Grade 8 Mathematics

Term 2 - 50 complete lesson plans

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

ABOUT THIS PACK

50 complete, ready-to-teach Grade 8 Mathematics lesson plans for Term 2, covering circles, area, money, geometrical constructions and coordinates and graphs.

TOPICS IN THIS PACK

Topic	Name	Lessons
3.1	Circles	5
3.2	Area	10
3.3	Money	9
4.1	Geometrical Constructions	12
4.2	Coordinates and graphs	14

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

Finding pi by measuring circular objects

By the end of the lesson, the learner should be able to: a) measure the circumference and diameter of circular objects; b) discover that circumference ÷ diameter is about 3.14

> **Measuring**
> Wrap a string around a tin, mark it, and measure the string: this is the circumference. Measure the diameter across the top.
> Record in a table: object, circumference, diameter, circumference ÷ diameter.

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

Finding pi by measuring circular objects

Strand 3.0 Measurements > Sub-strand 3.1 Circles | Lesson 1 of 5 | 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) measure the circumference and diameter of circular objects; b) discover that circumference ÷ diameter is about 3.14

KEY INQUIRY QUESTION(S)

- How do we determine the circumference of a circle?
- How do we use sectors of a circle in real-life situations?

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	**Creativity and imagination**	Learners make up their own examples, patterns or ways of showing the idea.
VALUE	**Integrity**	Learners record their own honest results and mark work truthfully.
VALUE	**Responsibility**	Learners look after shared materials and finish every task.
PCI	**Environmental education**	Examples link to caring for the school and home environment.

LEARNING RESOURCES

Circular objects (tins, plates, lids, a bicycle wheel) | String and metre rule | Pair of compasses | Paper or manila for cut-outs | 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

circle | radius | diameter | circumference | pi | arc | sector | semicircle

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 determine the circumference of a circle?" 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 circular objects (tins, plates, lids, a bicycle wheel), string and metre rule, pair of compasses. 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: "Which value of pi is used with radii that are multiples of 7?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Measuring

Wrap a string around a tin, mark it, and measure the string: this is the circumference. Measure the diameter across the top.

Record in a table: object, circumference, diameter, circumference ÷ diameter.

For every circle the last column is close to 3.14. This number is called pi. We often use 22/7 or 3.142.

So circumference = pi × diameter, or 2 × pi × radius.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is the diameter of a circle of radius 9 cm?	**18 cm**
2	A tin has circumference 31.4 cm and diameter 10 cm. Find circumference ÷ diameter.	**3.14**
3	Write the formula for circumference using the radius.	**C = 2 × pi × r**
4	Which value of pi is used with radii that are multiples of 7?	**22/7**

WATCH OUT FOR

Strings stretch or slip; measure twice. Results near 3.1 or 3.2 are fine.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

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

SUPPORT AND EXTENSION

Learners who need support	Work in pairs: one holds the string, one marks it.
Learners ready for more	Why do we get slightly different values of pi from measuring? (Answer: Measuring is never exact)
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 "finding pi by measuring circular objects" 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

Calculating the circumference

Strand 3.0 Measurements > Sub-strand 3.1 Circles | Lesson 2 of 5 | 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) calculate circumference from radius or diameter; b) find the radius from the circumference

KEY INQUIRY QUESTION(S)

- How do we determine the circumference of a circle?
- How do we use sectors of a circle in real-life situations?

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.
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LEARNING RESOURCES

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ORGANISATION OF LEARNING

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KEY WORDS

circle | radius | diameter | circumference | pi | arc | sector | semicircle

THE LESSON AT A GLANCE

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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 bicycle wheel has a diameter of 70 cm. How far does it move in one turn?" 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 circular objects (tins, plates, lids, a bicycle wheel), string and metre rule, pair of compasses. 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 wheel of diameter 56 cm turns 50 times. How far does it travel?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Using the formula

Radius 7 cm: C = 2 × 22/7 × 7, which is 44 cm.

Diameter 70 cm: C = 22/7 × 70, which is 220 cm. In 100 turns the bicycle moves 100 × 220 = 22000 cm, which is 220 m.

Finding the radius: C is 88 cm. 2 × 22/7 × r = 88, so r = 88 × 7 ÷ 44 = 14 cm.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Find the circumference of a circle of radius 21 cm.	**132 cm**
2	Find the circumference of a circle of diameter 28 cm.	**88 cm**
3	A circle has circumference 154 cm. Find its diameter.	**49 cm**
4	A wheel of diameter 56 cm turns 50 times. How far does it travel?	**8,800 cm, which is 88 m**

WATCH OUT FOR

Learners use the diameter in 2 × pi × r and double the answer. Check which measure is given.