Winter Break Homework

1. Write any 5 real life examples / situations where integers are used.

2. Write missing numbers

a) ____ × 8 = 96

b) 45 ÷ ____ = 9

3. Write any three numbers that are divisible by both 3 and 5.

4. Arrange the following in ascending order:

−7, 3, 0, −12, 9

5. Write algebraic expression for the following:

(a) Sum of numbers x and 9

(b) 7 times a number y

(c) Difference of a and 5

6. If x = 5 find

(a) 2x + 7

(b) 3x − 4

7. Simplify

(a) 3x + 5x

(b) 7a + 2a

(c) 4m + 6m

8. Draw and label

(a) two parallel lines

(b) two intersecting lines

9. Draw a diagram showing two parallel lines cut by a transversal and mark

i) corresponding angles

ii) vertically opposite angles

Project – Scrapbook Activity

i) Paste pictures showing parallel lines and intersecting lines.

ii) Write one line explanation for each.

KENDRIYA VIDYALAYA
WINTER BREAK HOMEWORK
Class: VI
Subject: Mathematics (Ganitha Prakash)
Chapters: Number Play, Prime Time, Constructions

General Instructions:
• Do all work neatly in a separate notebook.
• Use ruler, compass, and pencil wherever required.
• Write steps clearly for constructions.

Chapter 1: Number Play
1. Write the smallest and greatest 6-digit numbers.
2. Write the place value of each digit in 4,58,392.
3. Arrange in ascending order: 3,456; 3,465; 3,546; 3,654.
4. Write the number name of 7,09,408.
5. Write the expanded form of 6,42,517.

Competency-Based Questions:
1. A library has 3,405 storybooks, 2,689 science books and 1,925 maths books.
a) Find total books. b) Which are maximum?
2. Form the greatest 6-digit number using 4,0,9,2,7,5 without repetition.

Chapter 2: Prime Time
1. Write all prime numbers between 1 and 50.
2. Find prime factors of 36, 48, and 60.
3. Is 91 prime or composite? Give reason.

Competency-Based Questions:
1. 24 chocolates are packed equally. List factors and identify prime/composite.
2. Numbers 11, 15, 17, 21 – identify prime and composite.
3. A number has exactly two factors and lies between 20 and 30. Find it.

Chapter 3: Constructions
1. Construct a line segment of 6 cm.
2. Construct a circle of radius 3 cm.
3. Construct a circle of diameter 8 cm.

Competency-Based Questions:
1. A rangoli circle has radius 4 cm. Find diameter and instrument used.
2. Name tools needed to draw a line segment of 8 cm accurately.

HOTS:
1. Can a number be both prime and composite? Explain.
2. Why is 1 neither prime nor composite?

Note: Revise tables from 2 to 15 daily.

KENDRIYA VIDYALAYA
WINTER BREAK HOMEWORK

Class: VIII
Subject: Mathematics (Ganitha Prakash)
Chapters: Number Play, Proportional Reasoning, We Distribute – Yet Things Multiply

General Instructions
• Do all work neatly in a separate notebook.
• Show all steps clearly.
• Project work is compulsory.

Chapter 1: Number Play
1. Write any five rational numbers between 2 and 3.
2. Express –5/7 on the number line.
3. Find: (–18) ÷ 6, (–7) × (–9).
4. Arrange –3/4, 2/3, –5/6, 1/2 in ascending order.
5. Simplify (–4/5) × (15/8).

Competency-Based Questions
1. Temperature was –3°C and rose by 7°C. Find final temperature.
2. A submarine is 250 m below sea level and rises 180 m. Find new position.

Chapter 2: Proportional Reasoning
1. Cost of 5 notebooks is ■120. Find cost of 12 notebooks.
2. Are distance and time in direct proportion at constant speed?
3. Complete table: Workers 4, 8, 16; Days 24, ?, ?
4. If $x \propto y$, x = 15 when y = 5. Find x when y = 12.

Competency-Based Questions
1. A car travels 180 km in 3 hours. Find distance in 5 hours.
2. Rice for 6 people is 3 kg. Find rice for 10 people.

Chapter 3: We Distribute – Yet Things Multiply
1. Expand 7 × (20 + 4), (15 – 3) × 6.
2. Simplify 25 × 16 and 48 × 25.
3. Verify distributive property: 8 × (5 + 7).

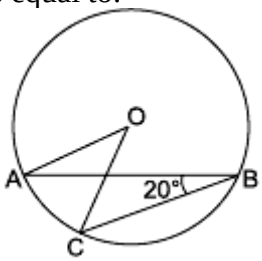
Competency-Based Questions
1. 12 boxes with 24 chocolates each. Find total using distributive property.
2. 18 rows with 25 students each. Find total students.

HOTS
1. Can two quantities be in proportion sometimes and not always?
2. Why is distributive property useful in mental maths?
3. Where are negative numbers used in real life?

Project Activity: Mathematics in Daily Life
• Choose one topic related to chapters.
• Collect at least 5 real-life examples.
• Show calculations clearly.
• Write a short conclusion.

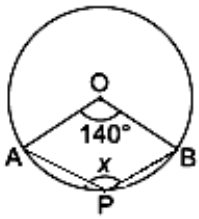
Note: Revise tables from 2 to 25.

1. In figure, if ∠ABC = 20°, then ∠AOC is equal to:



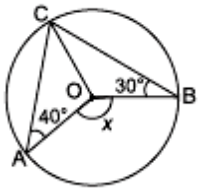
(a) 20° (b) 40° (c) 60° (d) 10°

2. In the given figure, value of x is



(a) 140° (b) 70° (c) 110° (d) 280°

3. In the given figure, O is the centre of the circle. The value of x is

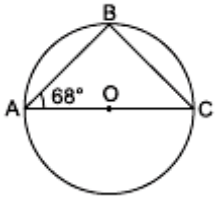


(a) 140° (b) 70° (c) 290° (d) 210°

4. Given a circle of radius 5 cm and centre O. OM is drawn perpendicular to the chord XY. If OM = 3 cm, then length of chord XY is

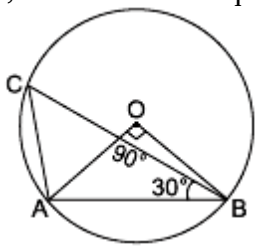
(a) 4 cm (b) 6 cm (c) 8 cm (d) 10 cm

5. In the given figure, O is centre of the circle, ∠BAO = 68°, AC is diameter of the circle, then measure of ∠BCO is



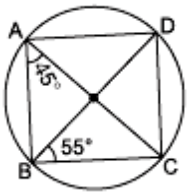
(a) 22° (b) 33° (c) 44° (d) 68°

6. In figure, ∠AOB = 90° and ∠ABC = 30°, then ∠CAO is equal to



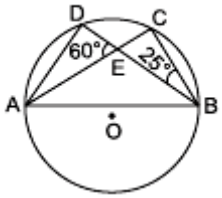
(a) 30° (b) 45° (c) 90° (d) 60°

7. In the given figure, ∠DBC = 55°, ∠BAC = 45° then ∠BCD is



(a) 45° (b) 55° (c) 100° (d) 80°

8. In the given figure, O is the centre of the circle, ∠CBE = 25° and ∠DEA = 60°. The measure of ∠ADB is

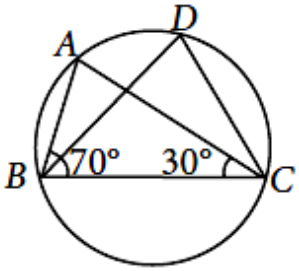


(a) 90° (b) 85° (c) 95° (d) 120°

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

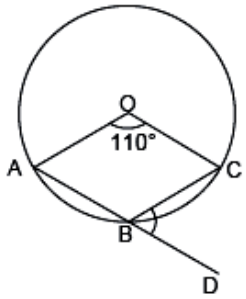
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): In the given figure, ∠ABC = 70° and ∠ACB = 30°. Then, ∠BDC = 80°.



Reason (R): Angles in the same segment of a circle are equal.

10. Assertion (A): If O is the centre of the circle as shown in figure, then ∠CBD = 55°.



Reason (R): Exterior angle of cyclic quadrilateral is equal to interior opposite angle

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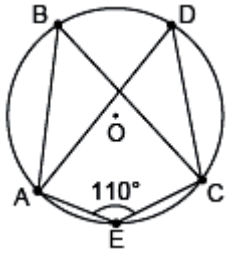
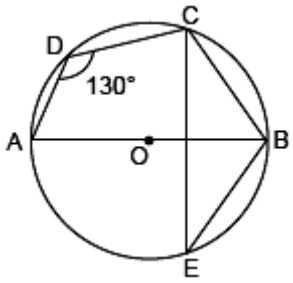
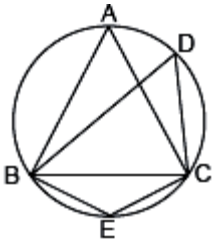
11. In the given figure, ABCE is a cyclic quadrilateral and O is the centre of circle. If ∠AEC = 110°, then find (a) ∠ABC (b) ∠ADC



12. In the given figure, ∠ADC = 130° and chord BC = chord BE. Find ∠CBE.



13. In the given figure, ΔABC is equilateral. Find ∠BDC and ∠BEC.



14. If two chords of a circle are equally inclined to the diameter passing through their point of intersection, prove that the chords are equal.

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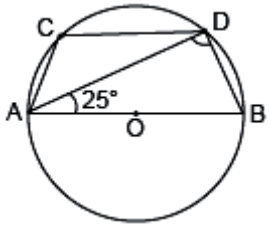
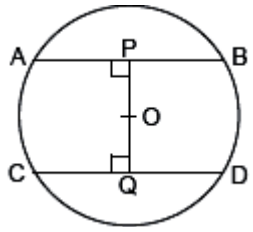
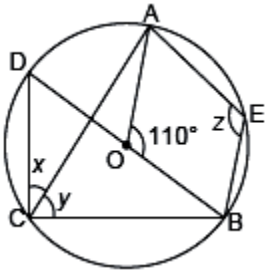
15. In the given figure, AB is diameter of the circle with centre O and CD || AB. If ∠DAB = 25°, then find the measure of ∠CAD.



16. In the given figure, O is the centre of the circle with radius 5 cm. OP ⊥ AB, OQ ⊥ CD, AB || CD, AB = 6 cm and CD = 8 cm. Determine PQ.



17. In the given figure, O is the centre of the circle and ∠AOB = 110°, find the value of *x*, *y* and *z*.



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18. 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.

OR

In a circle of radius 18 cm, AB and AC are two chords such that AB = AC = 12 cm. Find the length of chord BC.

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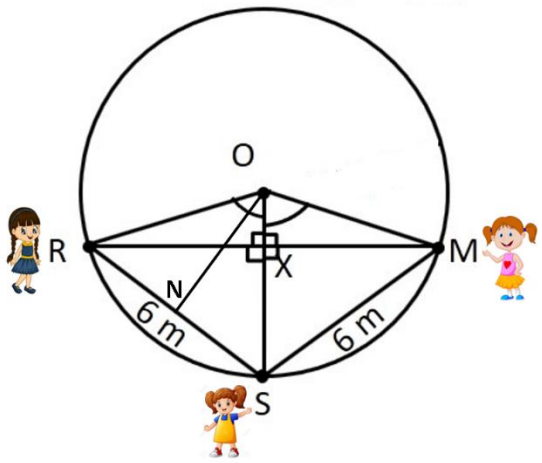
19. Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. The distance between Reshma and Salma and between Salma and Mandip is 6m each. In the given below figure Reshma's position is denoted by R, Salma's position is denoted by S and Mandip's position is denoted by M.



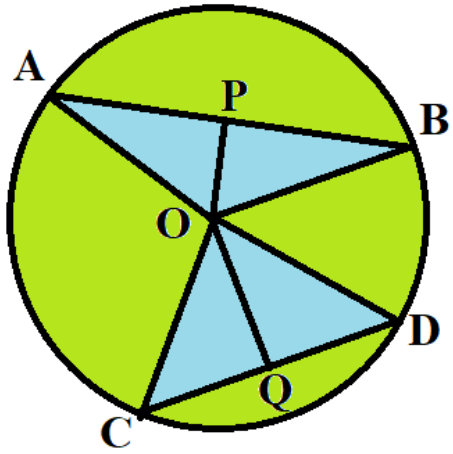
(i) Find the area of triangle ORS. [2]

(ii) What is the distance between Reshma and Mandip? [2]

OR

(ii) If BC is a diameter of a circle of centre O and OD is perpendicular to the chord AB of a circle, show that CA = 2OD. [2]

20. Aditya seen one circular park in which two triangular ponds are there whose common vertex is the centre of the park. After coming back to home, he tried to draw the circular park on the paper. He draws a circle of radius 10 cm with the help of a compass and scale. He also draws two chords, AB and CD in such a way that the perpendicular distance from the center to AB and CD are 6 cm and 8 cm respectively. Now, he has some doubts that are given below.

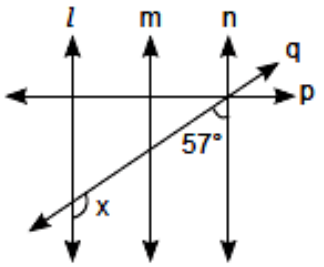


(i) Show that the perpendicular drawn from the Centre of a circle to a chord bisects the chord using any one triangle. (2)
(ii) What is the length of CD? (2)

OR

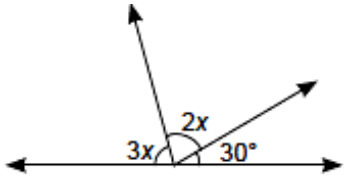
(ii) What is the length of AB? (2)

1. In the given figure, line l || line m || line n, line p and line q are transversals . Then , measurement of ∠ x is



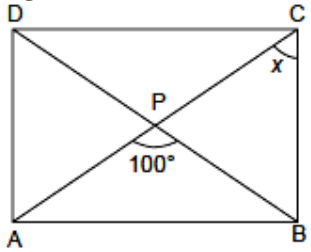
(a) 57° b) 43° (c) 150° (d) 123°

2. In the given figure, the value of x is



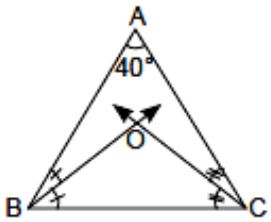
(a) 20° (b) 30° (c) 40° (d) 50°

3. In the given figure, ABCD is a rectangle in which ∠APB = 100°. The value of x is



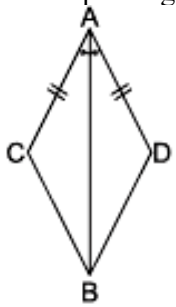
(a) 40° (b) 50° (c) 60° (d) 70°

4. In the given figure, measure of ∠BOC is



(a) 110° (b) 40° (c) 70° (d) 60°

5. In the given figure, the congruency rule used in proving ΔACB ≅ ΔADB is



(a) ASA (b) SAS (c) AAS (d) none of these

6. Given two right-angled triangles ABC and PRQ, such that ∠A = 30°, ∠Q = 30° and AC = QP. Write the correspondence if triangles are congruent.
(a) ΔABC ≅ ΔPQR (b) ΔABC ≅ ΔPRQ (c) ΔABC ≅ ΔRQP (d) ΔABC ≅ ΔQRP

7. In a quadrilateral ABCD, equal diagonals AC and BD intersect at P, such that AP = PC and BP = PD, also ∠BPC = 90°, then quadrilateral is exactly
(a) a parallelogram (b) a square (c) a rhombus (d) a rectangle

8. It is given that ΔABC ≅ ΔFDE and AB = 5 cm, ∠B = 40° and ∠A = 80°. Then which of the following is true?
(a) DF = 5 cm, ∠F = 60° (b) DF = 5 cm, ∠E = 60°
(c) DE = 5 cm, ∠E = 60° (d) DE = 5 cm, ∠D = 40°

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. **Assertion (A):** An angle is 14^0 more than its complementary angle, then angle is 52^0.
Reason (R): Two angles are said to be complementary if their sum of measure of angles is 180^0.

10. **Assertion (A):** In ΔABC, ∠C = ∠A, BC = 4 cm and AC = 5 cm. Then, AB = 4 cm
Reason (R): In a triangle, sides opposite to two equal angles are equal.

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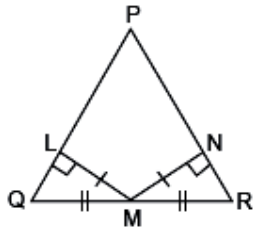
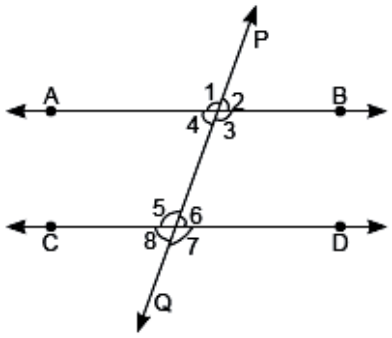
11. In the given figure, LM = MN, QM = MR, ML ⊥ PQ and MN ⊥ PR. Prove that PQ = PR.

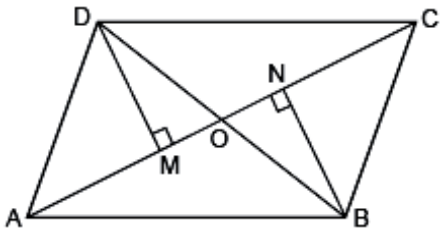


12. In the given figure, AB || CD, $\angle 1 = 90° + x$ and $\angle 7 = 4x$. Find the measure of $\angle 1$ and $\angle 2$.



13. Prove that a diagonal of a parallelogram divides it into two congruent triangles.

14. In quadrilateral ABCD, BN and DM are drawn perpendicular to AC. Such that BN = DM. Prove that O is mid-point of BD.



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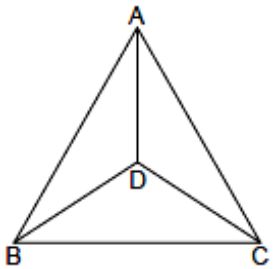
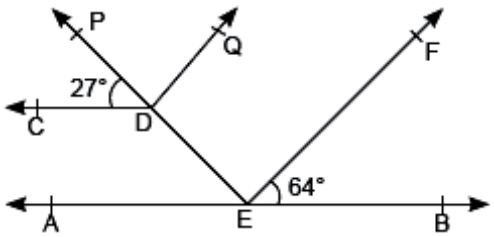
15. In the given figure, AB = AC and D is a point in the interior of ΔABC such that $\angle DBC = \angle DCB$. Prove that AD bisects $\angle BAC$ of ΔABC.

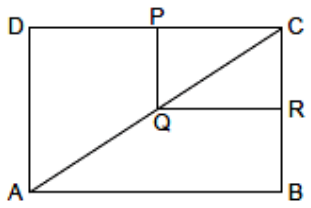


16. In the given figure, EF || DQ and AB || CD. If $\angle FEB = 64°$, $\angle PDC = 27°$, then find $\angle PDQ$, $\angle AED$ and $\angle DEF$.



17. In the given figure, ABCD and PQRC are rectangles and Q is the mid-point of AC. Prove that:

(i) DP = PC (ii) PR = $\frac{1}{2}$ AC



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18. Show that the quadrilateral formed by joining the mid-points of the sides of a square, is also a square.

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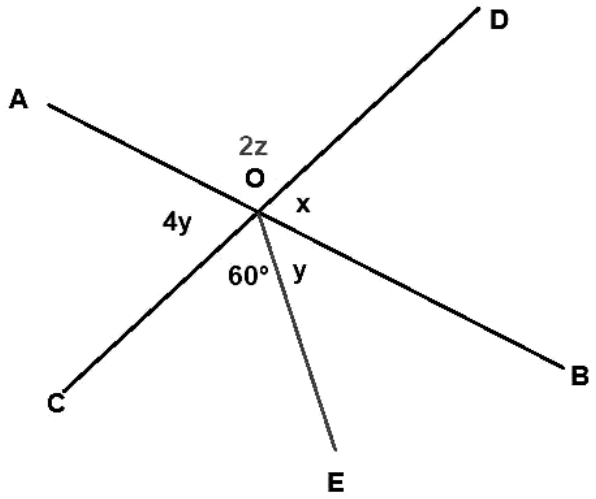
19. Maths teacher draws a straight line AB shown on the blackboard as per the following figure. Now he told Mohan to draw another line CD as in the figure. The teacher told Ajay to mark ∠AOD as 2z. Aditya was told to mark ∠AOC as 4y then Ravi Made an angle ∠COE = 60°. Lastly again Ajay marked ∠BOE and ∠BOD as y and x respectively



Answer the following questions:

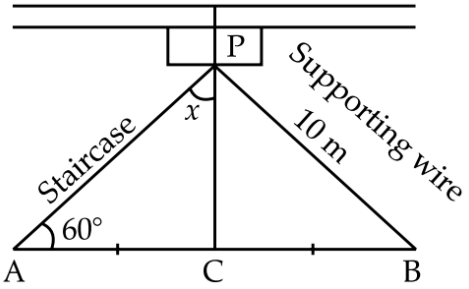
(i) What is the value of x?

(ii) What is the value of y?

(iii) What is the value of z?

(iv) What should be the value of x + 2z?

20. Aditya went to village in summer vacation. He saw a big pole PC while playing. This pole was tied with a strong wire of 10 m length. Once there was a big spark on this pole, thus wires got damaged very badly. Any small fault was usually repaired with the help of a rope which normal board electricians were carrying on bicycles. This time electricians need a staircase of 10 m, so that it can reach at point P on the pole and this should make 60° with line AC.



(i) In ΔPAC and ΔPBC which side is common? (1)

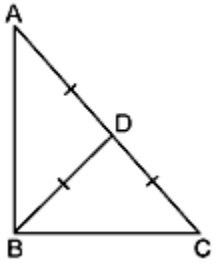
(ii) In figure, ΔPAC and ΔPBC are congruent due to which criterion? (2)

OR

Find the value of ∠x? (2)

(iii) Find the measure of ∠PBA? (1)

1. In the given figure, the measure of ∠ABC is

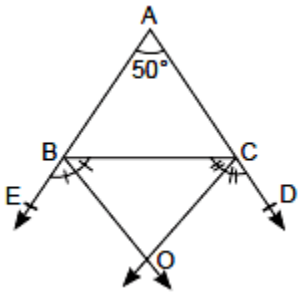


(a) 60° (b) 30° (c) 45° (d) 90°

2. A diagonal of a rectangle is inclined to one side of the rectangle at 25°. The acute angle between the diagonals is

(a) 55° (b) 50° (c) 40° (d) 25°

3. In the given figure, measure of ∠BOC is

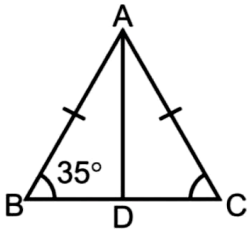


(a) 50° (b) 65° (c) 60° (d) 55°

4. Given a quadrilateral ABCD, and diagonals AC and BD bisect each other at P such that AP = CP and BP = DP. Also ∠APD = 90°, then quadrilateral is a

(a) rhombus (b) trapezium (c) parallelogram (d) rectangle

5. In the given figure, AD is the median, then ∠BAD is



(a) 35° (b) 70° (c) 110° (d) 55°

6. Diagonals of a rectangle ABCD intersect at O. If ∠AOB = 70°, then ∠DCO is
(a) 70° (b) 110° (c) 35° (d) 55°

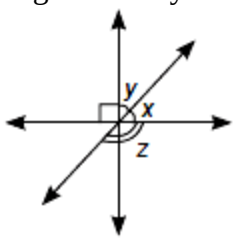
7. Difference between 'postulate' and 'axiom' is
(a) there is no difference
(b) few statements are termed as axioms other postulates
(c) 'postulates' are the assumptions used especially for geometry and 'axioms' are the assumptions used throughout mathematics.
(d) none of these

8. Two angles of a quadrilateral are 60° and 70° and other two angles are in the ratio 8 : 15, then the remaining two angles are
(a) 140°, 90° (b) 100°, 130° (c) 80°, 150° (d) 70°, 160°

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. **Assertion (A):** The quadrilateral formed by joining the midpoints of consecutive sides of a quadrilateral whose diagonals are perpendicular is a rectangle.
Reason (R): The line segment in a triangle joining the midpoint of any two sides of the triangle is said to be parallel to its third side and is also half of the length of the third side and the quadrilateral formed by joining the midpoints of consecutive sides of a quadrilateral is a parallelogram.

10. **Assertion (A):** In the given figure, if the angles x and y are in the ratio 2 : 3, then angle z is 144^0



Reason (R): The angles are said to be linear if they are adjacent to each other after the intersection of the two lines. The sum of angles of a linear pair is always equal to 180°.

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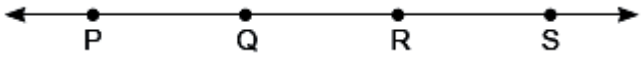
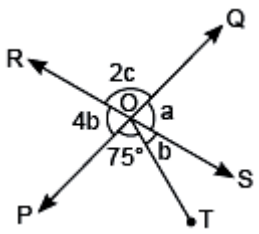
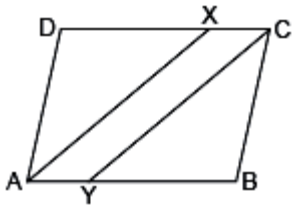
11. In the given figure PR = QS, then show that PQ = RS. Name the mathematician whose postulate/axiom is used for the same.



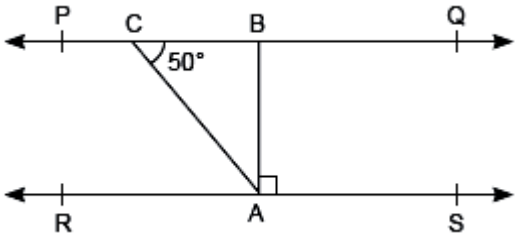
12. In the given figure, two straight lines PQ and RS intersect each other at O. If ∠POT = 75°. Find the value of *a*, *b* and *c*.



13. In the given figure, ABCD is a parallelogram and line segments AX and CY bisect the angles A and C respectively. Show that AX || CY.



14. In the given figure PQ || RS, BA ⊥ RS and ∠BCA = 50° find ∠BAC and ∠CAS.



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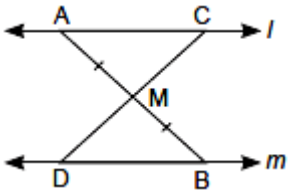
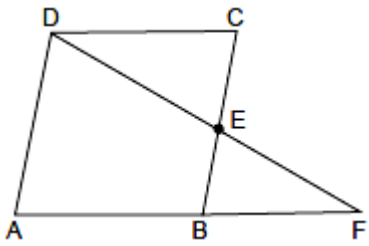
15. Two parallel lines *l* and *m* are intersected by a transversal *p*. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.

16. In the given figure, *l* || *m* and M is the mid-point of line segment AB. Prove that M is also the mid-point of any line segment CD having its end points C and D on *l* and *m* respectively.



17. ABCD is a parallelogram and E is the mid-point of side BC. DE and AB on producing meet at F. Prove that AF = 2AB.



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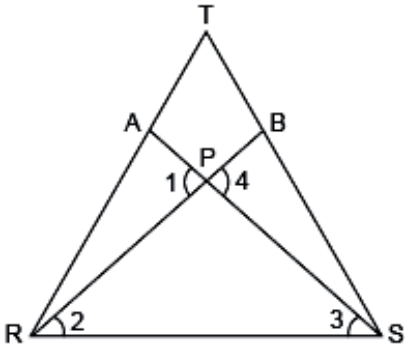
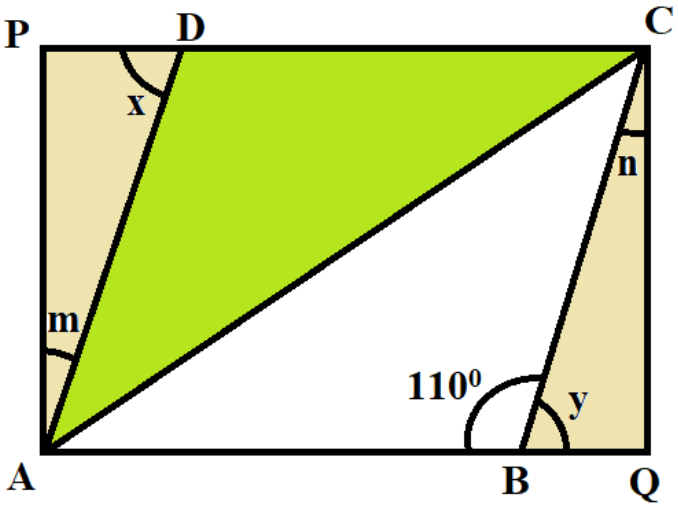
18. In the given figure, it is given that RT = TS, 1 = 2 2 and 4 = 2 3. Prove that ΔRBT ≅ ΔSAT



19. In the middle of the city, there was a park ABCD in the form of a parallelogram form so that AB = CD, AB||CD and AD =BC, AD || BC. Municipality converted this park into a rectangular form by adding land in the form of ΔAPD and ΔBCQ. Both the triangular shape of land were covered by planting flower plants.



(a) Show that ΔAPD and ΔBQC are congruent. (2)

OR

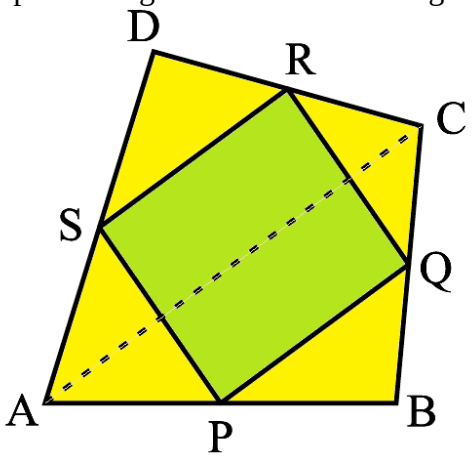
What is the value of ∠m? (2)

(b) Which side is equal to PD? (1)

(c) Show that ΔABC and ΔCDA are congruent. (1)

20. Activity-based learning- ensures active engagement of learner with concepts and instructional materials. Learning is hands-on and experiential, providing learners the opportunity of learning through manipulation of materials and objects.

Teachers model the process, and students work independently to copy it. Kumar sir Maths teacher of class 9th wants to explain the properties of parallelograms in a creative way, so he gave students yellow colored paper in the shape of a quadrilateral and then ask the students to make a parallelogram from it by using paper folding and coloured it with green colour.



(a) How can a parallelogram be formed by using paper folding? (2)

(b) (i) If ∠RSP = 30°, then find ∠RQP. (1)

(ii) If SP = 3 cm, Find the RQ. (1)

OR

(b) Find the value of ∠R and ∠S if ∠P : ∠Q = 1 : 4. (2)