Grade 9 Mathematics

Term 3 - 52 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

52 complete, ready-to-teach Grade 9 Mathematics lesson plans for Term 3, covering coordinates and graphs, scale drawing, similarity and enlargement, trigonometry, data interpretation (Grouped Data) and probability.

TOPICS IN THIS PACK

Topic	Name	Lessons
4.1	Coordinates and Graphs	6
4.2	Scale Drawing	14
4.3	Similarity and Enlargement	10
4.4	Trigonometry	8
5.1	Data Interpretation (Grouped Data)	8
5.2	Probability	6

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

Plotting points in all four quadrants

By the end of the lesson, the learner should be able to: a) draw and label the x- and y-axes; b) plot and read points with positive and negative coordinates

> **Coordinates (x, y)**
> The x-coordinate tells how far across (right is positive, left is negative); the y-coordinate tells how far up (up positive, down negative).

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

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ELIMU254

Plotting points in all four quadrants

Strand 4.0 Geometry > Sub-strand 4.1 Coordinates and Graphs | Lesson 1 of 6 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) draw and label the x- and y-axes; b) plot and read points with positive and negative coordinates

KEY INQUIRY QUESTION(S)

- How do we draw graphs of straight lines?
- How do we interpret graphs of straight lines?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Critical thinking and problem solving**	Learners choose a method, check their answers and give reasons for their choices.
VALUE	**Responsibility**	Learners look after shared materials and finish every task.
PCI	**Education for Sustainable Development**	Developed through the activities in this lesson.
PCI	**Safety**	Learners follow safety rules when using materials and moving about.

LEARNING RESOURCES

Graph paper | Rulers, sharp pencils and set squares | Protractors | A graphing app (optional) | Learners' exercise books

ORGANISATION OF LEARNING

Whole class for the introduction and the summary; pairs or groups of four to five for guided practice; individual work for the independent tasks.

KEY WORDS

Cartesian plane | quadrant | origin | coordinates | table of values | parallel | perpendicular | point of intersection

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "In a cinema, a seat is found by its row and its number. How do we find a point on a graph?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Work through the worked example on the next page, thinking aloud. Use graph paper, rulers, sharp pencils and set squares, protractors. Ask learners to predict each step before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "A point is 4 units left of the origin and 1 unit down. Write its coordinates."	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Coordinates (x, y)

The x-coordinate tells how far across (right is positive, left is negative); the y-coordinate tells how far up (up positive, down negative).

Plot A(3, 2), B((-2), 4), C((-3), (-1)) and D(4, (-2)). A is in the first quadrant, B the second, C the third and D the fourth.

Always move across first, then up or down: "along the corridor, then up the stairs".

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	In which quadrant is ((-5), 3)?	**The second**
2	In which quadrant is (2, (-6))?	**The fourth**
3	Give the coordinates of the origin.	**(0, 0)**
4	A point is 4 units left of the origin and 1 unit down. Write its coordinates.	**((-4), (-1))**

WATCH OUT FOR

Learners plot (3, 2) at (2, 3). x always comes first. Handle sharp pencils and compasses with care.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can draw and label the x- and y-axes confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can draw and label the x- and y-axes accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly draw and label the x- and y-axes, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet draw and label the x- and y-axes without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Play "battleships" with a partner on a grid to practise reading coordinates.
Learners ready for more	Plot (1, 1), (5, 1), (5, 4) and (1, 4). Name the shape and find its area. (Answer: A rectangle 4 by 3; area 12 square units)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "plotting points in all four quadrants" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.

ELIMU254

Drawing a straight line from its equation

Strand 4.0 Geometry > Sub-strand 4.1 Coordinates and Graphs | Lesson 2 of 6 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) make a table of values for a linear equation; b) plot the points and draw the line

KEY INQUIRY QUESTION(S)

- How do we draw graphs of straight lines?
- How do we interpret graphs of straight lines?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Critical thinking and problem solving**	Learners choose a method, check their answers and give reasons for their choices.
VALUE	**Responsibility**	Learners look after shared materials and finish every task.
PCI	**Education for Sustainable Development**	Developed through the activities in this lesson.
PCI	**Safety**	Learners follow safety rules when using materials and moving about.

LEARNING RESOURCES

Graph paper | Rulers, sharp pencils and set squares | Protractors | A graphing app (optional) | Learners' exercise books

ORGANISATION OF LEARNING

Whole class for the introduction and the summary; pairs or groups of four to five for guided practice; individual work for the independent tasks.

KEY WORDS

Cartesian plane | quadrant | origin | coordinates | table of values | parallel | perpendicular | point of intersection

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "Key question: how do we draw graphs of straight lines? How many points do we need to draw a straight line, and why do we use three?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Work through the worked example on the next page, thinking aloud. Use graph paper, rulers, sharp pencils and set squares, protractors. Ask learners to predict each step before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Where does y = 2x + 1 cross the y-axis?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Graph of y = 2x + 1

Table of values: x = (-2), (-1), 0, 1, 2 gives y = (-3), (-1), 1, 3, 5.

Plot the points ((-2), (-3)), ((-1), (-1)), (0, 1), (1, 3), (2, 5) and join them with a ruler.

Two points fix a line; the third is a check. If one point is out of line, there is a mistake in the table.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Complete the table for y = 3x - 2 for x = 0, 1, 2.	**y = (-2), 1, 4**
2	Complete the table for y = 4 - x for x = (-1), 0, 3.	**y = 5, 4, 1**
3	Does the point (2, 6) lie on y = 2x + 1?	**No: 2 × 2 + 1 = 5, not 6.**
4	Where does y = 2x + 1 cross the y-axis?	**At (0, 1)**

WATCH OUT FOR

Learners join points with a freehand curve. A linear equation gives a straight line: use a ruler and extend it past the end points.