Grade 9 Mathematics

Term 2 - 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 2, covering linear inequalities, area, volume of solids, mass, volume, weight and density, time, distance and speed, money and approximations and errors.

TOPICS IN THIS PACK

Topic	Name	Lessons
2.3	Linear Inequalities	6
3.1	Area	8
3.2	Volume of Solids	8
3.3	Mass, Volume, Weight and Density	8
3.4	Time, Distance and Speed	10
3.5	Money	7
3.6	Approximations and Errors	5

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.

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

Inequality statements and solving in one unknown

Strand 2.0 Algebra > Sub-strand 2.3 Linear Inequalities | 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) read and write inequality statements using <, >, <= and >=; b) solve simple linear inequalities in one unknown

KEY INQUIRY QUESTION(S)

- How do we represent linear inequalities in graphs?
- How do we use linear inequalities in real life situations?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Digital literacy**	Learners use a phone, tablet or the class computer to explore or check the idea.
COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
VALUE	**Social justice**	Every learner gets a turn and a fair chance to answer.
PCI	**Citizenship**	Learners connect the work to their rights and duties in the community.

LEARNING RESOURCES

Number line chart | Graph paper, rulers and pencils | Coloured pencils for shading | A graphing app on a phone or computer (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

inequality | less than | greater than | solution set | boundary line | region | unwanted region

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: "A lift can carry at most 8 people. Can it carry 8? Can it carry 9? How could we write this rule with a symbol?" 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 number line chart, graph paper, rulers and pencils, coloured pencils for shading. 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: "Write as an inequality: a learner must be at least 13 years old to join."	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Symbols and solving

x < 5 means "x is less than 5"; x >= 3 means "x is greater than or equal to 3". For the lift: number of people <= 8.

Solve like an equation: 2x + 3 < 11. Subtract 3: 2x < 8. Divide by 2: x < 4.

Special rule: when you multiply or divide both sides by a negative number, reverse the sign. (-3)x <= 12 gives x >= (-4).

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Solve x + 7 > 12.	**x > 5**
2	Solve 3x - 4 <= 11.	**x <= 5**
3	Solve 5 - 2x < 1.	**(-2)x < (-4), so x > 2**
4	Write as an inequality: a learner must be at least 13 years old to join.	**Age >= 13**

WATCH OUT FOR

Learners forget to reverse the sign when dividing by a negative. Test with a number: if x = 3, is 5 - 2x < 1 true?

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

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

SUPPORT AND EXTENSION

Learners who need support	Solve each inequality first as an equation, then put the sign back.
Learners ready for more	Solve and list the whole-number solutions: 3 < 2x + 1 <= 11. (Answer: 1 < x <= 5, so x = 2, 3, 4, 5)
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 "inequality statements and solving in one unknown" 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

Inequalities in one unknown on a number line

Strand 2.0 Algebra > Sub-strand 2.3 Linear Inequalities | 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) show the solution of an inequality on a number line; b) use open and closed circles correctly

KEY INQUIRY QUESTION(S)

- How do we represent linear inequalities in graphs?
- How do we use linear inequalities in real life situations?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Digital literacy**	Learners use a phone, tablet or the class computer to explore or check the idea.
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LEARNING RESOURCES

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ORGANISATION OF LEARNING

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KEY WORDS

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THE LESSON AT A GLANCE

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LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "How would you show "all numbers bigger than 2" on a number line, when there are too many to list?" 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 number line chart, graph paper, rulers and pencils, coloured pencils for shading. 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.
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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: "Solve 2x - 1 > 5 and describe its number line."	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Open and closed circles

For x > 2, put an open circle at 2 (2 itself is not included) and draw an arrow to the right.

For x <= (-1), put a closed (shaded) circle at (-1) (it is included) and an arrow to the left.

For (-2) < x <= 3, draw a line from an open circle at (-2) to a closed circle at 3.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Describe the number line for x >= 4.	**Closed circle at 4, arrow to the right**
2	Describe the number line for x < 0.	**Open circle at 0, arrow to the left**
3	Write the inequality shown by an open circle at 1 joined to a closed circle at 6.	**1 < x <= 6**
4	Solve 2x - 1 > 5 and describe its number line.	**x > 3: open circle at 3, arrow to the right**

WATCH OUT FOR

Learners use a closed circle for < and >. Only <= and >= include the end number.