ARITHMETIC PROGRESSION

1. How many 2digit numbers are divisible by 3?
2. The sum of four consecutive terms which are in A.P. is 32 and the ratio of the product of the first and the last term to the product of the middle two terms is 7:15. Find the numbers. **OR**
Divide 32 into 4 terms which are in A.P. such that ratio of the product of the extremes to the product of middle two terms is 7:15.
3. In an A.P. of 50 terms, the sum of the first 10 terms is 210 and sum of the last 15 terms is 2565. Find the A.P. [M.Q.P]
4. In an A.P. 'm' times m^{th} term is equal to the 'n' times the n^{th} term. Prove that $(m+n)^{th}$term is zero.
5. The digit of a positive 3 digit numbers are in A.P. and their sum is 15. The number obtained by reversing the digits in the unit and hundred's place is 594 less than the original number. Find the number.
6. An object covers a distance of 16 m in 1^{st}second, 48 m in 2^{nd} secondand 80 in the 3^{rd}, 112 in 4^{th} second and so on while falling from a certain height. Find the distance covered by it in 11^{th} second.
7. A ball moves in a inclined plane covers a distance of 36m in the first second, in 2^{nd} 32m, 3^{rd} second 28 m. It continues in the same manner. Find the distance covered by it in 8^{th} second.
8. 300 plants are arranged in a rows such that it makes triangle and each row from the base contains one plant less. How many plants are arranged in the row which makes the base of the triangle?
9. Find the sum of all natural numbers from 1 to 1000 which are neither divisible by 2 nor by 5.
10. The sum of the 3^{rd} and 7^{th} terms of an A.P. is 6 and their product is 8. Find the sum of first 16 terms of the A.P.
11. The ratio of 7^{th} to 3^{rd} term of an A.P. is 12:5. Find the ratio of 13^{th} to 4^{th} term.
12. Find 4 numbers in A.P. such that the sum of the 2^{nd} and 3^{rd} terms is 22 and the product of the first and 4^{th} terms is 85.
13. Find 3 numbers in A.P. whose sum is 24 and their product is 440.
14. If 9^{th} term of an A.P. is 0, prove that 29^{th} term is double the 19^{th} term.
15. 2, 6, 10, 14 . . . and 102, 96, 90, 84 . . . are two arithmetic progressions. Which term of these arithmetic progression is equal?
16. a, b, c, d, e are in A.P. Prove that a+e=b+d=2c
17. If 3x+k, 2x+9 and x+13 are three consecutive terms of an A.P., find 'k'.
18. Split 207 into 3 parts such that these are in A.P. and the product of the two smaller parts is 4623.
19. The angles of a triangle are in A.P. The greatest angle is twice the least. Find all the angles of a triangle.
20. How many numbers lie between 10 and 300 which when divided by 4 leaves a remainder 3?
21. Find sum of all 11 terms of an A.P. whose middle most term is 30.
22. An A.P. consists of 37 terms. The sum of the 3 middle most term is 225 and sum of the last 3 is 429. Find the A.P.
23. Show that sum of an A.P. whose first term is a, the second term is b and the last term is c is equal to $\frac{(a+c)(b+c-2a)}{2(b-a)}$
24. Find the sum of the integers between 100 and 200 that are not divisible 9.
25. Find the middle term in the A.P. 20, 16, 12 . . . . (−176)
26. 3 numbers are in the ratio 2:5:7. If 7 is subtracted from the 2^{nd}, the resulting numbers are in A.P. Find the numbers.
27. Sum of 6 terms of an A.P.is 345. The difference between first and last term is 55. Find the terms.
28. In an A.P. sum of first 5 terms is equal to the $\frac{1}{4}$ of the next five terms and the first term is 2. Show that $a_{20}= -112$ and find S_{20}.
29. Sum of first 8 terms of an A.P. is 64 and sum of first 19 terms is 361. Find the sum of first 20 terms.
30. The interior angles of a polygon are in A.P. and the smallest angle is 120^{0} c.d. is 5^{0}. Find the numbers of sides.
31. 5^{th} term of an A.P. is equal to 3 times the 2^{nd} term. If 7^{th} term is 4 less than two times the 4^{th} term, find the 12^{th} term of the A.P.
32. Sum of first 10 terms of an A.P. is 175. Sum of the next 10 terms is 475. Find the A.P.
33. Sum of three consecutive terms of an A.P. is 18 and sum of their squares is 140. Find the 3 terms.
34. In an A.P. $a_5:a_{10} = 1:2$, $a_{12}=36$. Find A.P.
35. Sum of 'n' terms of an A.P. is $\frac{1}{2}n(7n-1)$. Find first 3 terms.
36. If the p^{th}, q^{th} and r^{th} terms of an A.P. be a,b and c respectively. Show that a(q −r)+ b(r −p)+ c(p −q)= 0
37. In a given A.P. if p^{th}term is q, q^{th} term is p then show that the n^{th} term is (p+q−n).
38. If the m^{th} term of an A.P. be $\frac{1}{n}$and its n^{th} term be $\frac{1}{m}$then show that $(m.n)^{th}$term is 1.

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TRIGONOMETRY

1. If $4\tan\theta = 3$ evaluate $\frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1}$.
2. If $13\cos\theta - 5 = 0$ find $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta}$.
3. Prove that $\frac{\sin(90-\theta)}{1+\sin\theta} + \frac{\cos\theta}{1-\cos(90-\theta)} = 2\sec\theta$.
4. Prove that $[\operatorname{cosec}(90-\theta) - \sin(90-\theta)]\,[\operatorname{cosec}\theta - \sin\theta]\,[\tan\theta + \cot\theta] = 1$.
5. Prove that $\frac{\cos A}{1-\tan A} + \frac{\sin A}{1-\cot A} = \sin A + \cos A$.
6. If $\sin\theta = \frac{a}{b}$, find $\cos\theta$.
7. If $\sin\theta - \cos\theta = 0$ find $\sin^4\theta + \cos^4\theta$
8. Find the value of $\sin(45+\theta) - \cos(45-\theta)$.
9. Prove that $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\operatorname{cosec}\theta$.
10. Prove that $\frac{\tan A}{1+\sec A} - \frac{\tan A}{1-\sec A} = 2\operatorname{cosec} A$.
11. Prove that $1 + \frac{\cot^2\theta}{1+\operatorname{cosec}\theta} = \operatorname{cosec}\theta$.
12. If $2\sin^2\theta - \cos^2\theta = 2$, find θ.
13. Simplify: $(1+\tan^2\theta)(1-\sin\theta)(1+\sin\theta)$
14. If $1+\sin^2\theta = 3\sin\theta.\cos\theta$ then prove that $\tan\theta = 1$ or $\frac{1}{2}$.
15. Prove that $\tan^4\theta + \tan^2\theta = \sec^4\theta - \sec^2\theta$.
16. If $7\sin^2\theta + 3\cos^2\theta = 4$, show that $\tan\theta = \frac{1}{\sqrt{3}}$.
17. Prove that $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta} + \frac{\sin\theta - \cos\theta}{\sin\theta + \cos\theta} = \frac{2}{2\sin^2\theta - 1}$
18. Prove that $\frac{1}{\operatorname{cosec}\theta - \cot\theta} - \frac{1}{\sin\theta} = \frac{1}{\sin\theta} - \frac{1}{\operatorname{cosec}\theta + \cot\theta}$
19. Prove that $\tan^2 A - \tan^2 B = \frac{\sin^2 A - \sin^2 B}{\cos^2 A - \cos^2 B}$
20. Prove that $\sqrt{\frac{\sec\theta - 1}{\sec\theta + 1}} + \sqrt{\frac{\sec\theta + 1}{\sec\theta - 1}} = 2\operatorname{cosec}\theta$
21. Prove that $\frac{\operatorname{cosec} A}{\operatorname{cosec} A - 1} + \frac{\operatorname{cosec} A}{\operatorname{cosec} A + 1} = 2\sec^2 A$.
22. Prove that $\frac{\cot\theta}{\operatorname{cosec}\theta + 1} + \frac{\operatorname{cosec}\theta + 1}{\cot\theta} = \sec\theta$
23. Prove that $\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = 1 + \tan\theta + \cot\theta$
24. If $\cos(40 + x) = \sin 30^0$ find x. [x is acute]
25. If $\sin(A+B) = 1$ and $\cos(A-B) = 1$ find A and B. [A and B are acute]
26. Evaluate: $\frac{3\sin 3A + 2\cos(5A+10^0)}{\sqrt{3}\tan 3A - \operatorname{cosec}(5A-20^0)}$ where $A = 10^0$
27. If $5\cos\theta = 7\sin\theta$ find the value of $\frac{7\sin\theta + 5\cos\theta}{5\sin\theta - 7\cos\theta}$
28. Find the value of $\tan 1^0.\tan 2^0.\tan 3^0 \ldots \tan 89^0$.
29. If $\cot\theta = \frac{15}{8}$ Evaluate $\frac{4\cot\theta - 5\sec\theta - 8\operatorname{cosec}\theta}{5\tan\theta + \frac{4}{3}\cot\theta - 17\sin\theta}$
30. Prove that $\frac{\sin A}{1+\cos A} + \frac{\sin A}{1-\cos A} = \sqrt{\frac{1+\cos A}{1-\cos A}} + \sqrt{\frac{1-\cos A}{1+\cos A}}$
31. Prove that $(\sin\theta + \cos\theta + 1)(\sin\theta - 1 + \cos\theta)(\sec\theta.\operatorname{cosec}\theta) = 2$.
32. Prove that $(1+\cot^2\theta)(1+\cos\theta)(1-\cos\theta) = (1+\tan^2\theta)(1+\sin\theta)(1-\sin\theta) = 1$
33. Prove that $(\operatorname{cosec}\theta + \cot\theta)^2 = \frac{\sec\theta + 1}{\sec\theta - 1}$
34. Prove that $\frac{\sin A - 2\sin^3 A}{2\cos^3 A - \cos A} = \tan A$

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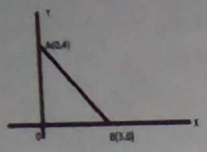
HEIGHT AND DISTANCES

1. From the top of a light house, the angle of depression of two ships on opposite sides of it are observed to be 30^0 and 60^0. If the height of the light house is 'h' meters and the line of joining the ships passes through the foot of the light house, show that the distance between the two ships is $\frac{4h}{\sqrt{3}}$meters.
2. A pole of 5m height is fixed on the top of a tower. The angle of elevation of the top of the pole observed from the point A on the ground is 60^0 and the angle of depression of the point A from the top of the tower is 45^0. Find the height of the tower.
3. A man standing on the deck of a ship which is 10m above the water level observe the angle of elevation of the top of a hill as 60^0 and the angle of depression of base of the hill as 30^0. Calculate the distance of the hill from the ship and the height of the hill.
4. The angle of elevation of an aeroplane from a point on the ground is 60^0. After 15 seconds flight, the elevation changes to 30^0. If the aeroplane is plying at height of$1500\sqrt{3}$ m, find the speed of the plane.
5. The shadow of the building when the angle of elevation of the sun is 45^0 is found to be 10 m longer than when it was 60^0. Find the height of the building. (use $\sqrt{3} = 1.732$)
6. Two men standing on either side of a tower 60 m high observe the angle of elevation of the top of the tower to be 45^0 and 60^0 respectively. Find the distance between two men.
7. The angle of elevation of a jet aircraft from a point P on the ground is 60^0. After a flight of 15 seconds, the angle of elevation becomes half of the previous angle. If the jet is flying at a speed of 720 km/h, find the constant height at which the jet is flying.
8. From a point on a bridge across a river, the angle of depression of the banks on opposite sides of a river are 30^0 and 45^0 respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.
9. From the top of a building of 60 m high, the angle of depression of the top and bottom of a vertical lamp post are observed to be 30^0 and 60^0 respectively. Find the height of the lamp post.
10. A ladder 9 m long reaches a point 9 m below the top of a vertical flagstaff. From the foot of the ladder, the elevation of the top of the flagstaff is 60^0. Find the height of the flagstaff.
11. From a point 50 m above the ground the angle of elevation of a cloud is 30^0 and the angle of depression of its reflection in water is 60^0 find the height of the cloud above the ground.

PROBABILITY

1. Two different dice are tossed together. Find the probability of getting
   i) a doublet ii) sum of the numbers on the two faces 10 iii) Product of the numbers on the two faces 6
2. An integer is chosen at random between 1 and 100. Find the probability that it is
   i) Divisible by ii) Not divisible by 8
3. The probability of selecting a rotten apple randomly from a heap of 900 apples is 0.18. What is the number of rotten apples in the heap?
4. A bag contains 15 white and some black balls. If the probability of drawing a black ball from a bag is thrice that of drawing a white ball, find the number of black balls in the bag.
5. A card is drawn at random from a well shuffled pack of 52 playing cards. Find the probability of getting neither a red card nor a queen.
6. Two different dice are tossed together. Find the probability that the product of the two numbers on the top of the dice is 6.
7. Rahim tosses two different coins simultaneously. Find the probability of getting atleast one tail.
8. Find the probability that a non- leap year chosen at random has i) 52 Sundays ii) 53 Sundays
9. A bag contains 24 balls of which 'x' are red, '2x' are white and '3x' are blue. A ball is selected at random. What is the probability that the ball drawn is i) not white ii) blue iii) white or blue
10. A coin is tossed 3 times.What is the probability of getting i) at least two tails ii) at most two tails.
11. From a pack of 52 playing cards kings, queens, jacks and aces of black color were removed. From the remaining cards, a card is drawn at random. Find the probability that the card drawn is
    i) a face card ii) a red card iii) a black card
12. One number selected from the numbers 2, 3, 3, 5, 5, 5, 7, 9, 20 at random. Find the probability that the selected numbers is equal to the median of the given numbers.
13. A die is thrown once. Find the probability of getting a number which is not a factor of 36.
14. In a family of 3 children, find the probability of having at least one boy.
15. A fair coin is tossed repeatedly. If tail appears on first 4 tosses, then find the probability of head appearing on the 5^{th} toss.
16. A letter of English alphabet is chosen at random. Determine the probability that chosen letter is a consonant.
17. A letter is chosen at random from the English alphabet. What is the probability that it is a letter of the word "MATHEMATICS"?

CO-ORDINATE GEOMETRY

1. What is the distance of the point P(2,3) from the x–axis?
2. AOBCis a rectangle whose three vertices are A(0,3), O(0,0) and B (5,0) The length of it diagonal = ________.
3.  In the figure A(0,4), B(3,0) and O(0,0) then find perimeter of ΔAOB.
4. P($\frac{a}{3}$, 4) is the midpoint of the line segment joining the points Q(–6,5) and R(–2, 3) find a.
5. If the points A(1,2), B(0,0) and C(a,b) then prove that 2a=b.
6. Prove that A(3,1), B(12, –2) and C(0 ,2)can't be the vertices of the triangle.
7. A circle has its center at the origin and a point P(5 ,0) lies on it. Show that the point Q(6, 8) lies outside the circle.
8. If P(a ,b) is the midpoint of the line segment joining the points A(10, –6) and B(k, 4) and a-2b=18 find the value of 'k' and distance AB.
9. Find the value of 'a' if the distance between the points A(–3, –14) and B(a, –5) is 9 units.
10. Find the area of a triangle with vertices P(a, b+c) , Q(b, c+a) and R(c, a+b).
11. A line intersect the y-axis and x – axis at the point P and Q respectively. If (2 , –5) is the midpoint of PQ, then find the co-ordinates of P and Q.
12. If the points P(x, y) , Q(1, 2) and R(7, 0) are collinear, prove thatx+3y=7.
13. Determine the ratio in which the line 2x+y–4 = 0 divides the line segment joining the points A(2,–2) and B(3,7).
14. Find the centroid of the ΔABC whose vertices are A(–3, 0), B(5, –2)and C(–8 , 5).
15. If A(X_1, Y_1), B(X_2,Y_2) and C(X_3,Y_3) are the vertices of ΔABC, find the co-ordinates of the centroid of the triangle.

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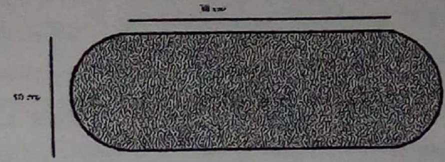
LINEAR EQUATIONS IN TWO VARIABLES

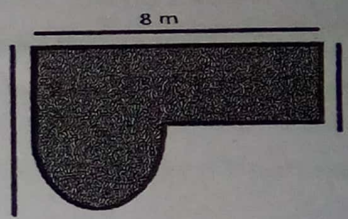
1. One says "Give me a hundred, friend I shall become twice as rich as you". The another replies, "if you give me ten, I shall be six times as rich as you'. Tell me what the amount of their (respective) capital is.
2. Calculate the value of k if the equations 3x – y+8 = 0 and 6x –ky= –16 represent coincident lines.
3. The age of the father is twice the sum of the ages of his two children. After 20 years his age will be equal to the sum of the ages of his children. Find the age of the father.
4. There are some students in the two examination halls A and B. to make the number of students equal in each hall, 10 students are sent from A to B. But if 20 students are sent from B to A, the number of students in A becomes double the number of students in B. find the number of students in two halls.
5. In a competitive examination, one mark is awarded for each correct answer. While $\frac{1}{2}$ marks is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly?
6. A sailor goes 8 km downstream in 40 minutes and returns back in 1 hour. Then find the speed of the sailor in still water and speed of the current.
7. In a given fraction if the numerator is multiplied by 2 and the denominator is reduced by 5 to get $\frac{6}{5}$ .but if the numerator of the given fraction is increased by 8 and the denominator is doubled we get$\frac{2}{5}$. Find the fraction.

AREAS RELATED TO CIRCLES

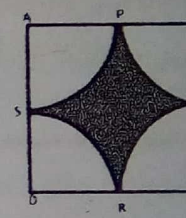
1. Find the area of the largest triangle that can be inscribed in a semicircle of radius "r" units.
2. Find the ratio of the areas of a circle to a square if their perimeters are equal.
3. Find the area of a circle that can be inscribed in a square of side 6 cm.
4. Find the area of a square that can be inscribed in a circle of radius 8 cm.
5. Find the area of the flower bed shown in the figure:



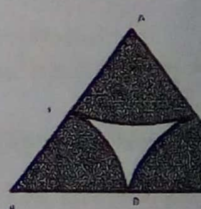
6. Find the area of the shaded region as shown in the figure.



7. Find the area of the shaded region in the figure where arcs are drawn with centers A, B, C and D intersect in pairs at midpoints P, Q, R and S of the sides AB, BC, CD and DA respectively of a square ABCD. Sides of the square is 12 cm.[π= 3.14]

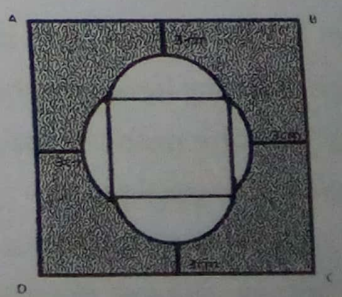


8. In the figure arcs are drawn by taking vertices A, B and C of an Equilateral triangle of side 10cm, to intersect the sides BC, CA and AB at their respective midpoints D, E and F. Find the area of shaded region.[π= 3.14]



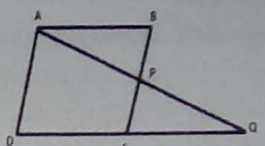
9. A piece of wire 20 cm long bent into the form of an arc of a circle subtending at an angle of 60^0 at center. Find the radius of the circle.

10. Find the area of the shaded region given in the figure. [ABCD is a square]

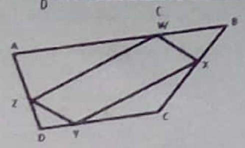


SIMILAR TRIANGLES

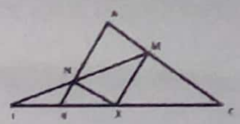
1. ABCD is a rhombus. P is any point on BC. AP is joined and produced to meet DC produced at Q. Prove that $\frac{1}{BC} = \frac{1}{PC} - \frac{1}{CQ}$



2. ABCD is a quadrilateral in which W, X, Y and Z are the points of intersection of sides AB, BC, CD and DA respectively. Prove that WXYZ is a parallelogram.



3. ABCD is rectangle. BP and DQ are drawn perpendicular to AC. Prove that i) AC. AP=AB^2 ii) AC. AQ=AD^2
4. In a quadrilateral ABCD diagonals AC and BD intersect at O. prove that $\frac{\text{area of } \Delta ABD}{\text{area of } \Delta BCD} = \frac{AO}{OC}$
5. In an ΔABC, D is point on BC. $\angle ABC = \angle BAC$ prove that CA^2 = CD.CB
6. In ΔABC, X is a point on BC. XM ∥ AB and XN ∥ AC are drawn to meet AC at M and AB at N. MN is produced to meet BC produced at T. Prove that (TX)^2=TB.TC



7. In the parallelogram ABCD, P is a point on BC. DP and AB are produced to meet at L. Prove that $\frac{DP}{PL} = \frac{DC}{BL}$
8. In a trapezium ABCD, AB∥ CD. Points E and F are on AD and BC such that EF∥ AB. Prove that $\frac{AE}{ED} = \frac{BF}{FC}$

PYTHAGOROUS THEOREM

1. The height of a quadrilateral triangle is $5\sqrt{3}$cm. Find its perimeter.
2. In an equilateral triangle with side "a" units, prove that its altitude is $\frac{a\sqrt{3}}{2}$ units.
3. There are two walls at the edge of a road. A ladder of 25m long reaches the top of a wall ehose height is 15m on one side of the street. Keeping its foot at the same point, the ladder is turned to other side of the street to reach the top of another wall whose height 7m. Find the width of the street.
4. The sides of a right angled triangle are in arithmetic progression. Show that the sides are in the ratio 3:4:5
5. A tree of 32m tall broke due to a gale and its top fell at a distance of 16m from the foot of the tree. At what height did the tree break?
6. Two poles of height 11m and 6m are perpendicular to the plane ground. If the distance between the two poles is 12m, find the distance between their tops.
7. A man walks 1km due north, from then he walks 4kms due east and again he walks 2km due north. Find his distance from the original point.
8. A ladder of length 2.6m is leaned a wall. When it is at a distance of 2.4m from the foot of the wall, its top touches the bottom edge of the window in the wall. If the foot of the ladder is moved 1.4m towards the wall, it touches top edge of the window. Find the height of the window.
9. The perpendicular AD on BC of an ΔABC trisects BC at D so that BC = 3CD. Prove that 2AB2 = 2AC^2 + BC^2.
10. In a figure ABC is a right triangle, right angled at B. AD and CE is two medians drawn from A and C respectively. If AC= 5 cm, and AD =$\frac{3}{2}\sqrt{5}$cm, find the length of CE.
11. In ΔABC, BD: CD = 3:1 and AD⊥BC Prove that 2(AB^2 – AC^2) = BC^2.
12. In an equilateral ΔABC, AD is perpendicular to BC. Prove that AB^2+CD^2 = $\frac{5}{4}$AC^2
13. In a ΔABC, ∠B =90^0, BM⊥ AC. If AM = 16 MC, prove that AB = 4 BC.
14. ABCD is a rhombus. Prove that AC^2 + BD^2=4AB^2. (it can be asked like this; prove that sum of the squares of the diagonals of a rhombus is equal to sum of the squares of its side)
15. P and Q are the midpoints of the sides AC and BC respectively of ΔABC, right angled at C. Prove that 4AQ^2 = 4AC^2 + BC^2.
16. In the trapezium ABCD, AB∥ CD and BC⊥ AB. If AB=7.5 cm, AD= 13cm, CD= 12.5cm, find BC.
17. P is any point inside a rectangle ABCD. Prove that PA^2 +PC^2 = PB^2 +PD^2.

QUADRATIC EQUATIONS

1. The sum of two numbers is 27 and their product is 182. Find the numbers.
2. The sum of the squares of two consecutive positive integers is 365. Find the numbers.
3. Rohan's mother is 26 years older than him. After 3 years the product of their ages will be 360. Find their present age.
4. A rectangular garden has its breadth 3m less than its length. The area of the garden is 4 sq.m more than the area of the isosceles triangle which is constructed on the breadth of the rectangle. If the height of the triangle is 12m, find the length and breadth of the rectangular garden.
5. In a test, the sum of the marks scored by Chaitra in maths and English is 30. If the scores 2 marks more than in maths and 3 less in English the product of marks would become 210. Find the marks by her in both the subjects.
6. The diagonal of a rectangle is 60m more than its breadth. If length of the rectangle is 30m more than its breadth, find length and breadth.
7. The difference between the squares of two numbers is 180. If the square of the small number is 8 times the bigger number, find the numbers.
8. The perimeter of a right angled triangle is 30cm and its hypotenuse is 13cm. find the other two sides.
9. Two pipes together can fill a water tank in 6 hours and 40 minutes. If one of the pipes take 3 hours less than the other, find the time required for the both the pipes to fill the tank separately.
10. In a flight of 600km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200km/hr and the time of flight increased by 30 minutes. Find the original duration of the flight.
11. A journey of 192km form a town A and B takes 2 hours more by ordinary passenger train than a super fast train. If the speed of the faster train is 16km/hr more, find the speed of both the trains.
12. Ramesh bought some glass vessels for Rs.600. two vessels were damaged during transportation. He sold rest of the vessels and made a total profit of Rs. 50. Find the number of glass vessels bought by him.
13. Three numbers are in the ratio $\frac{1}{3}:\frac{1}{5}:\frac{1}{6}$. If the sum of their squares is 644 then find the numbers.
14. If the roots of the equation $(b-c)x^2+(c-a)x+(a-b) = 0$ are equal, then prove that $2b=a+c$
15. By selling an article for Rs. 18.75, a merchant looses as much percent as its cost price. Find the cost price of the article.
16. If a cyclist had gone 3km/hr faster he would have taken 1 hr 20 mnts less to ride 80kms. What time did he take?
17. The head master of a school distributed Rs.1500 equally among rank holders of X std class. If 5 more of them has secured ranks each would have got Rs. 25 less. Find the number of rank holders.
18. Of one root of the equation $x^2+bx+c=0$ is 4 times the other, prove that $4b^2=25c$.