

International Indian School ,Dammam

Class IX

Worksheet: Probability

2017-18

1. Probability of an event always lies between _____
2. The probability of happening of an event is 37%. Then the probability of the event is _____.
3. In a class there x girls and y boys, a student is selected at random , then what is the probability of selecting a girl.
4. A die is thrown , find the probability of getting an odd number.
5. A coin is tossed 15 times and observed that 11 times head comes up. Find the probability of a tail to come up.
6. Two coins are tossed simultaneously, find the probability of getting one or more tail.
7. The record of a weather station shows that out of the past 150 consecutive days its weather forecast were correct 90 times.
 - (i) What is the probability that on the given day it was correct?
 - (ii) What is the probability that it was not correct on the given day?
8. Two coins are tossed simultaneously 300 times, and we get ,Two Heads: 135; One Head: 63; No Head :102. Find the probability of occurrence of each of these events.
9. 40 students of a class were born of on the following months.

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sudents	3	4	2	2	5	1	2	6	3	4	4	4

Find the Probability that a student's birthday is

- (i) in April (ii) after July (iii) falls in three first months of a year

10. In a medical examination of students of a class, the following blood groups are recorded

Blood group	A	B	AB	O
No: of Students	10	13	12	5

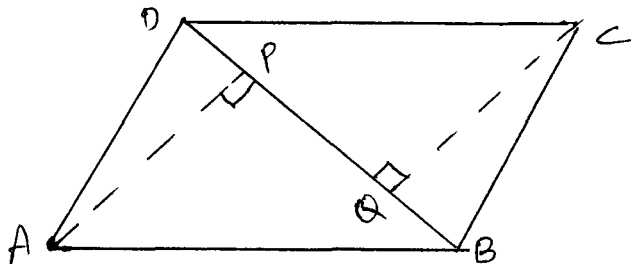
Find the probability that the student has blood group (i) A OR B (II) O (III) AB

INTERNATIONAL INDIAN SCHOOL DAMMAM

CLASS IX MATHS WORKSHEET 2017-18

QUADRILATERALS

- 1 Prove that a diagonal of a parallelogram divides it into two congruent triangles.
- 2 Two parallel lines l and m are intersected by a transversal p . Show that the quadrilateral formed by the bisectors of interior angles is a rectangle
- 3 Show that the bisectors of angles of a parallelogram form a rectangle
- 4 Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.
- 5 ABCD is a rhombus. Show that diagonal AC bisects $\angle A$ as well as $\angle C$ and diagonal BD bisects $\angle B$ as well as $\angle D$.
- 6 ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that (i) $\triangle APB \cong \triangle CQD$ (ii) $AP = CQ$



- 7 ABCD is a trapezium in which $AB \parallel CD$ and $AD = BC$ (see Fig. 8.23). Show that
 - (i) $\angle A = \angle B$
 - (ii) $\angle C = \angle D$
 - (iii) $\triangle ABC \cong \triangle BAD$
 - (iv) diagonal AC = diagonal BD
- 8 ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle.
- 9 ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that
 - (i) D is the mid-point of AC
 - (ii) $MD \perp AC$
 - (iii) $CM = MA = \frac{1}{2} AB$
- 10 Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other.

International Indian School, Dammam

WORKSHEET : STATISTICS

CLASS: IX

2017-18

1. Find the class mark of the interval 115-125.
2. Find the range of the data 25, 36, 14, 16, 22, 8, 33.
3. The mean of five numbers is 30. If one no: is excluded, the new mean is 28. Find the excluded no:
4. If the mean of $x, x+3, x+5, x+7, x+10$ is 9. Find x and also find the mean of last three no:s.
5. The mean of 25 observations is 36. The mean of first thirteen observations is 32 and last thirteen observations is 40, what is the 13th observation.
6. Find the median of the data, 36, 45, 23, 60, 22, 38, 48, 28, 43, 36.
7. Find the mode of the data 2, 3, 2, 2, 3, 5, 6, 2, 3, 5, 3, 3, 3, 5.
8. Find the class intervals if class marks are 15, 20, 25, 30, 35, 40.
9. For a particular year, following is the distribution of ages in years for primary teachers in a school.

Ages	25-30	30-35	35-40	40-45	45-50	50-55
Teachers	32	28	35	25	16	4

- a. Write the lower limit of the first class interval.
 - b. Determine the class limits of the fourth class interval.
 - c. Find the class mark of the class 45-50.
 - d. Determine the class size.
 - e. Construct a histogram for the frequency table.
10. The following table shows the no: of literate females in a town. Prepare a histogram and frequency polygon for the data.

Age group	10-15	15-20	20-25	25-30	30-35	35-40
Females	300	980	800	580	290	50

11. Mean of 10 numbers is 20. If 5 is subtracted from every number, what will be the new mean?
12. The mean of 21 numbers is 15. If each number is multiplied by 2, what will be the new mean?
13. If the mean of 10, 12, 18, 13, p , 17 is 15, find the value of p ?

14. The following observations are arranged in ascending order, if the median of the data is 63, find the value of x .
29, 32, 40, 50, x , $x+2$, 72, 78, 84, 95.

15. If the mean of the marks of five students is 33 and that of the marks of four of them is 32.5, then find the marks obtained by the 5th student.

16. Find the arithmetic mean of first 10 whole numbers.

17. Find the mean of first 5 prime numbers.

18. Plot a histogram and frequency polygon for the following distribution.

class	10-18	20-28	30-38	40-48	50-58	60-68
Frequency	6	10	12	5	8	4

19. The median of the following observations arranged in ascending order is 24. Find x

14, 18, $x+2$, $x+4$, 30, 34.

20. Find the mean of the following distribution.

x	4	6	9	10	15
f	5	10	10	7	8

21. The marks obtained (out of 100) by a class of 80 students are given below. Construct a histogram.

Marks	10-20	20-30	30-50	50-70	70-100
No: of students	6	17	15	16	26

22. The mean of the following distribution is 50. Find 'a' and all frequencies.

x	10	30	50	70	90
f	17	$5a+3$	32	$7a-11$	19

23. The class marks and their corresponding frequencies are given below. Construct a histogram.

Class mark	105	115	125	135	145	155	165
Class Frequency	5	7	4	15	12	3	5

INTERNATIONAL INDIAN SCHOOL DAMMAM

WORK SHEET: 2017-18

MATHEMATICS

CLASS IX

Surface Areas and Volumes

1. Three cubes each of side 6cm are joined end to end. Find the surface area of the resulting cuboid.
2. Twenty cylindrical pillars of a building are to be cleaned. If the diameter of the pillar is 0.5m and height 4m, what will be cost of cleaning them at the rate of Rs.3 per m^2 .
3. A hemispherical bowl made of steel is of 1cm thickness. The inner radius of bowl is 6cm. Find the T.S.A of the bowl in terms of π .
4. Two cylindrical cans have bases of the same size. The diameter of each is 14cm. One of the can is 10cm high and the other is 20cm high. Find the ratio of their volumes.
5. A well with 10m inside diameter is 10m deep. Earth taken out of it is spread all around it to a width of 5m to form an embankment. Find the height of the embankment?
6. A conical tent is 10m high and radius of the base is 24m. Find slant height and cost of the canvas required to make the tent, if the cost of $1m^2$ is Rs.70.
7. The diameter of a copper sphere is 6cm. The sphere is melted and is drawn into a long wire of uniform circular cross section. If the length of wire is 36cm, find its radius.
8. The capacity of a closed cylindrical vessel of height 1cm is 15.4 litres. How many square metre of metal sheet would be needed to make it?
9. A hemispherical bowl of internal radius 9cm is full of liquid. This liquid is to be emptied into cylindrical bottles of diameter 3cm and height 4cm. Find the number of bottles required to fill the liquid.
10. The length, breadth and height of a room are 5m, 4m and 3m. Find the cost of colour washing it four walls and ceiling at the rate of Rs. 7.50 per m^2 .
11. T.S.A of a cylinder is $231cm^2$. If the C.S.A is $\frac{2}{3}$ of T.S.A, find the volume of the cylinder?

12. For two cylinders A and B, the ratio of the length of A to that of B is 3:1 and ratio of the diameter of A to that of B is 1:2. Calculate the ratio of the volume of A to that of B.
13. The length of a cold storage is double its breadth. Its height is 3 metres. The area of its four walls (including doors) is 108m^2 . Find its volume.
14. The dimensions of a cuboid are in the ratio 1:2:3 and its total surface area is 88m^2 . Find the dimensions.
15. The volume of metallic cylindrical pipe is 748cm^3 . Its length is 14cm and its outer radius is 9cm. Find its thickness.
16. How many metres of cloth 5m wide are required to make a conical tent, the radius of whose base is 7m and whose height is 24m?
17. A right circular cone is 3.6 cm high and radius of its base is 1.6cm. It is melted and recasted into a right circular cone with radius of its base as 1.2cm. Find its height.
18. A solid sphere of radius 3 cm is melted and then casted into small spherical balls each of diameter 0.6cm. Find the number of balls thus obtained.
19. The inner and outer diameters of a hollow hemispherical vessel are 24cm and 25cm respectively. If the cost of painting 1cm^2 of the surface area is Rs.0.05, find the total cost of painting the vessel all over.
20. A rectangular sheet of paper 44cm x 18cm is rolled along its length and a cylinder is formed. Find its volume.
21. A semicircular sheet of metal of diameter 28cm is bend into an open conical cup. Find the depth and capacity of the cup.
22. The surface area of a sphere is 5544cm^2 . Find its volume.
23. One iron solid is a cuboid of 30cm x 30cm x 42.6cm. It is melted and cubes each of 3cm are moulded. Find the number of cubes.
24. Find the edge of a cube, if volume of the cube is equal to the volume of cuboid of dimensions 8m x 4m x 2m.
25. A closed iron tank 12m long, 9m wide and 4m deep is to be made. Determine the cost of iron sheet used at the rate of Rs.50 per metre, the sheet being 2m wide.

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CLASS IX MATHS WORKSHEET 2017-18

CONSTRUCTIONS

1. Draw an angle of 110° with the help of a protractor and bisect it. Measure each angle.
2. Construct a triangle whose sides are 3.6 cm, 3.0 cm and 4.8 cm. Bisect the smallest angle and measure each part
3. Construct a triangle ABC in which $BC = 5$ cm, $\angle B = 60^\circ$ and $AC + AB = 7.5$ cm
4. Construct a rhombus whose side is of length 3.4 cm and one of its angles is 45°
5. Construct an equilateral triangle if its altitude is 6 cm. Give justification for your construction.
6. Construct a triangle whose perimeter is 10.4 cm and two angles are 45° and 120° .
7. Construct a triangle PQR given that $QR = 3$ cm, $\angle PQR = 45^\circ$ and $QP - PR = 2$ cm.
8. Construct a right angled triangle when one side is 3.5 cm and sum of other sides and the hypotenuse is 5.5 cm.
9. Construct an equilateral triangle if its altitude is 3.2 cm.
10. Construct a rhombus whose diagonals are 4 cm and 6 cm in lengths.
11. Construct a triangle PQR in which $\angle Q = 60^\circ$ and $\angle R = 45^\circ$ and $PQ + QR + PR = 11$ cm.
12. Construct a right angled triangle whose base is 12 cm and the difference in lengths of its hypotenuse and the other side is 8cm. Also give justification of the steps of construction.
13. Draw lines PQ and RS intersecting at point K. Measure a pair of vertically opposite angles. Bisect them. Are the bisecting rays forming a straight line ?

INTERNATIONAL INDIAN SCHOOL DAMMAM

CLASS IX MATHS WORKSHEET 2016-'17

LINEAR EQUATIONS IN TWO VARIABLES

1. Find the points where the graph of the equation $3x + 4y = 12$ cuts the x-axis and the y-axis.
2. At what point does the graph of the linear equation $x + y = 5$ meet a line which is parallel to the y-axis, at a distance 2 units from the origin and in the positive direction of x-axis
3. Determine the point on the graph of the linear equation $2x + 5y = 19$, whose ordinate is $1\frac{1}{2}$ times its abscissa.
4. Draw the graph of the equation represented by a straight line which is parallel to the x-axis and at a distance 3 units below it.
5. Draw the graph of the linear equation whose solutions are represented by the points having the sum of the coordinates as 10 units.
6. If the point (3, 4) lies on the graph of $3y = ax + 7$, then find the value of "a"
7. Find the solution of the linear equation $x + 2y = 8$ which represents a point on
 - (i) x-axis
 - (ii) y-axis
8. For what value of c, the linear equation $2x + cy = 8$ has equal values of x and y for its solution.
9. Let y varies directly as x. If $y = 12$ when $x = 4$, then write a linear equation. What is the value of y when $x = 5$?
10. Draw the graph of the linear equation $2x + 3y = 12$. At what points, the graph of the equation cuts the x-axis and the y-axis?

graph of the same by taking the constant mass equal to 6 kg. Read from the graph, the force required when the acceleration produced is (i) 5 m/sec^2 , (ii) 6 m/sec^2

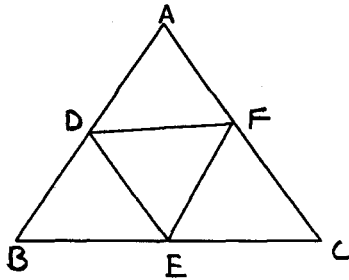
12. Give the equations of two lines passing through (2, 10). How many more such lines are there, and why?
13. If the point (3, 4) lies on the graph of the equation $6y + ax = 3$, find whether (6, 5) also lies on the same graph.
14. Find three solutions of linear equation $7x - 5y = 35$ in two variables.
15. Find the solution of the linear equation $x + 2y = 8$ which represents a point on
(i) x-axis (ii) y-axis
16. Find the points where the graph of the equation $3x + 4y = 12$ cuts the x-axis and the y-axis.

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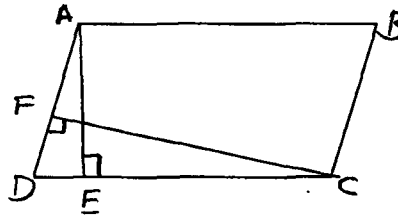
CLASS IX MATHS WORKSHEET 2017-18

Areas of Parallelograms and Triangles

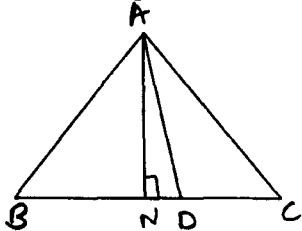
1. In a $\triangle ABC$, D , E and F are respectively the midpoints of sides AB , BC and CA show that $\triangle ABC$ is divided into four congruent triangles by joining D , E and F



2. Let $ABCD$ be a parallelogram with $AE \perp DC$ and $CF \perp AD$. Let $AB=15\text{cm}$, $AE=8\text{cm}$ and $CF=10\text{cm}$. Find AD .

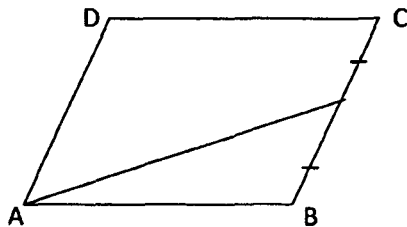


3. In the given fig, AD is a median and $AN \perp BD$. Prove that $\text{ar}(\triangle ABD) = \text{ar}(\triangle ACD)$



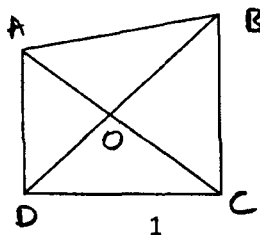
4. Area of $\triangle ABC$ is 14 cm^2 . If AD is median to side BC , Find area ($\triangle ACD$)

5. $ABCD$ is a parallelogram. If E is the midpoint of BC , and AE is the bisector of $\angle A$. Prove that $AB = \frac{1}{2}AD$

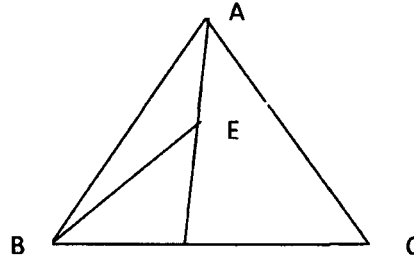


6. $ABCD$ is a quadrilateral with diagonal AC and BD intersecting at O . If $\text{ar}(\triangle DOC) = \text{ar}(\triangle AOB)$. Show that

$$\angle BDA = \angle DBC$$

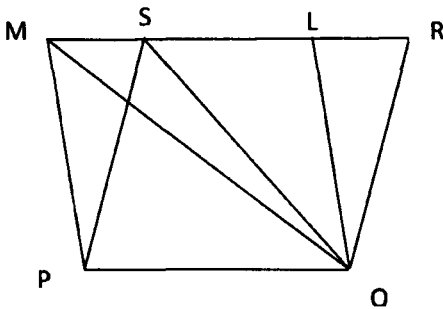


7. In a ΔABC , E is a mid point of median AD. Show that $\text{ar}(\Delta BED) = \frac{1}{4} \text{ar}(\Delta ABC)$

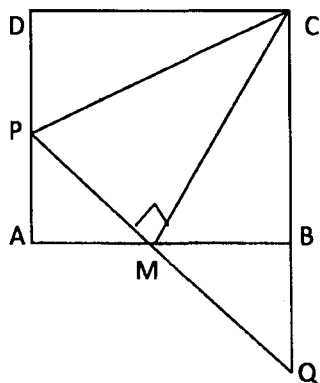


8. In the given fig. PQRS and PQLM are parallelogram and $\text{ar}(PQRS) = 120 \text{ cm}^2$

i) $\text{ar}(PQLM)$ ii) $\text{ar}(\Delta PQS)$ iii) $\text{ar}(\Delta QLM)$



9. ABCD is a square. M is the point on AB such that $AM = MB$. P and Q are points on sides AD and extended CB such that $PQ \perp CM$. Show that $\text{ar}(\Delta CPM) = \text{ar}(\Delta CQM)$



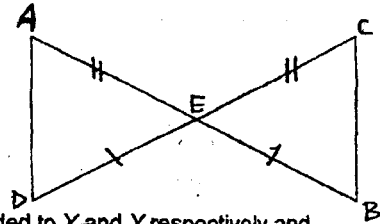
10. P and Q are any two points lying on the sides DC and AD respectively of a parallelogram ABCD. Show that $\text{ar}(APB) = \text{ar}(BQC)$

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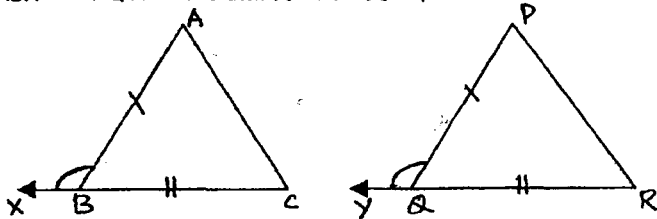
MATHEMATICS WORKSHEET 2017-18

TRIANGLES

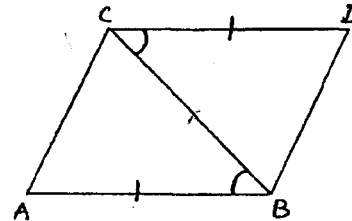
1. In fig AB and CD intersect each other at E such that $DE = BE$ and $EA = EC$ show that $AD = CB$.



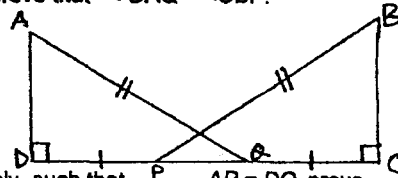
2. In $\triangle ABC$ and $\triangle PQR$, $AB = PQ$, $BC = QR$ and CB and RQ are extended to X and Y respectively and $\angle ABX = \angle PQY$. Prove that $\triangle ABC \cong \triangle PQR$.



3. In the fig $AB = DC$, $\angle ABD = \angle CDB$ Prove that $AD = CB$.



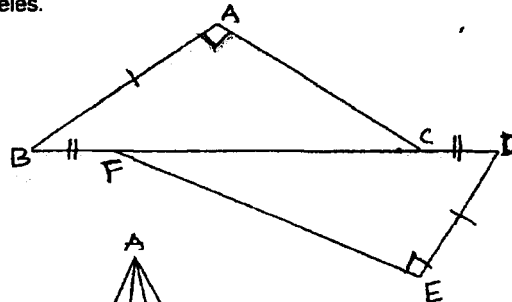
4. In the figure, $AD \perp CD$ and $BC \perp CD$. If $AQ = BP$ and $DP = CQ$, prove that $\angle DAQ = \angle CBP$.



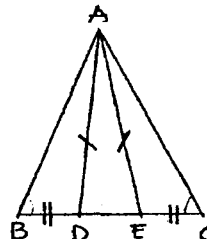
5. $ABCD$ is a square. P and Q are points on DC and BC respectively, such that $AP = DQ$, prove that (i) $\triangle ADP \cong \triangle DCQ$

6. From the vertices B and C of $\triangle ABC$, perpendiculars BE and CF are drawn on the opposite sides AC and AB respectively. If $BE = CF$, prove that $\triangle ABC$ is isosceles.

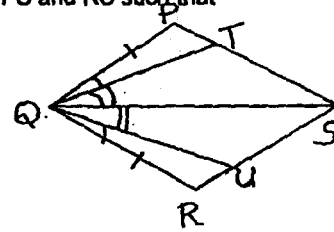
7. In the figure $BA \perp AC$ and $DE \perp EF$ such that $BA = DE$ and $BF = DC$. Prove that $AC = EF$.



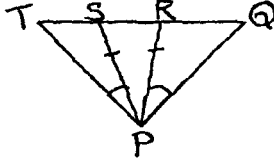
8. In figure, $AD = AE$ and D and E are points on BC such that $BD = EC$. Prove that $AB = AC$.



9. In the figure, $PQRS$ is a quadrilateral and T and U are respectively points on PS and RS such that $PQ = RQ$, $\angle PQT = \angle RQU$ and $\angle TQS = \angle UQS$. Prove that $QT = QU$.

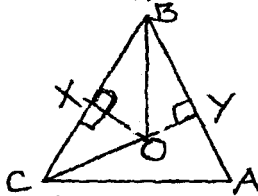


10. In fig., $PS = PR$, $\angle TPS = \angle QPR$. Prove that $PT = PQ$



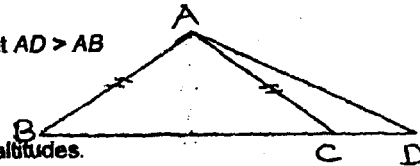
11. In the above fig. If $PQ = PT$ and $\angle TPS = \angle QPR$, prove that $\triangle PRS$ is isosceles.

12. In the figure given below, BO and CO are the bisectors of the angles $\angle B$ and $\angle C$ respectively of a $\triangle ABC$. If $OX \perp BC$ and $OY \perp AB$, prove that (i) $\triangle BOY \cong \triangle COX$ (ii) $OX = OY$.

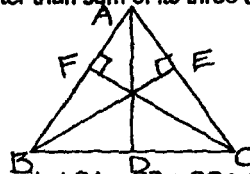


13. In a right-angled triangle, prove that the hypotenuse is the longest side.
 14. $PQRS$ is a quadrilateral with PS as its longest side and QR as its shortest side. Prove that (i) $\angle PQR > \angle PSR$ and (ii) $\angle QRS > \angle SPQ$.

15. In the figure, $AB = AC$ and D is any point on BC produced. Show that $AD > AB$

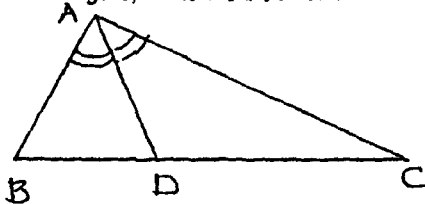


16. Prove that the perimeter of a triangle is greater than sum of its three altitudes. [Hint: $AB > AD$, $BC > BE$, $AC > CF$]



17. "O" is any point in the interior of $\triangle ABC$. Prove that $OA + OB + OC > \frac{1}{2}(AB + BC + AC)$

18. In the figure, AD is the bisector of $\angle A$. Show that $AB > BD$.

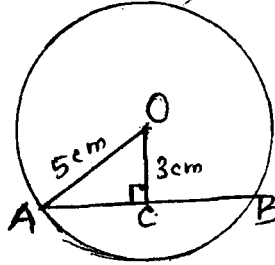


INTERNATIONAL INDIAN SCHOOL, DAMMAM

CLASS IX—MATHEMATICS

CIRCLES[WORKSHEET]— 2017-18

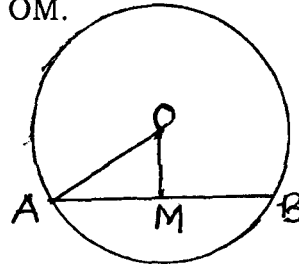
1. In the given figure O is the centre of the circle. If $OA=5\text{cm}$ and $OC=3\text{cm}$, then find the length of AB.



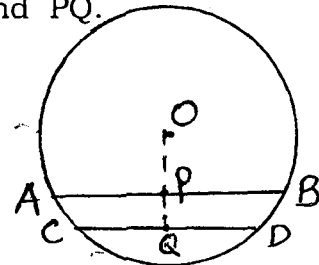
2. In a circle chord AB of length 6 cm is at a distance of 4 cm from the centre O. The length of another chord CD which is also 4 cm away from the centre is...

3. How many circles are passing through three non-collinear points.

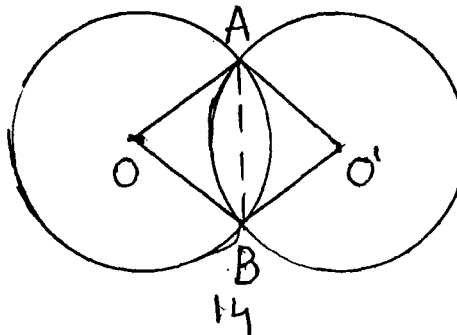
4. In the given figure OM perpendicular to the chord AB of the circle with centre O. If $OA=13\text{cm}$ and $AB=24\text{cm}$. Find OM.



5. In the given figure, O is the centre of the circle of radius 5 cm. $OP \perp AB$, $OQ \perp CD$, $AB \parallel CD$, $AB=8\text{cm}$ and $CD=6\text{cm}$. Find PQ.



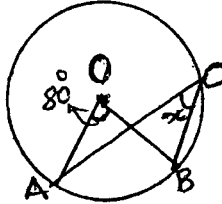
6. Two congruent circles with centres O and O' intersect at two points A and B. Check whether $\angle AOB = \angle A'O'B'$



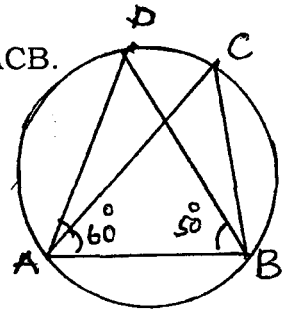
7. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

8. Prove that a cyclic parallelogram is a rectangle. **OR** Prove that parallelogram inscribed in a circle is a rectangle.

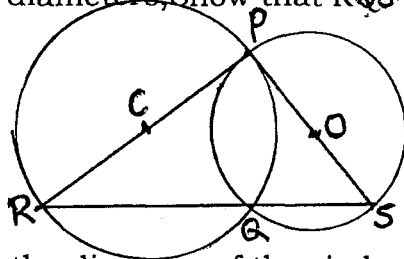
9. In the given figure 'O' is the centre of the circle. If $\angle AOB = 80^\circ$ Find the value of x .



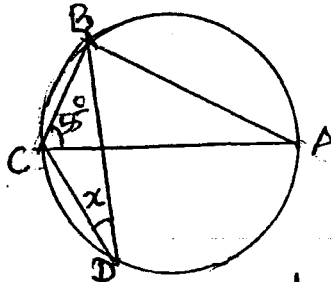
10. In the given figure, if $\angle DAB = 60^\circ$, $\angle ABD = 50^\circ$. then find $\angle ACB$.



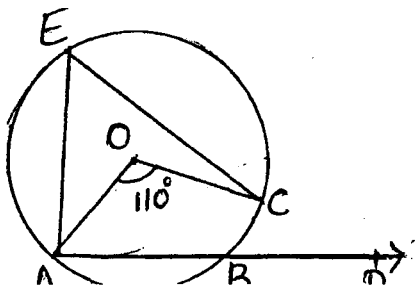
11. In given figures, two circles centered at C and O are intersecting at P and Q. If PR and PS are diameters. Show that RQS is a straight line.



12. In the figure AC is the diameter of the circle. If $\angle ACB = 55^\circ$. Find the value of x .

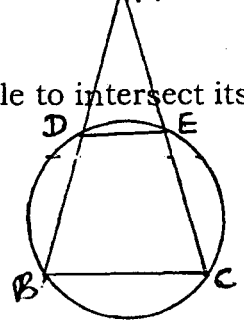


13. In the given figure, if O is the centre of the circle. $\angle AOC = 110^\circ$ and AB is produced to D then find $\angle AEC$ and $\angle ABC$.

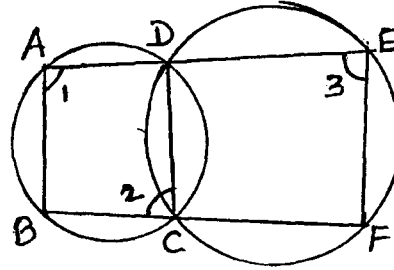


15.

14. If a line drawn parallel to the base of an isosceles triangle to intersect its equal sides. Prove that the quadrilateral so formed is cyclic.

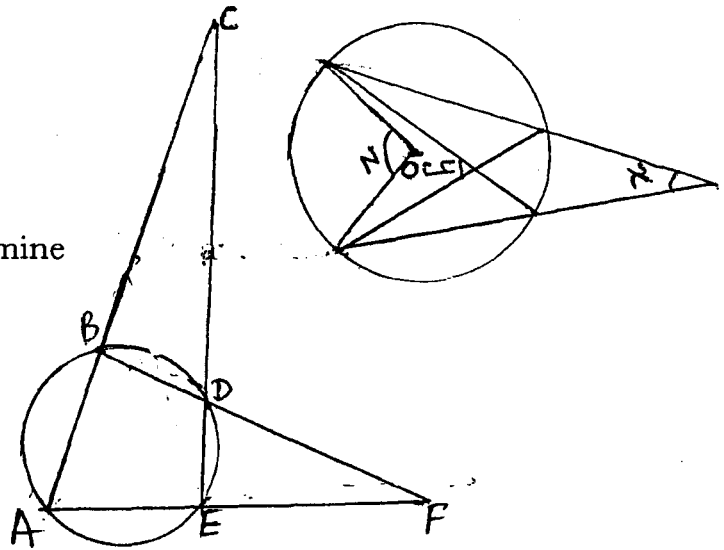


15. In the given figure, two circles intersect each other at C and D. If ADE and BCF are straight lines intersecting circles at A, B, F and E. Prove that $AB \parallel EF$.

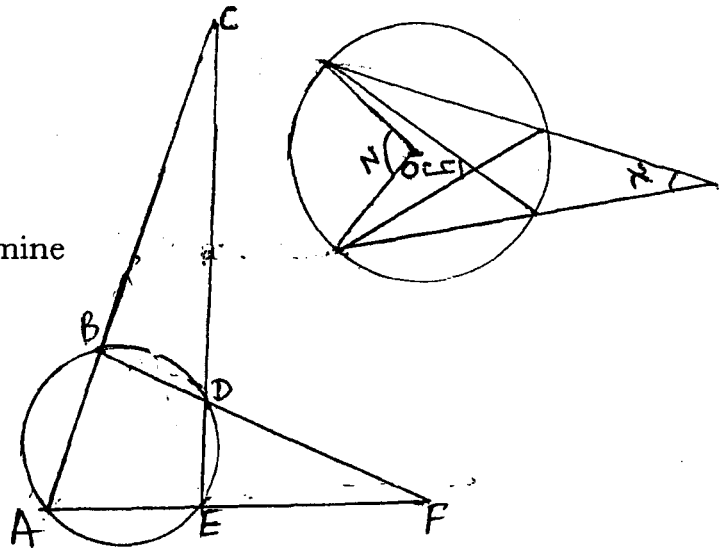


16. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

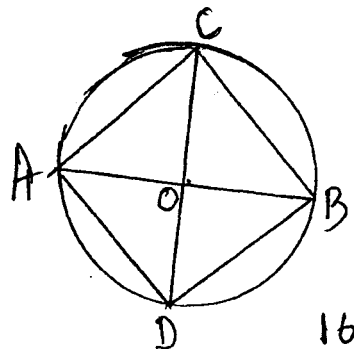
17. In the given figure, O is the centre of the circle. Prove that $\angle X + \angle Y = \angle Z$.



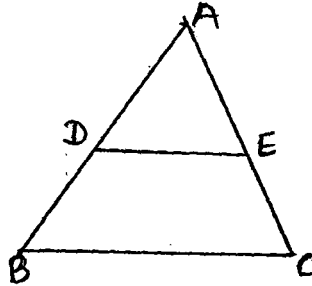
18. In the given figure determine a , b and c .



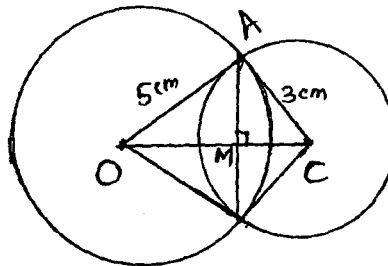
19. Two diameters of a circle intersect each other at right angles. Prove that the quadrilateral formed by joining their end points is a square.



20. D and E are points on equal sides AB and AC of an isosceles triangle ABC such that $AD = AE$. Prove that B, C, D, E are concyclic.



21. Two circles of radii 5 cm and 3 cm intersect at 2 points and the distance from their centres is 4 cm. Find the length of the common chord.



22. If the line segment join the mid points of 2 chords of a circle passing through the centre of the circle, prove that the two chords are parallel.