

Practice
Analyse
Improve
Succeed

CBSE
Class 9

Small Steps
Big Progress!

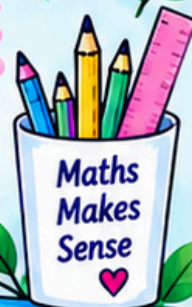
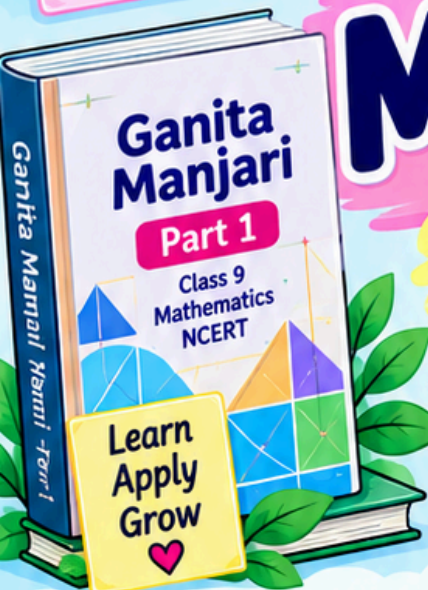
You
Can
Do It!

MATHEMATICS

SAMPLE PAPER

Set - 1

Half-Yearly Examination 2026 - 27



As per CBSE
Half-Yearly Syllabus
2026 - 27



Total Marks
80



Time
3 Hours



Question Paper +
Complete Solutions
Included

SYLLABUS COVERED

Textbook: Ganita Manjari - Part 1 (NCERT)

Syllabus Covered: Ganita Manjari Part 1

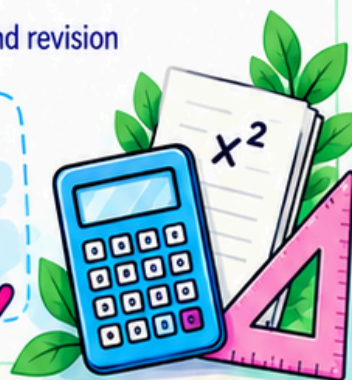
Chapter 1	Orienting Yourself: The Use of Coordinates
Chapter 2	Introduction to Linear Polynomials
Chapter 3	The World of Numbers
Chapter 4	Exploring Algebraic Identities
Chapter 5	I'm Up and Down, and Round and Round
Chapter 6	Measuring Space: Perimeter and Area
Chapter 7	The Mathematics of Maybe: Introduction to Probability
Chapter 8	Predicting What Comes Next: Exploring Sequences and Progressions

KEY FEATURES

- ✓ Prepared as per latest CBSE syllabus 2026 - 27 (Ganita Manjari - Part 1)
- ✓ Covers all important types of questions
- ✓ Includes MCQs, short answer, long answer and case-based questions
- ✓ Complete step-by-step solutions
- ✓ Helps in exam preparation and self-assessment
- ✓ Ideal for school practice and revision

Same
Syllabus
Brighter
Future

*Mathematics
is not just about numbers,
it's about thinking clearly
and solving real-life problems.*



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CBSE CLASS 9 MATHEMATICS SAMPLE PAPER

Half-Yearly Examination 2026-27 | Set - 1

Based on NCERT Ganita Manjari Part 1 (New Syllabus 2026 - 27)

Small
Steps
Big
Progress!

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SECTION A — $20 \times 1 = 20$ MARKS

Choose the correct option (A, B, C or D) for each of the following questions.

- 1** The coordinates of the point where the two axes intersect are: Ch 1
(A) (1, 1) (B) (0, 0)
(C) (0, 1) (D) (1, 0)
- 2** A point $P = (x, 0)$ lies on which axis? Ch 1
(A) y-axis (B) x-axis
(C) both axes (D) neither axis
- 3** The point $(-4, 3)$ lies in which quadrant? Ch 1
(A) I (B) II
(C) III (D) IV
- 4** The distance between $(2, 5)$ and $(7, 5)$ is: Ch 1
(A) 3 (B) 5
(C) 7 (D) 10
- 5** What is the degree of $4x - 7$? Ch 2
(A) 0 (B) 1
(C) 2 (D) 4
- 6** In $7x^3 - 4x + 9$, the coefficient of x is: Ch 2
(A) 7 (B) -4
(C) 9 (D) 3
- 7** For $y = 3x - 2$, the slope is: Ch 2
(A) -2 (B) 2
(C) 3 (D) -3
- 8** Which of the following is irrational? Ch 3
(A) 0.25 (B) $\frac{7}{8}$
(C) $\sqrt{5}$ (D) -3
- 9** Which statement is true? Ch 3
(A) Every rational number is an integer.
(B) $\sqrt{2}$ is irrational.
(C) Every terminating decimal is irrational.
(D) Every integer is irrational.
- 10** Which number lies between $\frac{1}{2}$ and $\frac{3}{4}$? Ch 3
(A) $\frac{1}{4}$ (B) $\frac{1}{3}$
(C) $\frac{2}{3}$ (D) $\frac{4}{3}$
- 11** $(a + b)^2$ equals: Ch 4
(A) $a^2 + b^2$ (B) $a^2 - 2ab + b^2$
(C) $a^2 + 2ab + b^2$ (D) $2a^2 + 2b^2$
- 12** The factorisation of $x^2 - 9$ is: Ch 4
(A) $(x - 9)(x + 1)$ (B) $(x - 3)(x + 3)$
(C) $(x - 3)^2$ (D) $(x + 9)(x - 1)$
- 13** $(x + 5)^2 - (x - 5)^2$ equals: Ch 4
(A) $10x$ (B) $20x$
(C) 25 (D) x^2
- 14** The perpendicular bisector of a chord of a circle passes through the: Ch 5
(A) circumference only (B) centre
(C) chord endpoint (D) arc only
- 15** If two chords of the same circle are equal, their distances from the centre are: Ch 5
(A) unequal (B) equal
(C) always zero (D) unrelated
- 16** The area of a sector with central angle θ and radius r is: Ch 6
(A) $\frac{\pi r^2 \theta}{180}$ (B) $\frac{\pi r^2 \theta}{360}$
(C) $\frac{2\pi r \theta}{360}$ (D) $\frac{\pi r \theta}{360}$
- 17** A fair die is rolled once. The probability of getting an even number is: Ch 7
(A) $\frac{1}{6}$ (B) $\frac{1}{3}$
(C) $\frac{1}{2}$ (D) $\frac{2}{3}$
- 18** The sample space when two fair coins are tossed is: Ch 7
(A) {H, T} (B) {HH, TT}
(C) {HH, HT, TH, TT} (D) {HHT, THH}
- 19** **Assertion (A):** In the sequence 5, 8, 11, 14, ... the common difference is 3. Ch 8
Reason (R): Each term after the first is obtained by adding 3 to the preceding term.
(A) Both A and R are true and R correctly explains A.
(B) Both A and R are true but R is not the correct explanation.
(C) A is true but R is false.
(D) A is false but R is true.
- 20** **Assertion (A):** The probability of an impossible event is 0. Ch 7
Reason (R): An impossible event has no favourable outcomes.
(A) Both A and R are true and R correctly explains A.
(B) Both A and R are true but R is not the correct explanation.
(C) A is true but R is false.
(D) A is false but R is true.



CBSE CLASS 9 MATHEMATICS SAMPLE PAPER

Half-Yearly Examination 2026-27 | Set - 1

Small
Steps
Big
Results

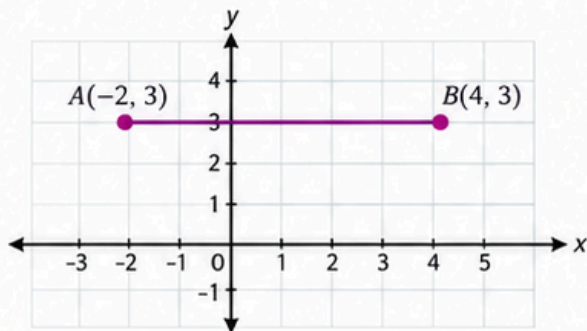
Believe
You
Can

Section B: Short Answer Questions (Q21 – Q25) 2 marks each

Q21 Ch 1 Orienting Yourself: The Use of Coordinates

Points $A(-2, 3)$ and $B(4, 3)$ are given.

- Find the length of AB .
- State whether AB is horizontal or vertical.



Q22 Ch 2 Introduction to Linear Polynomials

For $p(x) = 3x - 5$,

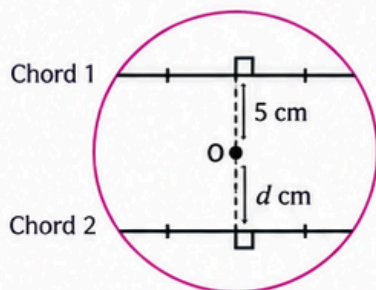
- find its degree.
- find the value of $p(4)$.

Q23 Ch 3 The World of Numbers

Show that $\frac{2}{3}$ lies between $\frac{1}{2}$ and $\frac{3}{4}$.

Q24 Ch 5 I'm Up and Down, and Round and Round

Two equal chords of a circle are at distances 5 cm and d cm from the centre. Find the value of d . Give the property used.



Two equal chords of a circle are equidistant from the centre.

Q25 Ch 7 The Mathematics of Maybe: Introduction to Probability

Two fair coins are tossed together. Find the probability of

- exactly one head.
- at least one head.

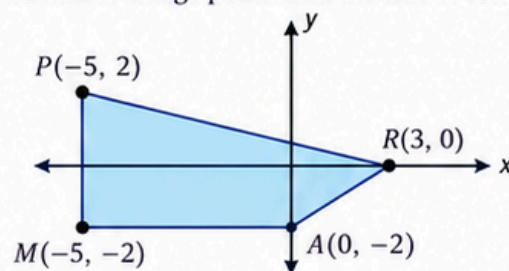


Section C: Short Answer Questions (Q26 – Q31) 3 marks each

Q26 Ch 1 Orienting Yourself: The Use of Coordinates

Consider the points $R(3, 0)$, $A(0, -2)$, $M(-5, -2)$ and $P(-5, 2)$. If these points are joined in this order, $R - A - M - P$, identify:

- two perpendicular sides.
- a side parallel to an axis.
- two mirror-image points and the axis of reflection.



Q27 Ch 2 Introduction to Linear Polynomials

For the line $y = 3x - 2$,

- state the slope.
- state the y -intercept.
- find the point where it cuts the y -axis.

Q28 Ch 3 The World of Numbers

Prove that $\sqrt{5}$ is irrational.

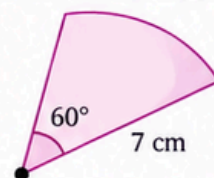
Q29 Ch 4 Exploring Algebraic Identities

- Simplify $(x + 3)^2 - (x - 3)^2$.
- Factorise $x^2 - 16$ using an algebraic identity.

Q30 Ch 6 Measuring Space: Perimeter and Area

A sector of a circle has radius 7 cm and central angle 60° . Using $\pi = \frac{22}{7}$, find

- the length of the arc.
- the area of the sector.



Q31 Ch 8 Predicting What Comes Next: Exploring Sequences and Progressions

For the sequence $t_n = 5n - 3$ ($n \geq 1$),

- find t_{10} .
- find t_{15} .
- determine whether 97 is a term of the sequence. Justify your answer.



$t_n = 5n - 3$
 $n = 1, 2, 3, \dots$

Practice
Makes
Progress



Section D Long Answer Type Questions (5 marks each)

(Q. 32 – 35)

32 Ch 2 Introduction to Linear Polynomials (5 marks)

For the two lines given below, answer the following questions:

$$y = 2x + 1 \text{ and } y = 2x - 3$$

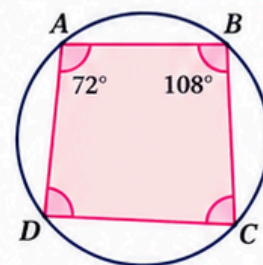
- Write the slope and y-intercept of each line.
- Explain why the two lines are parallel.
- Find any two points on the line $y = 2x + 1$.
- Find any two points on the line $y = 2x - 3$.

33 Ch 5 I'm Up and Down, and Round and Round (5 marks)

In the given figure, $ABCD$ is a cyclic quadrilateral drawn in a circle. $\angle A = 72^\circ$ and $\angle B = 108^\circ$.

Find:

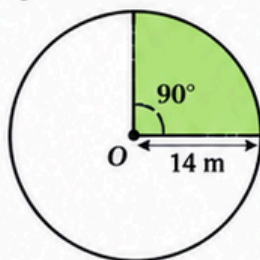
- $\angle C$
- $\angle D$
- State the property used to find the angles.



34 Ch 6 Measuring Space: Perimeter and Area (5 marks)

A circular garden has a radius of 14 m. A sector of 90° is used as a flower bed.

- Find the area of the sector used as a flower bed.
(Use $\pi = \frac{22}{7}$)
- Find the area of the remaining part of the garden.
- Find the perimeter of the sector (flower bed).



35 Ch 8 Predicting What Comes Next: Exploring Sequences and Progressions (5 marks)

A sequence is defined by $t_1 = 2$ and $t_{n+1} = t_n + 3$ for $n \geq 1$.

- Write the first six terms of the sequence.
- Find the general term t_n (nth term) of the sequence.
- Determine whether 59 is a term of the sequence. Justify your answer.

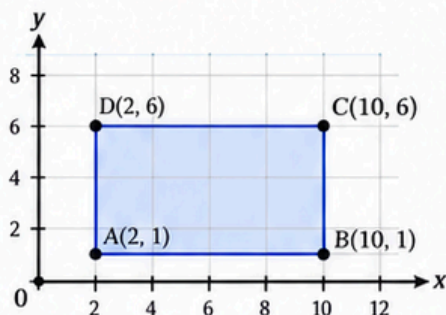
Patterns help us see
the beauty of Mathematics! ♥

Section E Case Based / Source Based Questions (4 marks each)

(Q. 36 – 38)

36 Ch 1 Orienting Yourself: The Use of Coordinates (4 marks)

A rectangular playground $ABCD$ has its vertices $A(2, 1)$, $B(10, 1)$, $C(10, 6)$ and $D(2, 6)$ as shown in the figure.



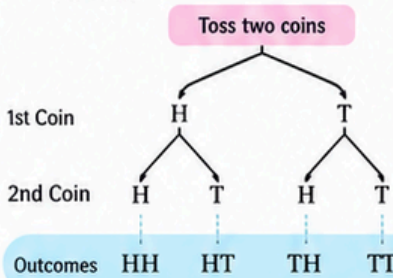
Find:

- The length of AB .
- The length of BC .
- The coordinates of the midpoint of AC .
- The area of the playground.

37 Ch 7 The Mathematics of Maybe: Introduction to Probability (4 marks)

Two fair coins are tossed simultaneously.

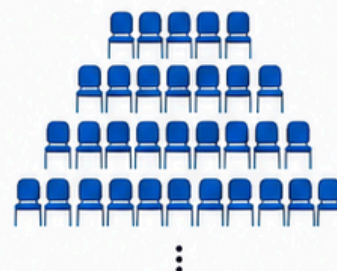
- List the sample space.
- Find the probability of getting exactly one head.
- Find the probability of getting at least one head.
- Find the probability of getting no head.



38 Ch 8 Predicting What Comes Next: Exploring Sequences and Progressions (4 marks)

In a school auditorium, chairs are arranged in rows. The number of chairs in the first few rows is as follows:

5, 8, 11, 14, ...



Find:

- The common difference of the sequence.
- The n th term of the sequence.
- The 20th term of the sequence.
- The sum of the first 10 terms of the sequence.



CBSE CLASS 9 MATHEMATICS

HALF-YEARLY SAMPLE PAPER 2026-27

SOLUTIONS — SECTION A (Q1 – 20)

SET - 1

Based on Ganita Manjari Part 1 — 8 current chapters

Small Steps
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- 1 The coordinates of the point where the two axes intersect are: Ch 1

Answer: (B) (0, 0)

The x -axis and y -axis intersect at the origin $O(0, 0)$.

- 2 A point $P = (x, 0)$ lies on which axis? Ch 1

Answer: (B) x -axis

A point of the form $(x, 0)$ lies on the x -axis (its y -coordinate is 0).

- 3 The point $(-4, 3)$ lies in which quadrant? Ch 1

Answer: (B) II

Since $x < 0$ and $y > 0$, the point lies in Quadrant II.

- 4 The distance between $(2, 5)$ and $(7, 5)$ is: Ch 1

Answer: (B) 5

Distance = $\sqrt{(7-2)^2 + (5-5)^2} = \sqrt{25} = 5$ units.

- 5 What is the degree of $4x - 7$? Ch 2

Answer: (B) 1

The highest power of x is 1, so the degree is 1.

- 6 In $7x^3 - 4x + 9$, the coefficient of x is: Ch 2

Answer: (B) -4

The coefficient of x is -4 .

- 7 For $y = 3x - 2$, the slope is: Ch 2

Answer: (C) 3

In the form $y = mx + c$, the slope is $m = 3$.

- 8 Which of the following is irrational? Ch 3

Answer: (C) $\sqrt{2}$

$\sqrt{2}$ is an irrational number.

- 9 Which statement is true? Ch 3

Answer: (B) $\sqrt{2}$ is irrational.

$\sqrt{2}$ is an irrational number.

- 10 Which number lies between $\frac{1}{2}$ and $\frac{3}{4}$? Ch 3

Answer: (C) $\frac{2}{3}$

Since $\frac{1}{2} < \frac{2}{3} < \frac{3}{4}$, the number $\frac{2}{3}$ lies between $\frac{1}{2}$ and $\frac{3}{4}$.

- 11 $(a + b)^2$ equals: Ch 4

Answer: (C) $a^2 + 2ab + b^2$

$(a + b)^2 = a^2 + 2ab + b^2$

- 12 The factorisation of $x^2 - 9$ is: Ch 4

Answer: (A) $(x - 3)(x + 3)$

$x^2 - 9 = x^2 - 3^2 = (x - 3)(x + 3)$

- 13 $(x + 5)^2 - (x - 5)^2$ equals: Ch 4

Answer: (B) $20x$

$(x + 5)^2 - (x - 5)^2 = [(x + 5) + (x - 5)][(x + 5) - (x - 5)]$
 $= (2x)(10) = 20x$

- 14 The perpendicular bisector of a chord of a circle passes through the: Ch 5

Answer: (B) centre

The perpendicular bisector of a chord always passes through the centre of the circle.

- 15 If two chords of the same circle are equal, their distances from the centre are: Ch 5

Answer: (B) equal

Equal chords of a circle are equidistant from the centre.

- 16 The area of a sector with central angle θ and radius r is: Ch 6

Answer: (B) $\frac{\pi r^2 \theta}{360}$

Area of a sector = $\frac{\theta}{360^\circ} \pi r^2$

- 17 A fair die is rolled once. The probability of getting an even number is: Ch 7

Answer: (C) $\frac{1}{2}$

Even numbers: $\{2, 4, 6\} \rightarrow 3$ favourable outcomes.

Probability = $\frac{3}{6} = \frac{1}{2}$.

- 18 The sample space when two fair coins are tossed is: Ch 7

Answer: (C) $\{HH, HT, TH, TT\}$

The possible outcomes are $\{HH, HT, TH, TT\}$.

- 19 **Assertion (A):** In the sequence 5, 8, 11, 14, ... the common difference is 3. **Reason (R):** Each term after the first is obtained by adding 3 to the preceding term. Ch 8

Answer: (A) Both A and R are true and R correctly explains A. The sequence 5, 8, 11, 14, ... has common difference 3. Each term is obtained by adding 3 to the preceding term.

- 20 **Assertion (A):** The probability of an impossible event is 0. **Reason (R):** An impossible event has no favourable outcomes. Ch 7

Answer: (A) Both A and R are true and R correctly explains A. An impossible event cannot occur, so its probability is 0, as there are no favourable outcomes.



CBSE CLASS 9 MATHEMATICS

HALF-YEARLY SAMPLE PAPER 2026-27

SOLUTIONS — SECTION B (Q21 – 31)

Based on Ganita Manjari Part 1 – 8 Current Chapters

Set – 1

Small Steps
Big Progress!

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- 21** Find the distance between the points $(-3, 2)$ and $(5, -4)$.

Ch 1

Solution:

$$\begin{aligned}\text{Distance} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(5 - (-3))^2 + (-4 - 2)^2} \\ &= \sqrt{8^2 + (-6)^2} = \sqrt{64 + 36} = \sqrt{100} = 10\end{aligned}$$

Hence, the distance is 10 units.

- 22** The point $(4, -3)$ is reflected in the x -axis. Find the coordinates of the image.

Ch 1

Solution:

Reflection in the x -axis changes (x, y) to $(x, -y)$.
So, the image of $(4, -3)$ is $(4, 3)$.

- 23** If the graph of a linear polynomial passes through $(0, 3)$ and $(2, 7)$, find the polynomial.

Ch 2

Solution:

Let the polynomial be $p(x) = mx + c$.
Since it passes through $(0, 3)$, $c = 3$.
It also passes through $(2, 7)$: $7 = 2m + 3$
 $\Rightarrow 2m = 4 \Rightarrow m = 2$
Hence, the polynomial is $p(x) = 2x + 3$.

- 24** Find the zero of the polynomial $p(x) = 5x - 20$.

Ch 2

Solution:

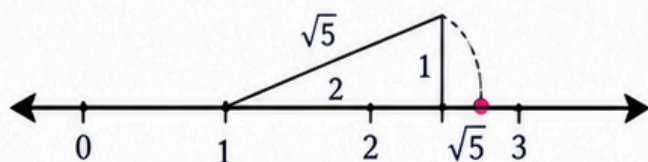
$5x - 20 = 0 \Rightarrow 5x = 20 \Rightarrow x = 4$
Hence, the zero is 4.

- 25** Represent $\sqrt{5}$ on the number line.

Ch 3

Solution:

Since $4 < 5 < 9$, we have $2 < \sqrt{5} < 3$.
Using a right triangle with base 2 units and height 1 unit, the hypotenuse represents $\sqrt{5}$.
(Construction as per textbook method.)



- 26** Simplify using a suitable identity: $(2x + 3)^2 - (2x - 3)^2$

Ch 4

Solution:

Using $a^2 - b^2 = (a - b)(a + b)$,

Let $a = 2x + 3$, $b = 2x - 3$

$$\begin{aligned}\Rightarrow (2x + 3)^2 - (2x - 3)^2 &= [(2x + 3) - (2x - 3)] \\ &\quad [(2x + 3) + (2x - 3)] \\ &= (6)(4x) = 24x\end{aligned}$$

- 27** Factorise: $4x^2 - 25$

Ch 4

Solution:

$$4x^2 - 25 = (2x)^2 - 5^2 = (2x - 5)(2x + 5)$$

- 28** In a circle of radius 7 cm, find the circumference.

Ch 5

Solution:

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 7 = 44 \text{ cm}$$

- 29** Find the area of a circle of radius 14 cm.

Ch 6

Solution:

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 14^2 = \frac{22}{7} \times 196 = 616 \text{ cm}^2$$

- 30** A bag contains 5 red balls, 3 blue balls and 2 green balls. A ball is drawn at random. Find the probability of getting a blue ball.

Ch 7

Solution:

Total number of balls = $5 + 3 + 2 = 10$

Number of blue balls = 3

$$\text{Probability} = \frac{3}{10}$$

- 31** Find the next two terms of the sequence: 3, 7, 11, 15, ...

Ch 8

Solution:

The sequence has a common difference of 4.

Next term = $15 + 4 = 19$

Next term = $19 + 4 = 23$

Hence, the next two terms are 19, 23.

Keep Practicing
Keep Growing! ♥

Maths Builds
a Brighter You! ♥

Ganita Manjari Part 1
Page 6 of 7



CBSE CLASS 9 MATHEMATICS

HALF-YEARLY SAMPLE PAPER 2026-27

SOLUTIONS — SECTION C (Q32 – 38)

Based on Ganita Manjari Part 1 – 8 Current Chapters

Set – 1

Small Steps
Big Progress!



- 32** Find the equation of the line passing through the points (2, 3) and (5, 9). Ch 1
(3 marks)

Solution:

$$\text{Slope, } m = \frac{9-3}{5-2} = \frac{6}{3} = 2$$

Using point-slope form: $y - 3 = 2(x - 2)$

$$\Rightarrow y - 3 = 2x - 4$$

$$\Rightarrow y = 2x - 1$$

Hence, the equation of the line is $y = 2x - 1$.

- 33** If (a, 4) and (3, b) are two points at a distance of 5 units, find the value of a when b = 1. Ch 1
(3 marks)

Solution:

$$\text{Distance} = \sqrt{(a-3)^2 + (4-1)^2} = 5$$

$$\Rightarrow (a-3)^2 + 9 = 25$$

$$\Rightarrow (a-3)^2 = 16$$

$$\Rightarrow a-3 = \pm 4$$

$$\Rightarrow a = 7 \text{ or } a = -1$$

Hence, the value of a is 7 or -1.

- 34** Factorise: $6x^2 + 11x - 10$ Ch 4
(3 marks)

Solution:

$$\begin{aligned} 6x^2 + 11x - 10 &= 6x^2 + 15x - 4x - 10 \\ &= 3x(2x + 5) - 2(2x + 5) \\ &= (3x - 2)(2x + 5) \end{aligned}$$

- 35** Find the area of a sector of a circle with radius 21 cm and central angle 60° . Ch 6
(3 marks)

Solution:

$$\begin{aligned} \text{Area of sector} &= \frac{\theta}{360^\circ} \times \pi r^2 \\ &= \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times (21)^2 \\ &= \frac{1}{6} \times 22 \times 63 \\ &= 231 \text{ cm}^2 \end{aligned}$$

Hence, the area of the sector is 231 cm^2 .

- 36** Two chords AB and CD of a circle are equal. Show that they are equidistant from the centre. Ch 5
(3 marks)

Solution:

Let O be the centre of the circle.

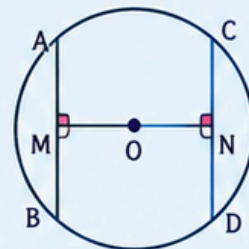
Let $OM \perp AB$ and $ON \perp CD$.

Given: $AB = CD$

In a circle, equal chords are equidistant from the centre.

$$\therefore OM = ON$$

Hence, AB and CD are equidistant from the centre.



- 37** A bag contains 3 red balls, 4 blue balls and 5 green balls. A ball is drawn at random. Find the probability of getting (i) a red ball (ii) a green ball. Ch 7
(3 marks)

Solution:

$$\text{Total number of balls} = 3 + 4 + 5 = 12$$

$$(i) P(\text{red ball}) = \frac{3}{12} = \frac{1}{4}$$

$$(ii) P(\text{green ball}) = \frac{5}{12}$$

- 38** The first term of an arithmetic progression is 7 and the common difference is 5. Find (i) the 10th term (ii) the sum of the first 10 terms. Ch 8
(3 marks)

Solution:

First term $a = 7$, common difference $d = 5$, $n = 10$

$$\begin{aligned} (i) a_{10} &= a + (n-1)d \\ &= 7 + 9 \times 5 \\ &= 7 + 45 = 52 \end{aligned}$$

Hence, the 10th term is 52.

$$\begin{aligned} (ii) S_{10} &= \frac{n}{2} [2a + (n-1)d] \\ &= \frac{10}{2} [2 \times 7 + 9 \times 5] \\ &= 5[14 + 45] \\ &= 5 \times 59 = 295 \end{aligned}$$

Hence, the sum of the first 10 terms is 295.