant allows 25% discount on the marked price of the cycles and still makes a profit of 20%. If he gain Rs360 over the sale of one cycle, find the marked price of the cycle.
15. The marked price of a computer is Rs22,000. After allowing a 10% discount , a dealer still makes a profit of 20%. Find the cost price of the computer.
16. How much percent above the cost price should a shopkeeper mark his goods so that after allowing a discount of 20% on the marked price , he gains 12% ?
17. Bharati bought 2 fans for Rs1200 each. She sold one at a loss of 5% and the other at a profit of 10%' Find the total profit or loss.
18. A grocer purchased 200 kg of rice at Rs 25 per kg. He sold 80 kg of it at a gain of 10% and 40 kg at a loss of 4%. At what rate per kg should he sell the remainder to gain 8% on his total investment?
19. Hilary bought two pairs of jeans for Rs 725 each. She sold one of them at a gain of 8% and the other at a loss of 4%. Find her gain or loss per cent in the whole transaction.

## CH-6 COMPOUND INTEREST

### 3Marks Questions

1. At what rate of interest (compounded annually) will a sum of Rs.6, 250 amount to Rs.7, 290 in two years?
2. Find principal if the interest is compounded at the rate of 10%pr annum for 2 years is Rs.420?
3. If P is the principal, then compound interest at the rate of 10% per annum compounded annually for 2 years is?
4. The population of a city is 20,000.if annual birth rate and annual death rate are 6% and 3% respectively then find the population of city after two years.
5. In what time will Rs. 3,300 become Rs.3, 399 at the rate of 6% per annum, if interest is compounded half yearly?
6. Find the compound interest on Rs.25, 000 at rate of 12%per annum for 3 years.
7. A TV was bought at price of Rs.21, 000. After one year the value of TV depreciated by 5%. Find the value of TV after one year.
8. A certain sum of money at compound interest becomes Rs. 7,396 in 2 years and Rs.7, 950.70 in 3 years. Find the rate.
9. Find the compound interest on Rs.11, 200 at  $17\frac{1}{2}$  % per annum for 2 years.
10. On what sum will the compound interest at 5% per annum for 2 years compounded annually be Rs.164?
11. At what rate percent will a sum of Rs.640 be compounded to Rs.774.40 in 2 years?
12. The population of a town is increasing at rate of 8% per annum what will be the population of town after 2 years if present population is 12,500?
13. Find the compound interest on Rs.15 625 at 16%p.a. for 9 months when compounded quarterly?
14. Rohit deposited Rs.10, 000 a bank for 6 months. If the bank pays compound interest at 12%p.a. reckoned quarterly, find the amount to be received by him on maturity?
15. At what rate percent per annum will sum of Rs.4, 000 yield compound interest of Rs.410 in 2 years?
16. Compute the compound interest by unitary method on Rs.14000 for 1 year at rate of 10%p.a. compounded half yearly.
17. Raju purchased an old scooter for Rs. 16000.if the cost of scooter after 2 years depreciates to Rs.14440, find the rate of depreciation.
18. In a factory the production of scooter rose to 46305 from 40000 in 3 years. Find the annual rate of growth of the production of scooters.
19. You invest Rs 5000 at 12% interest compounded annually. How much is in the account after 2 years, assuming that you make no subsequent withdrawal or deposit?

20. Find the amount and the compound interest on Rs 4000 at 10% p.a. for  $2\frac{1}{2}$  years.

21. Calculate the compound interest for the second year on Rs 8000 invested for 3 years at 10% p.a.

### 4Marks Questions

1. The difference between compound interest and simple interest on certain sum of money at 10% per annum for 2 years is Rs. 500. Find the sum when the interest is compounded annually.

2. A man invests Rs 5000 for three years at a certain rate of interest, compounded annually. At the end of one year it amounts to Rs 5600. Calculate (i) the rate of interest per annum, (ii) the interest accrued in the second year, (iii) the amount at the end of the third year.

3. A sum of Rs 9600 is invested for 3 years at 10% per annum at compound interest. (i) What is the sum due at the end of the first year? (ii) What is the sum due at the end of the second year? (iii) Find the compound interest earned in two years. (iv) Find the difference between the answers (ii) and (i) and find the interest on this sum for one year. (v) Hence write down the compound interest for the third year.

4. Find the difference between the S.I. and C.I. on Rs 2500 for 2 years at 4% p.a., compound interest reckoned semi-annually.

5. A man invests Rs 6500 for 3 years at 4.5% p.a. compound interest reckoned yearly. Income tax at the rate of 20% is deducted at the end of each year. Find the amount at the end of the third year.

2829. Find the sum which amounts to Rs 9261 at 10% p.a. compound interest for 18 months, interest payable half-yearly.

6. On what sum will the compound interest for 2 years at 5% p.a. be Rs 246?

7. On what sum will the compound interest (reckoned yearly) for 3 years at  $6\frac{1}{4}\%$  per annum be Rs 408.50?

8. A man invests Rs 1200 for two years at compound interest. After one year his money amounts to Rs 1275. Find the rate of compound interest. Also find the amount which the man will get after 2 years correct to the nearest paise.

9. At what rate percent per annum compound interest will Rs 2000 amount to Rs 2315.25 in 3 years?

10. If Rs 50000 amounts to Rs 73205 in 4 years, find the rate of compound interest payable yearly. In what time will Rs 15625 amount to Rs 17576 at 4% per annum compound interest? .

11. Kamala borrowed Rs 26,400 from a Bank to buy a scooter at a rate of 15% p.a. compounded yearly. What amount will she pay at the end of 2 years and 4 months to clear the loan?

12. Fabina borrows Rs 12,500 at 12% per annum for 3 years at simple interest and Radha borrows the same amount for the same time period at 10% per annum, compounded annually. Who pays more interest and by how much?

13. I borrowed Rs. 12,000 from Jamshed at 6% per annum simple interest for 2 years. Had I borrowed this sum at 6% per annum compound interest, what extra amount would I have to pay?

14. Vasudevan invested Rs 60,000 at an interest rate of 12% per annum compounded half yearly. What amount would he get (i) after 6 months? (ii) after 1 year?

15. Arif took a loan of Rs 80,000 from a bank. If the rate of interest is 10% per annum, find the difference in amounts he would be paying after 1.5 years if the interest is (i) compounded annually. (ii) compounded half yearly.

16. Maria invested Rs 8,000 in a business. She would be paid interest at 5% per annum compounded annually. Find (i) the amount credited against her name at the end of the second year. (ii) The interest for the 3rd year.

17. If carbon-14 ( $C_{14}$ ) decays at a constant rate in such a way that it reduces to 50% in 5568 years. Find the age of an old wooden piece in which the carbon is only 12.5% of original.

## CH-7. ALGEBRAIC IDENTITIES

### 1Mark Questions

- Find the value of:  $x^2 - 1/5$  at  $x = -1$ .
- What is the value of  $x^2 + y^2 - 10$  at  $x = 0$  and  $y = 0$ ?
- Find the product of  $9a$ ,  $4ab$  and  $-2a$ .
- Simplify  $(a + b + c)(a + b - c)$ .
- Using identities evaluate:  $8.56 \times 11.6$
- Find the following product  $(x + 2)(x + 9)$ .
- If  $(x + 2)(x + a) = x^2 + 5x + 6$ , then  $a$  is equal to \_\_\_\_\_.
- If  $x^2 + y^2 = 57$ ,  $xy = 16$  and  $x$  is greater than  $y$ , then  $(x - y)$  is \_\_\_\_\_.

## 2Marks Questions

- If  $(a + \frac{1}{a}) = \frac{17}{4}$ , find the value of  $(a - \frac{1}{a})$ .
- Using identities evaluate:  $(99)^2$ .
- Simplify  $x(2x - 1) + 5$  and find its value at  $x = -2$ .
- Evaluate the value of  $(95)^2$  using identities.
- Verify the identity  $(x + a)(x + b) = x^2 + (a + b)x + ab$  for  $a = 2$ ,  $b = 3$  and  $x = 4$ .
- Evaluate :  $102 \times 106$  .
- Expand  $(-3x + 4y - 5)^2$
- Using a suitable identity , evaluate :  $(10.5)^2$
- Find the product :  $(a + \frac{1}{5})(a + \frac{2}{5})$
- Find volume of cuboid whose dimensions are  $(x^2 - 2)$ ;  $(2x + 4)$  and  $(x - 3)$ .
- Simplify the expression  $x(2x-1) + 5$  and its value at  $x = -2$ .
- Using suitable identities find  $(xy + 3p)^2$ .
- Simplify :  $(x + y + z)^2 + (x + y - z)^2$
- Factorise the following expression :  $m^2 - 2m - 15$
- factorize :  $x^2 - 1 - 2y - y^2$
- Find  $194 \times 206$  using suitable identity.

## 3Marks Questions

- If  $(a + \frac{1}{a}) = \frac{17}{4}$ , find the value of  $(a - \frac{1}{a})$ .
- Using a suitable identity , evaluate :  $(999)^2$
- Factorise :  $49x^2 + 81y^2 + 144z^2 + 126xy + 216yz + 168xz$
- Find  $(2x + 3y)^2$  using algebraic identities.
- Using the identity  $(a-b)^2 = a^2 - 2ab + b^2$ , find  $(5a - 7b)^2$ .
- Find  $194 \times 206$  using suitable identity.
- If  $x + \frac{1}{x} = 11$ , find the value of  $x^2 + \frac{1}{x^2}$
- If  $5x - 2y = 7$  and  $xy = 2$ , find the value of  $(5x + 2y)^2$

## 4Marks Questions

- If  $x^2 + \frac{1}{x^2} = 27$ , find  $(x - \frac{1}{x})$ .
- Find the following products  $(a - 3b)(a + 3b)(a^2 + 9b^2)$
- Simplify using identity:  $\frac{2.3 \times 2.3 - 0.3 \times 0.3}{2.3 \times 2.3 - 2 \times 2.3 \times 0.3 + 0.3 \times 0.3}$
- If  $a + b + c = 12$  and  $a^2 + b^2 + c^2 = 66$ , find the value of  $ab + bc + ca$ .
- The sum of  $(x + 3)$  observations is  $(x^4 - 81)$ . Find the mean of the observations.
- The area of the circle is given by the expression:  $(\pi x^2 + 10\pi x + 25\pi)$ . Find the radius of the circle.

# CH-8. POLYNOMIALS

## 1Mark Questions

1. Divide:  $6x^2$  by  $3xy$
2. Simplify:  $\frac{24x^3y^2}{3xy}$
3. What is the degree of  $(x^2 + 2x + 2)(x + 1)$  ?
4. Divide:  $15m^2n^3$  by  $5m^2n^2$ .
5. Is  $x^3+x^2+20$  a polynomial?

## 2Marks Questions

1. Divide:  $12x + 5x^2 + 9 + x^3$  by  $x + 2$
2. Divide:  $x^4 - x^3 + x^2 + 5$  by  $(x + 1)$  and write quotient and remainder.
3. Divide:  $7x - 2 + x^3 - 4x^2$  by  $(x - 2)$
4. Using factor method divide:  $x^2 + 3x + 2$  by  $(x + 1)$
5. Using long division method show that  $(3x + 1)$  is a factor of  $12x^3 - 2x^2 + x + 1$ .
6. Divide:  $a^4 - b^4$  by  $a - b$ .
7. Divide and verify:  $2x^2 + 5x + 4$  by  $x + 1$
8. Divide  $6x^3 - 4x^2 + 8x$  by  $\frac{2}{3}x$

## 3Marks Questions

9. Simplify:  $\frac{343x^3-125y^3}{(49x^2+35xy+25y^2)}$
10. Find remainder, If  $\left(x^2 - \frac{4}{x}\right)\left(x^2 + \frac{4}{x}\right)$  is divided by  $x^2 + \frac{4}{x}$ .
11. Divide  $x^{4a} + x^{2a}y^{2b} + y^{4b}$  by  $x^ay^b + y^{2b}$
12. Divide  $a^{12} + a^6b^6 + b^{12}$  by  $a^6 - a^3b^3 + b^6$
13. Using division method state whether:  $z^2 + 3$  is a factor of  $z^5 - 9z$
14. Divide  $(125 - 225x + 135x^2 - 27x^3)$  by  $(5 - 3x)$  and write quotient and remainder.
15. What must be subtracted from  $8x^4 + 14x^3 - 2x^2 + 7x - 8$  So that the resulting polynomial is exactly divisible by  $4x^2 + 3x - 2$ ?

## 4Marks Questions

1. Divide and check:  $y^3+5y^2+12y+9$  by  $y+9$
2. The sum of the remainder obtained when  $x^3+(k+8)x+k$  is divided by  $(x+2)$  or When it is divided by  $(x+1)$  is zero. Find the value of  $k$ .
3. Divide:  $3x(5x^2+3x^2+2)-(2x^2+8-x)$  by  $(3x-2)$  and check your answer.
4. Divide  $(x^4 - 1)$  by  $(-1+x)$  and verify your answer.

## CH-9 LINEAR EQUATION IN ONE VARIABLE

### (1 mark)

1. Find The value of  $x$  which satisfies the equation :  $\frac{2x+1}{x+3} = 1$
2. Three fourth of a number exceeds its one third by 60.find the number.
3. Find a number which when added to 10 times itself gives 264.
4. Solve:  $\frac{2x+1}{3x-2} = \frac{5}{9}$
5. Find a number which is as much greater than 36 as is less than 86.
6. Find the solution of  $3x-4 = 12$
7. Solve:  $5x-9 = 8$
8. What should be subtracted from thrice the rational number  $-8/3$  to get  $5/2$  ?
9. The sum of three consecutive multiples of 7 is 63. Find these multiples.
10. Solve  $3x/4 - 7/4 = 5x + 12$

### (2 marks)

1. Solve and check:  $\frac{2X - \frac{3}{4}}{3X + \frac{4}{5}} = \frac{1}{5}$
2. Present ages of Anu and Raj are in ratio 4:5. Eight years from now there ages will be in ratio 5:6.find present ages.
3. Solve:  $\frac{0.4z \pm 3}{1.5z + 9} = \frac{7}{5}$
4. The sum of two consecutive multiples of 6 is 66.find these multiples.
5. Solve:  $\frac{3x+5}{2x+7} = 4$
6. **Perimeter of a rectangle is 13cm. if its width is  $11/4$  cm, find its length.**
7. **The present of Sita's father is three times the present age of Sita. After six years sum of their ages will be 69 years. Find their present ages.**
8. **The digits of a two-digit number differ by 3. If digits are interchanged and the resulting number is added to the original number, we get 121. Find the original number.**
9.  **$(x-2)/(x+1) = \frac{1}{2}$ . Find  $x$**
10. **Sanjay will be 3 times as old as he was 4 years ago after 18 years. Find his present age.**

### (3 marks )

1. A purse has only one rupee and two rupee coins in it. The number of two rupee is one-third the numbers of one-rupee coins. If the purse has Rs.115, find number of two rupee coins.
2. The width of the rectangle is two-third its length. If the perimeter is 90 metre, find the dimensions of rectangle.
3. One of the angles of a triangle is equal to sum of other two angles. If the ratio of other to angles is 4:5, find the angles of triangle.
4. A boat travels 30Km upstream. In the same period of time it takes to travel 50 Km downstream. If the current of the water is 5 Km per hour, what is the speed of boat in still water?
5. The numerator of a rational number is 3 less than its denominator. If the numerator is increased by 1 and denominator is increased by 3, the number becomes  $\frac{1}{2}$ . Find rational number.
6. **If the sum of two numbers is 30 and their ratio is 2:3 then find the numbers.**
7. **The numerator of a fraction is 2 less than the denominator. If one is added to its denominator, it becomes 1/2 find the fraction.**
8. **Solve  $x/3 + 1/5 = x/2 - 1/4$**
9. **Show that  $x = 4$  is a solution of the equation  $x + 7 - 8x/3 = 17/6 - 5x/8$  .**
10. **Find x for the equation:  $(2 + x)(7 - x)/(5 - x)(4 + x) = 1$**
11. Solve:  $\frac{(1+2x)+(1-2x)}{(4x+1)+(x-3)} = \frac{1}{2}$
12. Solve:  $\frac{x^2-(x+2)(x+3)}{7x+1} = \frac{2}{3}$
13. Solve  $\frac{3-x^2}{8+x^2} = \frac{-3}{4}$
14. Solve:  $\frac{x-5}{2} - \frac{x-3}{5} = \frac{1}{5}$
15. The sum of three consecutive number is 156. Find the number which is a multiple of 13 out of these numbers.

16. The perimeter of a rectangle is 240cm. If the length is increased by 10% and its breadth is decreased by 20%, we get the same perimeter. Find the length and breadth of the rectangle.

17. The age of A is five years more than that of B. 5 years ago, the ratio of their age was 3:2. Find their present age.

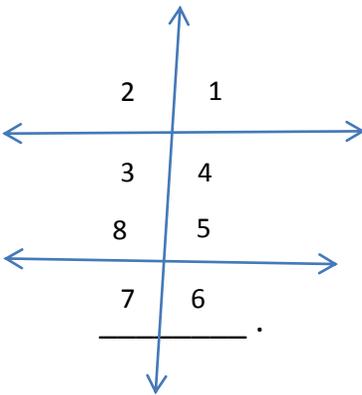
**(4 marks )**

1. The sum of the digits of a 2-digit number is 8. The number obtained by interchanging the digits exceeds the given number by 18. Find the given number.
2. Two years ago, father 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.
3. The race boat covers a distance of 60km downstream in one and a half hour. It covers this distance upstream in 2 hours. The speed of the race boat in still water is 35km/hr. Find the speed of the stream.
4. Divide 243 into three parts such that half of the first part, one-third of the second part and one-fourth of the third part are all equal.
5. Three numbers are in the ratio 4:5:6. If the sum of the largest and smallest exceeds the third number by 55. Find the number.
6. Radhika takes some flowers in a basket and visit three temples one by one. At each temple. She offers one half of the flowers from the basket. If she is left with 3 flowers at the end, find the number of flowers she had in the beginning.
7. Selina had 60 flowers. She offered some flowers in a temple and found that the ratio of the remaining flowers to that of flowers in the beginning is 3:5. Find the number of flowers offered by her in the temple.

## CH-10. PARALLEL LINES

(1 marks)

1. Two lines in the same plane which are perpendicular to a given line in the plane are \_\_\_\_\_ to each other.
2. A line drawn through the midpoint of a side of a triangle parallel to other side \_\_\_\_\_ the third side.
3. In the given figure ,  $p \parallel q$  and  $t$  is a transversal then  $\angle 1 =$  \_\_\_\_\_

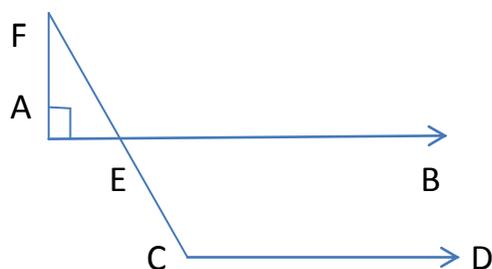


- 1)  $\angle 1$  and  $\angle 5$  are called \_\_\_\_\_ angles
- 2)  $\angle 3$  and  $\angle 5$  are called \_\_\_\_\_ angles.
- 3) Two pairs of corresponding angles are \_\_\_\_\_ .
- 4) Two pairs of alternate interior angles are \_\_\_\_\_
- 5) Two pairs of alternate exterior angles \_\_\_\_\_ .

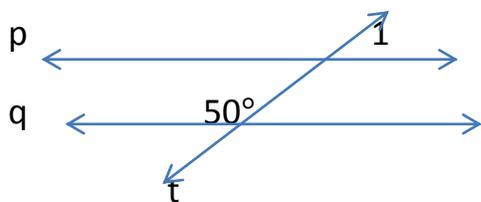
4. Two lines in the same plane which are perpendicular to a given line in the plane are \_\_\_\_\_ to each other.
5. A line drawn through the midpoint of a side of a triangle parallel to other side \_\_\_\_\_ the third side.

## (2 marks)

1) In the given figure,  $AB \parallel CD$  and  $\angle F = 30^\circ$ . Find  $\angle ECD$ .



2) In the given figure,  $p \parallel q$  and  $t$  is a transversal then  $\angle 1 = \underline{\hspace{2cm}}$

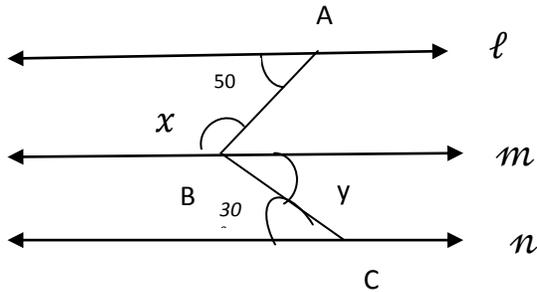


3) If  $AB = x + 3$ ,  $BC = 2x$  and  $AC = 4x - 5$ , then for what value of  $x$ , B lies on AC.

## (3 marks)

1. Draw a line segment AB of length 7.5 cm and divide it into three equal parts. Measure the length of each part.
2. Draw a line segment AB of length 8.5 cm and divide it into five equal parts. Measure the length of each part.
3. ABCD is a quadrilateral in which all the four angles,  $\angle A = \angle B = \angle C = \angle D = 90^\circ$ .  
Show that  $AB \parallel CD$  and  $AD \parallel BC$ .
4. Given that  $l \parallel m$  and a line  $p$  in the plane intersect  $l$ . Does  $p$  intersect  $m$ ?
5. Prove that if arms of an angle are respectively parallel to the arms of another angle, then the angles are either equal or supplementary.

6. Draw a line segment AB of length 7 cm and find a point P on it such that  $AP = PB$  .  
Measure AP and PB .
7. Draw a line segment  $AB=6\text{cm}$ . Mark two points P and Q on it. Draw lines perpendicular to AB through P and Q ( PQ and RS ). What can you say about PR and QS ? Are these parallel ? Justify your answer.
8. In the following figure,  $l \parallel m \parallel n$ . Find  $\angle x$  and  $\angle y$  .

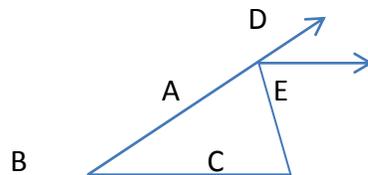


**(4 marks)**

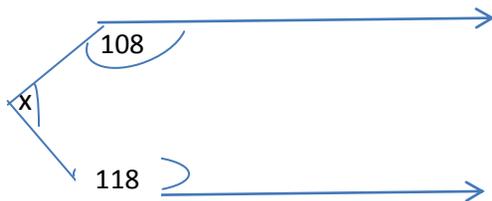
Q1) Draw a line segment  $AB = 5.5 \text{ cm}$  . Find a point P on it such that  $AP = \frac{2}{3}PB$  .

Q2) Prove that if two lines intersect each other , then vertically opposite angles are equal .

Q3) In given figure , AE bisects  $\angle CAD$  and  $\angle B = \angle C$  prove that  $AE \parallel BC$ .



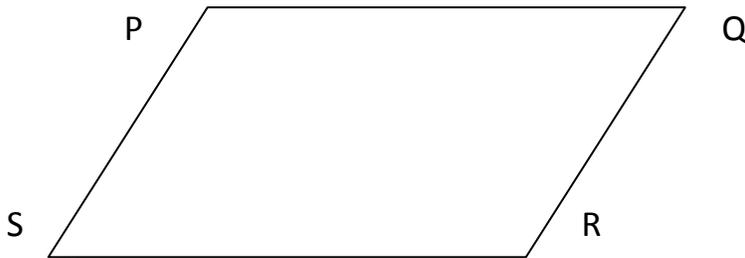
Q4) In the given figure  $AB \parallel CD$  . Find the value of x.



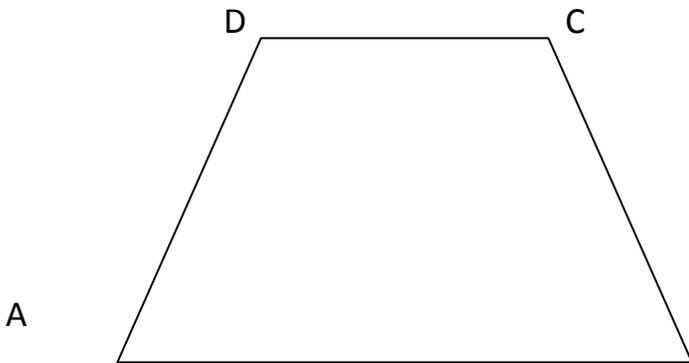
## CH – 11. UNDERSTANDING QUADRILATERALS

(1 marks )

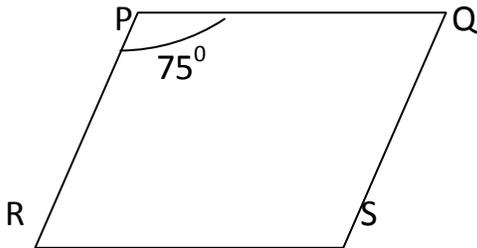
1. Name the polygon with 10 sides.
2. PQRS is an llgm. If perimeter of llgm PQRS is 40 cm and  $PQ = 12$  cm then find PS.



3. In given figure, ABCD is a trapezium in which  $AB \parallel CD$ . IF  $\angle A = 50^\circ$  then find  $\angle D$



4. In given parallelogram PQRS if  $\angle p = 75^\circ$ , find  $\angle Q$ .



5 .Define heptagon.

6. If an exterior angle of a regular polygon is  $45^\circ$ , then find the number of its sides.

7. If an interior angle of a regular polygon is  $162^\circ$ , then find the number of its sides.
8. Find the measure of an interior angle of a regular polygon having 15 sides.

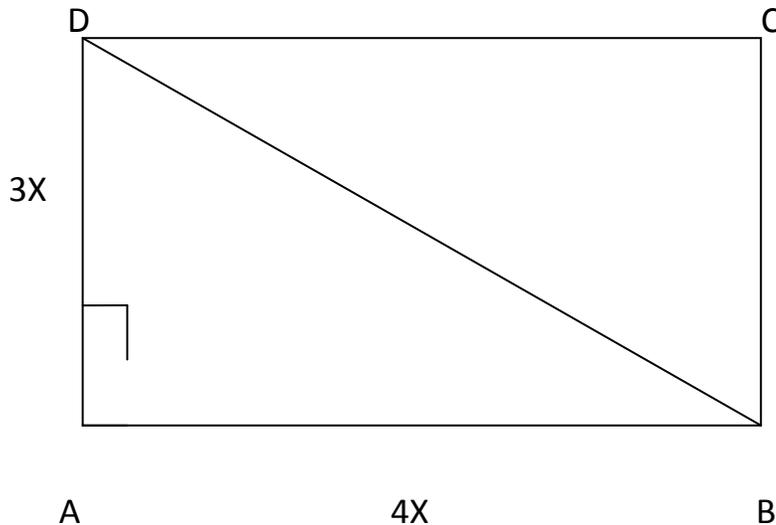
**(2 marks )**

1. Two adjacent angles of parallelogram are in the ratio of 1:5. Find all the angles of parallelogram.
2. The ratio of two sides of a parallelogram is 3:5 and its perimeter is 48 cm. find the sides of llgm.
3. One side of a llgm is  $\frac{3}{4}$  times its adjacent side. If he perimeter of parallelogram is 70cm, find sides of it.
4. Lengths of diagonals AC and BD of a rhombus are 12cm, 16 cm respectively. Find the length of each side.
5. ABCD is a quadrilateral in which all four sides are equal. Show that both pairs of opposite sides are parallel.
6. One angle of a quadrilateral is  $111^\circ$  and the remaining three angles are equal. Find three angles. (2)
7. What is the ratio of the interior angles of a pentagon and a decagon?
8. One angle of a parallelogram is of measure  $70^\circ$ . Find the measures of the remaining angles of the parallelogram.

**(3 marks )**

1. In figure one pair of adjacent sides of a llgm is in the ratio 3:4. If one of its angles  $\angle A$  is a right angle and diagonal  $BD=10$  cm. find

- (i) Lengths of the sides of llgm.                      ii) Perimeter of llgm.

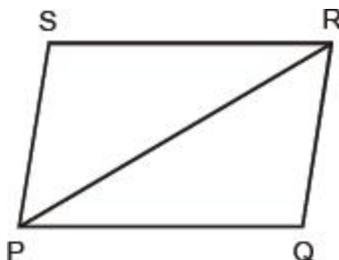


2. The measures of two adjacent angles of a parallelogram are in the ratio 3:2. Find the measure of each of the angles of llgm.

3. In a parallelogram HOPE,  $\angle HOP=110^\circ$ ,  $\angle EHP=40^\circ$ . find the angle measures of  $\angle HEP$ ,  $\angle OHP$ ,  $\angle OPH$ .

5. A pair of adjacent sides of a rectangle is in the ratio 4:3. if its diagonal is 20 cm, find the lengths of the sides and hence, the perimeters of the rectangle.

6. In the given figure PR is a diagonal of the parallelogram PQRS. Is  $PS = RQ$ ? Why?



Is  $SR = PQ$ ? Why?

Is  $PR = RP$ ? Why?

Is  $\triangle PSR \cong \triangle RQP$ ? Why?

6. The perimeter of a parallelogram is 150 cm. One of its side is greater than the other by 25 cm. Find length of all sides of the parallelogram.

7. Lengths of adjacent sides of a parallelogram is 3 cm and 4 cm. Find its perimeter.

8. In a parallelogram, the ratio of the adjacent sides is 4 : 5 and its perimeter is 72 cm then, find the sides of the parallelogram.

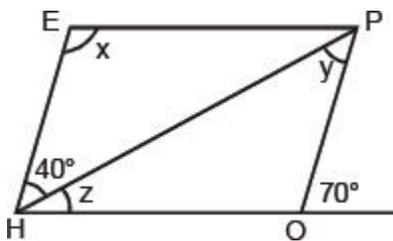
9. The adjacent figure HOPE is a parallelogram. Find the angle measure x, y and z.

### (4 marks)

1. In a quadrilateral ABCD, the angles A, B, C and D are in the ratio 1: 2: 3: 4. Find the measure of each angle of the quadrilateral.

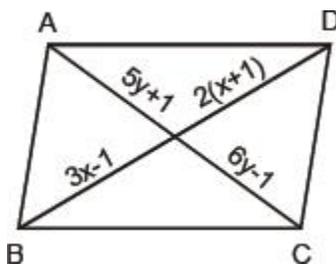
2. The interior angle of a regular is  $108^\circ$ . Find the number of sides of the polygon. The exterior angle of a regular polygon is one-fifth of its interior angle. How many sides have the polygon?

State the properties you used to find them.

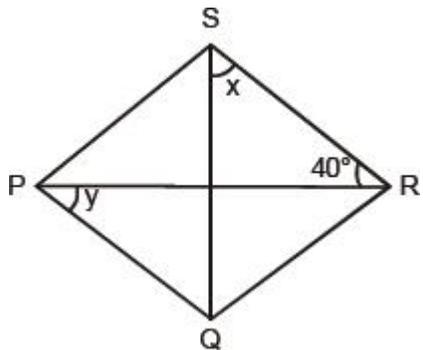


3. Find value of x and y in the following figures. (4)

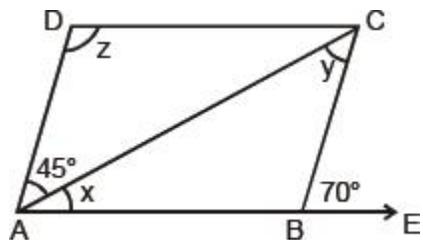
where ABCD is a parallelogram.



4. Find  $x$ , where PQRS is a rhombus.



5. Find  $x$ ,  $y$ ,  $z$  in the given parallelogram ABCD. (4)



## **CH-12, CONSTRUCTION OF QUADRILATERAL**

### **(3 marks )**

1. Construct a quadrilateral ABCD in which  $AB = 4\text{cm}$ ,  $BC = 3\text{ cm}$ ,  $AD=2.5\text{cm}$ ,  $AC=4.5\text{cm}$ ,  $BD=4\text{cm}$ .
2. Draw a line segment AB of length 6 cm. divide it in the ratio 2:3 and measure the length of smaller part. Write steps.
3. Construct a rectangle ABCD whose adjacent sides are 5 cm and 4.5 cm.
4. Construct a rhombus with side 5.2 cm and one of its angles  $75^\circ$ .

### **(4marks)**

1. Construct a rhombus whose diagonals are 6 cm and 8 cm.
2. Using ruler and compass only construct a quadrilateral ABCD in which  $AB= 3.5\text{ cm}$ ,  $BC =6.5\text{ cm}$ ,  $\angle A=60^\circ$ ,  $\angle C=120^\circ$ ,  $\angle D=75^\circ$
3. Construct a trapezium ABCD in which  $AB=6\text{ cm}$ ,  $BC=4\text{cm}$ ,  $CD=3.2\text{cm}$ ,  $\angle B=75^\circ$  and  $CD \parallel AB$ .
4. Construct a quadrilateral ABCD in which  $AB=4\text{cm}$ ,  $BC=5\text{cm}$ ,  $CD=4.5\text{cm}$ ,  $AD=5.5\text{cm}$  and diagonal  $AC=7.5\text{cm}$ .
5. Construct a quadrilateral ABCD in which  $AB=CD=5\text{cm}$ ,  $BC=AD=4\text{cm}$  and  $BD=6.5\text{cm}$ .

6. Construct a quadrilateral ABCD in which three sides are 4 cm each and both diagonals are 6cm each.
7. Construct a quadrilateral ABCD in which  $AB=5\text{cm}, BC=4\text{cm}, CD=4.5\text{cm}, \angle B=70^\circ, \angle C=100^\circ$
8. Construct a quadrilateral ABCD in which all sides are 5cm. and  $\angle A=\angle B=90^\circ$
9. Construct a quadrilateral ABCD in which  $AB=BC=CD=AD=5\text{ cm},$  diagonal  $AC=7\text{cm}$  and diagonals bisect each other at right angle. What type of quadrilateral is it ?
10. Construct a quadrilateral ABCD in which  $AB=4.5\text{cm}, BC=5\text{cm}, \angle A=60^\circ, \angle B=120^\circ$  and  $\angle C=60^\circ$ .

## CH- 13, INTRODUCTION TO GRAPHS

### (1 marks )

1. Draw the points (5, 4) and (4, 5). Do they represent the same point?
2. Point (0,3) lies on \_\_\_\_\_ axis.
3. A pictorial representation of data, using symbols to represent a group of items is known as \_\_\_\_\_ .
4. The coordinates of origin is \_\_\_\_\_ .
5. A point whose y-coordinate is zero , will lie on the \_\_\_ axis .
6. A point whose X-coordinate is zero , will lie on the \_\_\_ axis .
7. Plot the points A(0,2), B(5,2), C(2,1) and D(1,6) on the graph paper.
8. Write the answer to each of the following question
  - (a) What is the name of the horizontal and vertical lines drawn to determine the position of any point in the Cartesian plane ?
  - (b) Write the name of the point where the above two lines intersect.
9. What is histogram ?
10. What is pictograph ?
11. What is bar graph ?

## (2 marks )

1. Draw a line passing through (2, 1) and (1, 2). Find the coordinates of the points at which this line meets the x-axis and y-axis.
2. Draw the graph for the following table of values of time (in hours) and distances (in km) covered by a car. (2)

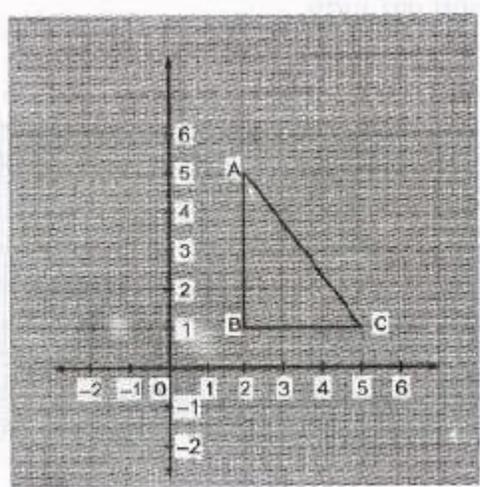
<b>Time (in hours)</b>	7:00	8:00	9:00	10:00
<b>Distance (in km)</b>	60	120	180	240

From the graph, find:

The distance covered by the car during the period 7:00 to 8:00.

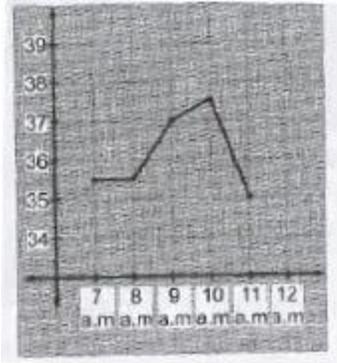
At what time the car would have covered 180 km?

3. Find the coordinates of the vertices of ABC given in graph. Draw a triangle by taking vertices as A(5, 2), B(1, 2) and C(1, 5).





3. The graph shows the temperature of a patient recorded before noon. Read it and answer the following questions.



What was patient's temperature at 9 a.m.?

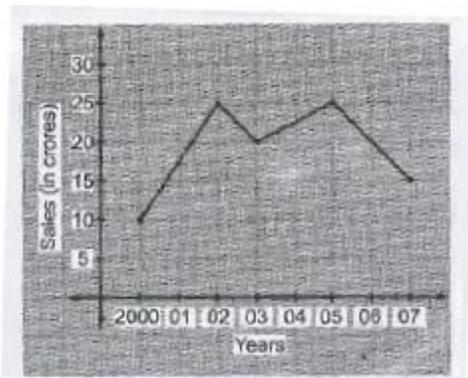
What the highest temperature of the patient?

When was the patient's temperature lowest?

During which period, the patient's temperature remained constant?

4. The graph shows the yearly sales figure of a shoe manufacturing company.

(3)



What were the sales in 2000?

In which year the sales were maximum?

What is the difference between the sales in the year 2003 and 2005?

5. Draw a linear graph for the following data: (3)

Month	May	June	July	August
Rainfall. (in cm)	5	7	4	6

6. Plot the points on a graph: A(4, 9); B(6, 0); C(7, 7); D(2, 4) (4)

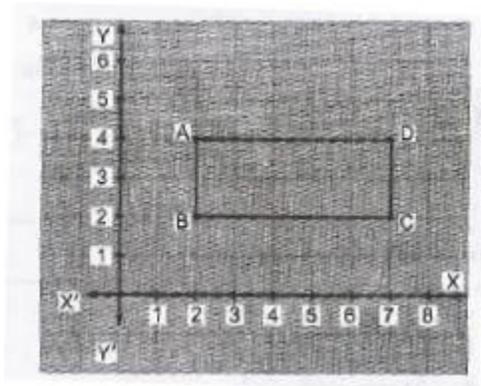
7. Plot the points A(4, 3), B(4, 0), C(4, 2), D(4, 6) and join them. Do they lie on the same line?

8. Draw a line passing through (4, 5) and (5, 4). Find the coordinates of the points on a straight line.\*\*\*\*\*

9. Show that the linear graph obtained by joining the following points is a straight line.

(6, -3), (6, 1), (6, 4) and (6, 6)

10. Look at the graph of a rectangle in the figure. What are the coordinates of its vertices?



15. Draw a graph of  $\Delta PQR$ , the coordinates of whose vertices are P(9, 5), Q(7, 7) and C(9, 9).

**(4 marks)**

1. Draw a 'deposit-interest' graph for the following data: (4)

Deposit (in Rs)	5000	6000	7000	8000	9000
Simple interest (in Rs) for 1 Year	400	480	560	640	720

From the graph, find the interest on Rs 7500 for 1 year.

2. Draw a graph from the given information.

day	1	2	3	4	5	6	7
No of pairs	20	24	18	16	17	22	12

3. Draw a graph from the given table.

Time(in hrs)	1	2	3	4
Distance (in km)	40	80	120	160

4. Write the coordinates of the origin. (1)

5. What are coordinates of a point which lies on the x-axis? (1)

6) Plot the points A(0,2), B(5,2), C(2,1) and D(1,6) on the graph paper.

7) Plot the points A(2,3), B(5,3), C(5,5) and D(2,5) on graph. Connect the points in that order so as to get a closed figure ABCD. What type of figure do you get?

Q8) Plot the points (2,2), (4,4), (6,6). Join these points in pairs. Do they lie on the line passing origin ?

Q9) Plot the following ordered pairs on the graph

X	0	2	5	3	6	7
Y	2	2	2	2	2	2

10) Following table gives the temperature at 12 :00 noon on seven successive days in Delhi.

Day(October)	1	2	3	4	5	6	7
Temp.(in °C)	14	18	16	13	19	20	17

Q11) Locate the points (2,3), (0,1), (4,5). Do they lie on a line ?

Q12) Locate the point (1,0), (2,1), (3,2), (4,3). Do they lie on a line ?

Q13) The following table shows the amount of rice grown by a farmer in different years.

Year	2000	2001	2002	2003	2004	2004	2005
Rice grown in quintal	200	180	240	260	250	200	270

Plot a graph to illustrate this information.

Q14) The following table gives the marks scored by the students of class VIII.

No of students	8	10	10	8	4	4	2
Marks obtained	10	12	14	15	16	18	20

Represent this information on graph paper.

Q15) A bus is going on a long journey starting at 4:00 hour. The speed of the bus in different hours is given below. :

Time in hours	4:00	6:00	8:00	10:00	12:00	14:00
Speed in km/hr	30	50	60	45	80	70

Draw speed – time graph for the above data.

## CH-14, MENSURATION

### (1 marks)

1. The area of trapezium is  $24m^2$ . If its height is 6m then find sum of parallel sides.
2. The area of trapezium is  $110m^2$  and its height is 11m. If one of the parallel sides is 7m then find other parallel side.
3. Sum of parallel sides of trapezium is 26 m and its area is  $156m^2$ , and then find distance between parallel sides of trapezium.
4. The height of a cylinder is 14 cm and its curved surface area.
5. The height of a cylinder is 14 cm and its surface area is 704 sq.cm, and then find its volume.
6. Can a polygon have 4 triangles as its faces?
7. How are pyramids and cones alike ?
8. Can a polyhedron have 10 faces, 20 edges and 15 vertices?
9. Verify the Euler's formula for i) cuboid ii) tetrahedron.
10. Draw the net of a i) square prism ii) triangular pyramid

11. Find the increase in the surface of the cube if each edge of the cube is increased by 40%?
12. Find the surface area of a sphere of radius 5.6cm.
13. In a solid if  $F=V=5$ , find the number of edges.

**(2 marks)**

1. Volume of a cube is  $1000 \text{ cm}^3$ . Find its total surface area.
2. How many vertices and edge do the polyhedron have  
(a) Square pyramid (b) triangular prism
3. Find the volume of a cube, whose surface area is  $600 \text{ cm}^2$ .
4. Find the area of a square, the length of whose diagonal is  $3\sqrt{2} \text{ m}$ .
5. The length, breadth and height of a cuboid are 20 cm, 15 cm, 10 cm respectively. Find its total surface area.
6. If the parallel sides of a parallelogram are 2 cm apart and their sum is 10 cm then find its area.
7. Find the area of a square the length of whose diagonal is 2.9 metres.
8. The area of a square field is 0.5 hectares. Find the length of its diagonal in metres.
9. The diameter of a semi-circular field is 14 metres. What is the cost of fencing the plot at Rs. 10 per meter.

**(3 marks)**

1. Find the cost of carpeting a room 15 m long and 9 m broad with carpet 75 cm broad at the rate of Rs. 7.40 per metre.
2. The sides of a triangle are in ratio 13:14:15 and its perimeter is 84 cm. find the area of triangle.
3. The sides of a rectangular park are in ratio 4:3. If its area is  $1728 \text{ m}^2$ , find the cost of painting it at Rs. 2.50 per metre.
4. The area of a square plot is  $1024 \text{ m}^2$ . Find the length of wire which can go around the boundary of the plot.

5. In a cylindrical pipe, the area of its base and CSA are  $154 \text{ m}^2$  and  $880 \text{ m}^2$  respectively. Find the radius and height of the cylinder.
6. The length and breadth of a rectangular field are in the ratio 3:2. If the area of the field is  $34565 \text{ m}^2$ , find the cost of fencing the field at Rs. 3.50 per meter.
7. In a building there are 24 cylindrical pillars with each having a radius 28 cm and height 4 m. Find the cost of painting the curved surface area of all pillars at the rate of Rs. 8 per  $\text{m}^2$ .
8. A box is in the form of a cuboid of dimensions  $(80 \times 30 \times 40) \text{ cm}^3$ . The base, the side faces and back faces are to be covered with a coloured paper. Find the area of paper needed.
9. The lateral surface area of a hollow cylinder is  $4224 \text{ cm}^2$ . It is cut along its height and formed a rectangular sheet of width 33 cm. Find the perimeter of the rectangular sheet.
10. A roller takes 750 complete revolutions to move once over a level of road. Find the area of road if the diameter of the roller is 84 cm and length is 1 m.
11. If the base area of a room is  $12 \text{ m}^2$  and height is 3 m then its volume is:
12. The area of the floor of a rectangular hall of length 40 m is  $960 \text{ m}^2$ . Carpets of size 6 m x 4 m are available. How many carpets are required to cover the hall?
13. Find the area of the quadrilateral ABCD as shown. The diagonal AC is 84 units and perpendiculars BE and FD are 21 and 28 units respectively.
14. The floor of a rectangular hall has a perimeter 250 m. If the cost of painting the four walls at the rate of Rs.  $10/\text{m}^2$  is Rs. 15000, find the height of the hall.
15. The curved surface area of a right circular cylinder of height 14 cm is  $88 \text{ cm}^2$ . Find the diameter of the base of the cylinder.
16. In a hot water heating system, there is a cylindrical piping of length 28 cm and diameter 5 cm. Find the total radiating surface in the system.
17. Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface and its total curved surface area.
18. Find the total surface area of a hemisphere of radius 10 cm.

19. A rectangular sheet of paper  $44\text{cm} \times 18\text{cm}$  is rolled along its length and a cylinder is formed. Find the volume of the cylinder.
20. The area of a trapezium is  $440\text{cm}^2$ . The lengths of the parallel sides are respectively  $30\text{cm}$  and  $14\text{cm}$ . Find the distance between them.
21. The circumference of a circle exceeds the diameter by  $30\text{cm}$ . Find the radius of the circle.
22. The diameter of a wheel of a car is  $98\text{cm}$ . How many revolutions will it make to travel  $6160$  metres.
23. Find the side of a cube whose surface area is  $600\text{cm}^2$ .
24. The area of a rectangular field is  $48\text{m}^2$  and one of its side is  $6\text{m}$ . How long will a lady take to cross the field diagonally at the rate of  $20\text{m/minute}$ ?
25. Four horses are tethered with equal ropes at 4 corners of a square field of side  $70\text{m}$  so that they just can reach one another. Find the area left ungrazed by the horses.
26. A boy is cycling such that the wheels of the cycle are making  $140$  revolutions per hour. If the diameter of the wheel is  $60\text{cm}$ , calculate the speed in  $\text{km/hr}$  with which the boy is cycling.
27. Find the length of the largest pole that can be placed in a room of dimension  $12\text{m} \times 4\text{m} \times 3\text{m}$ .
28. A cube of side  $5\text{cm}$  is cut into as many  $1\text{cm}$  cubes as possible. What is the ratio of the surface area of the original cube to that of the sum of the surface areas of the smaller cubes?
29. A swimming pool is  $200\text{m}$  by  $50\text{m}$  and has an average depth of  $2\text{m}$ . By the end of a summer day, the water level drops by  $2\text{cm}$ . How many cubic metres of water is lost?

**(4 marks)**

1. The diagonal of a quadrilateral is 30 m in length and the perpendicular to it from the opposite vertices are 6.8m and 9.6m. Find area of quadrilateral.
2. Find the area of a rhombus having each side equal to 15 cm and one of whose diagonal is 24 cm
3. The base of parallelogram is twice of its height. If the area is  $512 \text{ cm}^2$ , find the base and height.
4. The parallel sides DC and AB of a trapezium are 12 cm and 36 cm respectively. Its non-parallel sides are each equal to 15cm. Find area of trapezium.
5. The parallel sides of a trapezium are 25 cm and 13 cm. its non-parallel sides are equal, each being 10 cm. find area of trapezium.
6. A flooring tile has a shape of a parallelogram whose base is 28cm and the corresponding height is 20cm . How many such tiles are required to cover a floor of a area  $2800\text{cm}^2$
7. The rainfall recorded on a certain day was 5cm. Find the volume of water that fall on 2 hectare field.
8. Rain water which falls on a flat rectangular surface of length 6 m and breadth 4 m is transferred into a cylindrical vessel of internal radius 20 cm. What will be the height of water in the cylindrical vessel if the rain fall is 1 cm (Take  $\pi = 3.14$ )
9. The areas of three adjacent faces of a cuboid are 180 cm sq., 96 cm sq. and 120cm sq. what is the volume of cuboid ?.
10. If each edge of a cube is doubled, (i) how many times will its surface area increases? (ii) how many times will its volume increases?
11. If a solid cylinder has a total surface area 462 sq. cm. and CSA is  $\frac{1}{3}$ rd of it so what is the volume of the cylinder?
12. Water is pouring into a cuboidal reservoir at the rate of 60 litres per minute. If the volume of reservoir is  $108\text{m}^3$ , find the number of hours it will take to fill the reservoir.

13. A suitcase with measures 80cm x 48cm x 24 cm is to be covered with a tarpaulin cloth. How many metres of tarpaulin of width 96cm is required to cover 100 such suitcases?

14. The lateral surface area of a hollow cylinder is  $4224\text{cm}^2$ . It is cut along its height and formed a rectangular sheet of width 33cm. Find the perimeter of rectangular sheet?

15. An ant is moving around a few food pieces of different shapes {a semicircle of radius 2.8cm or a cone having slant height 2cm and radius 2.8cm} scattered on the floor. For which food-piece would the ant have to take a longer round?

## **CH-15, STATISTICS AND PROBABILITY**

**(1 marks)**

Q1) The difference between the highest and the lowest values of the observation in a given data is called \_\_\_\_\_ .

Q2) The difference between the upper and lower class limit is known as \_\_\_\_\_ .

Q3) What is statistics ?

Q4) Define the term observation .

Q5) Two coins are tossed together. List the number of outcomes .

**(2 marks)**

Q1) Find the arithmetic mean of the following : 15, 10, 5, 22, 18, 35, 19, 20 .

Q2) Find the mean of the first ten natural numbers .

Q3) Find the mean of the first six prime numbers .

Q4) A die is thrown once . Find the probability of getting an odd number .

Q5) Find the mean of first six prime numbers .

**(3 marks)**

Q1) Following are the heights of 15 girls (measured in cm.) :

143,148,135,150,128,139,151,142,144,156,140,133,136,142,146 .

(a) What is height of the tallest and shortest girls ?

(b) Find the mean height .

Q2) The following data gives the number of children in 40 families :

1	2	6	5	1	5	1	3
2	6	2	3	4	2	0	4
4	3	2	2	0	0	1	2
2	4	3	2	1	0	5	1
2	4	3	4	1	6	2	2

Represent it in the form of a frequency distribution table .

Q3) Following were the maximum daily temperature ( in °C ) in Delhi on 10 consecutive days of March : 32.4,29.5,25.7,26.3,24.2,23.4,22.4,22.5,23.3,23.8 .

(a) On which day was the lowest temp.recorded and which day the highest .

(b) What is the range ? (c) find the mean of daily temp. .

Q4) There are 25 chalks in a box in which 8 are yellow chalks , 11 are blue chalks and the rest are white chalks . You are asked to pick a chalk without looking into the box . What is the probability of : (a) getting a yellow chalk ?

(b) getting a blue chalk ? (c) getting a white chalk ?

Q5) Letters of alphabet are written on 26 separate slip and put in a bag One slip is chosen from the bag . What is the probability of : (a) getting the letter Q ?

(b) getting a vowel

Q6) Slips with numbers written on it as 1,4,6,7,9,15,18,36,48,73 are mixed in a bag . A slip is drawn from the bag . What is the probability of getting : (a) a factor of 36 (b) a single digit number (c) a multiple of 3 but not a multiple of 9 .

**(4 marks)**

Q1) The number of trees of different fruits in a orchard are given below in percentage . Draw a pie chat for the data.

Trees	mango	pear	guava	papaya
No. of trees in	50%	20%	20%	10%

Q2) Draw a histogram from the following frequency distribution table.

Ages	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. of teachers	3	6	11	8	5	4	3	2

Q3) When a die is thrown , list the outcomes of an event of getting :

- (a) a prime number (b) a composite number (c) a number less than 4 (d) a number more than or equal to 3.

Q4) 1500 families with 2 children were selected randomly, and the following data were recorded .

No. of boys in a family	2	1	0
No. of families	475	814	211

Find the probability of a family , having (a) 2boys (b) 1boy (c) no boy.

5.The daily wages( in rupees) of 15 workers in a factory are the following.

30	25	20	25	20	25	20	15	35	20	15	30	15	20	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Prepare a frequency distribution table.

6.Given below are the ages of 30 students of class-VIII in a school.

13	14	14	12	15	15	14	13	13	14	14	15	13	14	14
12	14	13	12	13	14	14	13	12	13	12	13	14	15	14

Prepare a a frequency distribution table.

7.The pulse rate (per minute)of 30 persons was recorded as-

61	76	72	73	71	66	78	73	68	81	78	63	72	75	80
68	75	62	71	81	73	60	79	72	73	74	71	64	76	71

Construct a frequency table using class interval 60-65 ,65-70,etc.Answer the following:

- What is the upper limit of third class interval ?
- What are the class mark of each class interval ?
- Which class interval has the highest frequency ?

8. Given below is the frequency distribution of monthly school fee of 50 schools.Draw a histogram for the following data.

Monthly school fee	300-350	350-400	400-450	450-500	500-550
No. of schools	5	10	20	8	7

i) How many students obtained less than 10 marks ?

How many students obtained more than 15 but less than 30 marks ?

9.The number of trees of different fruits in an orchard are given below in percentage.Draw a pie chart for the data. Draw a pie chart for the data.

Tree	Mango	Pear	Guava	Papaya
No. of trees in percentage	50	20	20	10

10.Choice of food for a group of people is given below.Prepare a piechart for the data.

Food	North Indian	South Indian	Chinese	Other
No. of people	30	40	25	25

11. A box contains 24 marbles of different colours. The following table shows the number of marbles of these different colour. Draw a pie chart.

Colour of marble	Red	Green	Yellow	Blue
No. of marbles	10	6	5	3

12. Study the the frequency distribution table given below and answer the questions that follows.

frequency distribution table of weight of apples

Weights( in grams )	Frequency(no. of pieces)
60-80	5
80-100	13
100-120	18
120-140	8
140-160	1
160-180	2
180-200	3
Total	50

- i) What is the size of the class interval ?
- ii) What is the lower class limit of fourth class ?
- iii) What is the upper class limit of sixth class ?
- iv) Which class has the lowest frequency ?
- v) What is the class mark of the class interval having the highest frequency ?

13. The daily minimum temperature (in  $^{\circ}\text{C}$ ) in Delhi for the 30 days of June in a particular year was as under.

27.	26.	30.	29.	29.	30.	30.	26.	27.	27.	28.	28.	27.	27.	26.
1	3	4	5	3	1	0	5	0	1	0	6	9	0	9
26.	25.	25.	24.	26.	26.	26.	27.	27.	25.	25.	25.	26.	26.	27.
8	3	5	9	4	9	8	3	5	8	9	5	4	6	5

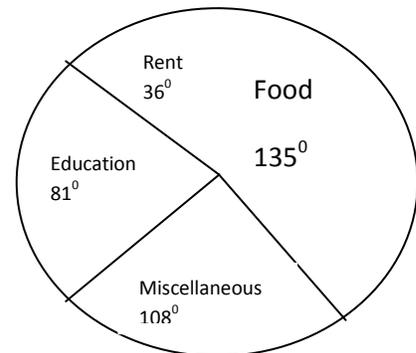
Prepare a a frequency distribution table taking class interval 24.0-25.5, 25.5-27.0, etc. Also prepare a histogram.

14. The quantity of different fruit sold in fruit market in one day is given in percentage as follows. Draw a pie chart for data.

Fruit	Percentage of fruit sold
Guava	25
Mango	50
Jamun	25

15. The following pie-chart shows the monthly expenditure of Neha on various items. If she spends Rs.16000 per month, answer the following questions:

- i) How much does she spend on rent ?
- ii) How much does she spend on education ?
- iii) What is the ratio of expenditure on food and rent ?



16. Letters of alphabet are written on 26 slips and put in a bag. One slip is chosen from the bag. What is the probability of:

- i) getting the letter Q ?
- ii) getting a vowel ?

17. What is the probability of:

- i) a impossible event ?
- ii) a sure event ?

18. There are 25 marbles in a box out of which 8 are yellow marbles, 11 are blue marbles and rest are white marbles. You are asked to pick a marbles from the box without looking into the box. What is the probability of:

- i) getting a yellow marbles ?
- ii) getting a blue marbles?
- iii) Getting a white marbles ?

19. A box contains 19 cards bearing number 1,2,3.....19. A card is drawn at random from the box. Find the probability on the card is

- i) a perfect square number
- ii) an even number

iii) A number divisible by 3

iv) A composite number

20. A card is drawn from a well shuffled pack of 52 cards. Find the probability of getting a face card.

21. A card is drawn from a well shuffled pack of 52 cards. Find the probability of :

i) getting a king

ii) getting a red card

iii) getting a numbered card

22. All face cards are withdrawn from a deck of cards. Then cards are well shuffled. Find the probability of :

i) getting a black king

ii) getting heart queen

i) getting a face card

23. A die is thrown once. Find the probability of :

i) getting a prime number

ii) a composite number

iii) neither a prime nor a composite number.

### CH-16, ROTATIONAL SYMMETRY

**(1 marks)**

What is centre of rotation?

1. What is the order of rotational symmetry of the object?
2. What is the Order of rotational symmetry of equilateral triangle ?
3. What is the angle of rotation of an equilateral triangle?
4. Which of the following has rotational symmetry around its centre for every angle?

(A) Equilateral triangle

(B) Circle

(C) Square

(D) Trapezium

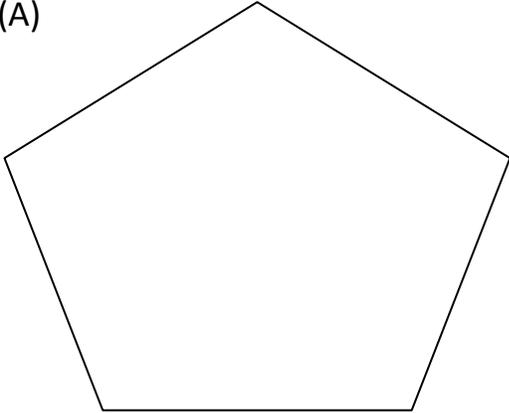
6. Find the angle of rotation of the given figure.



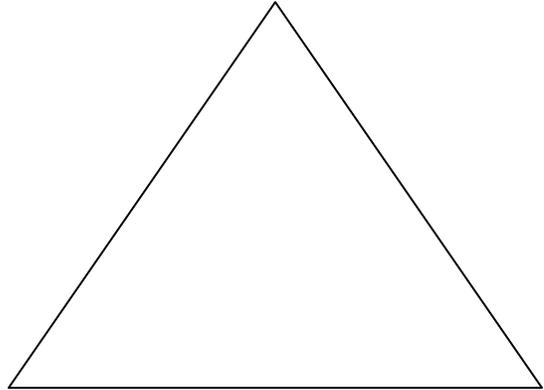
(2 marks)

1. Write 4 letter shows rotational symmetry?
2. List two letters of English alphabet which exhibit both line as well as rotational symmetry.
3. Give the order of rotational symmetry of the figures.

(A)

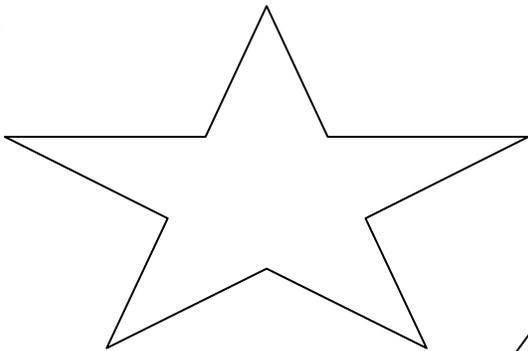


(B)

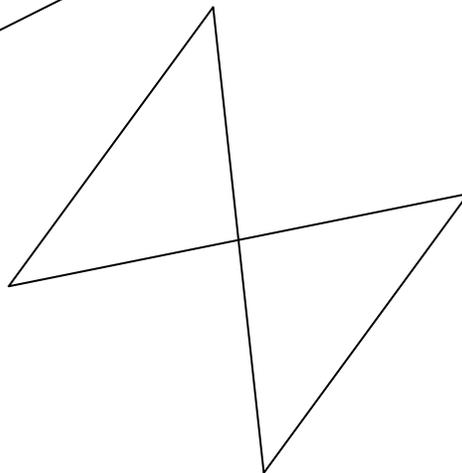


4. Give the order of rotational symmetry?

(a)

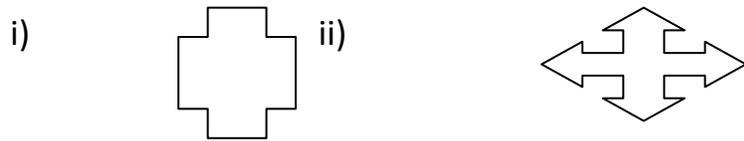


(b)



5. Find the angle of rotation and order of rotation of a equilateral triangle.

6. Give the order of rotational symmetry of the given figures.



7. Find the angle of rotation and order of rotation of:

i) rectangle ii) regular hexagon iii) circle

8. Name two figures having both line symmetry and rotational symmetry.

9. Which letter of the word "STATISTICS" has order of rotation 2.

10. Find the angle of rotation and order of rotation of a ceiling fan having four blades.

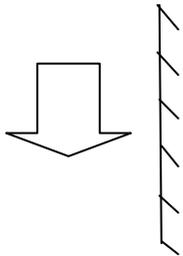
11. Find the angle of rotation and order of rotation of English alphabets

i) H ii) S iii) O

12. How does the shape  look like after it rotates  $180^\circ$  ?

13. The angle of rotation of a figure is  $60^\circ$ . What will be its order of rotational symmetry.

14. Draw the image of the following object.



15. Does isosceles triangle exhibit rotational symmetry? Give reason.

16. Which letter of the word "MATHS" has order of rotation 2.

17. Find the angle of rotation and order of rotation of a semi-circle.

(3 marks)

1. which of the following show rotational symmetry.

A, H, S, T, M.

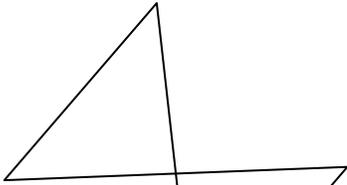
2. Write the order of rotation and angle of rotation for the following:

(i) Regular hexagon (iii) Rectangle

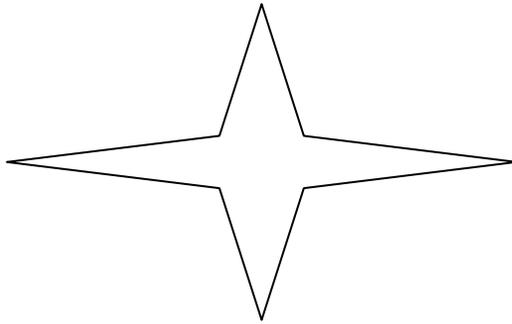
(ii) Parallelogram

3. Find the angle of rotation and order of rotation of the following figures:

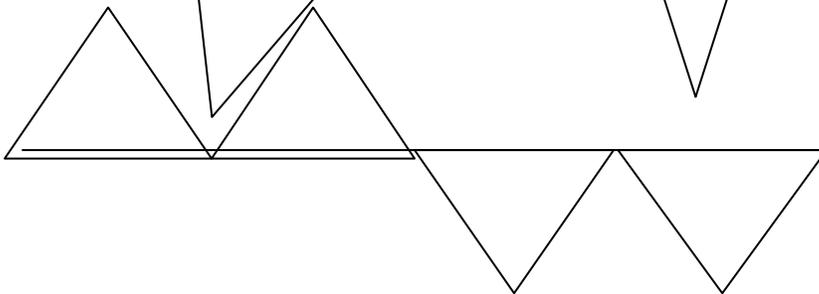
(a)



(b)



(c)



4. Write the

i) angle of rotation

ii) centre of rotation

iii) order of rotational symmetry of a regular pentagon.

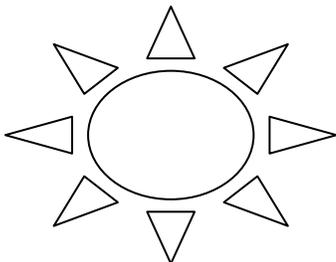
5. Find two letters of English alphabet which have

i) no rotational symmetry.

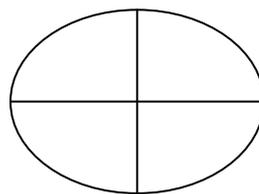
ii) rotational symmetry of order 2.

6. Find the angle of rotation of following figures.

i)



ii)



7. Name one figure each having rotational symmetry of order

i) 3

ii) 4

iii) 2

iv) 6

**4 MARKS**

1. Write the order of rotational symmetry of a square with the help of rough sketches.

2. Write the order of rotational symmetry of an equilateral triangle with the help of rough sketches.

3. Shade the triangles in such a way that a shape is created with rotational symmetry of order 2.

