Grade 7 Mathematics

Term 1 - 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 7 Mathematics lesson plans for Term 1, covering whole numbers, factors, fractions, decimals, squares and square roots and algebraic expressions.

TOPICS IN THIS PACK

Topic	Name	Lessons
1.1	Whole Numbers	20
1.2	Factors	7
1.3	Fractions	9
1.4	Decimals	6
1.5	Squares and Square Roots	5
2.1	Algebraic Expressions	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.

A TASTE OF LESSON 1

Place value up to hundreds of millions

By the end of the lesson, the learner should be able to name the place of each digit in a 9-digit number

> **Placing 245,836,170 on a place value chart**
> Hundred millions 2 | Ten millions 4 | Millions 5 | Hundred thousands 8 | Ten thousands 3 | Thousands 6 | Hundreds 1 | Tens 7 | Ones 0.
> Digits are grouped in threes from the right: ones (170), thousands (836), millions (245).

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.

CONTENTS

No.	Lesson	Topic	Page
1	Place value up to hundreds of millions	1.1 Whole Numbers	4
2	Total value up to hundreds of millions	1.1 Whole Numbers	7
3	Writing numbers in symbols	1.1 Whole Numbers	10
4	Writing numbers in words	1.1 Whole Numbers	13
5	Writing dummy cheques	1.1 Whole Numbers	16
6	Rounding off to the nearest ten, hundred and thousand	1.1 Whole Numbers	19
7	Rounding off to the nearest ten thousand, hundred thousand and million	1.1 Whole Numbers	22
8	Rounding off to the nearest ten million and hundred million	1.1 Whole Numbers	26
9	Even and odd numbers	1.1 Whole Numbers	29
10	Prime numbers	1.1 Whole Numbers	32
11	Addition of whole numbers	1.1 Whole Numbers	36
12	Subtraction of whole numbers	1.1 Whole Numbers	39
13	Multiplication of whole numbers	1.1 Whole Numbers	42
14	Division of whole numbers	1.1 Whole Numbers	45
15	Order of operations	1.1 Whole Numbers	48
16	Three or more combined operations	1.1 Whole Numbers	51
17	Combined operations in real-life problems	1.1 Whole Numbers	54
18	Identifying number sequences	1.1 Whole Numbers	57
19	Sequences with multiplying and other patterns	1.1 Whole Numbers	60
20	Creating number sequences and puzzles	1.1 Whole Numbers	63
21	Divisibility by 2, 4 and 8	1.2 Factors	67
22	Divisibility by 3, 6 and 9	1.2 Factors	70
23	Divisibility by 5, 10 and 11	1.2 Factors	73
24	Prime factors and factor trees	1.2 Factors	76
25	GCD by factor method	1.2 Factors	79
26	LCM by factor method	1.2 Factors	82
27	Applying GCD and LCM	1.2 Factors	85
28	Comparing and ordering fractions	1.3 Fractions	88
29	Adding fractions	1.3 Fractions	91
30	Subtracting fractions	1.3 Fractions	94
31	Multiplying fractions by whole numbers and fractions	1.3 Fractions	97

32	Multiplying mixed numbers	1.3 Fractions	100
33	Reciprocals	1.3 Fractions	103
34	Dividing fractions by whole numbers and fractions	1.3 Fractions	106
35	Dividing mixed numbers and whole numbers by fractions	1.3 Fractions	109
36	Number sequences with fractions	1.3 Fractions	112
37	Place value of decimals	1.4 Decimals	115
38	Total value of digits in decimals	1.4 Decimals	118
39	Multiplying decimals by whole numbers	1.4 Decimals	121
40	Multiplying decimals by decimals	1.4 Decimals	124
41	Dividing decimals by whole numbers	1.4 Decimals	127
42	Dividing decimals by decimals	1.4 Decimals	130
43	Squares of whole numbers	1.5 Squares and Square Roots	133
44	Squares of fractions and decimals	1.5 Squares and Square Roots	136
45	Square roots of whole numbers by factor method	1.5 Squares and Square Roots	139
46	Square roots of fractions and decimals	1.5 Squares and Square Roots	142
47	Square roots by division method and in real life	1.5 Squares and Square Roots	145
48	Using letters for objects	2.1 Algebraic Expressions	148
49	Forming expressions from statements	2.1 Algebraic Expressions	151
50	Forming expressions from real-life situations	2.1 Algebraic Expressions	154
51	Simplifying by collecting like terms	2.1 Algebraic Expressions	157
52	Simplifying expressions with brackets and in real life	2.1 Algebraic Expressions	160

ELIMU254

Place value up to hundreds of millions

Strand 1.0 Numbers > Sub-strand 1.1 Whole Numbers | Lesson 1 of 20 | 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 name the place of each digit in a 9-digit number

KEY INQUIRY QUESTION(S)

- Why do we write numbers in words and/or symbols?
- Where do we write numbers in words or symbols?

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.
COMPETENCY	**Creativity and imagination**	Learners make up their own examples, patterns or ways of showing the idea.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
VALUE	**Unity**	Learners share materials fairly and work as one team.
VALUE	**Peace**	Learners settle differences calmly during group work.
PCI	**Financial literacy**	Examples use shillings and cents, shopping, saving and simple budgets.
PCI	**Self-esteem**	Developed through the activities in this lesson.

LEARNING RESOURCES

Place value chart up to hundreds of millions on manila paper | Number cards 0 to 9 | Newspaper cuttings with large numbers | Dummy cheque forms | 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

digit | place value | total value | hundreds of millions | round off | natural number | even | odd | prime | sequence | term

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: why do we write numbers in words and/or symbols? A national budget line reads Ksh 245,836,170. Which digit is in the hundred millions place?" 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 place value chart up to hundreds of millions on manila paper, number cards 0 to 9, newspaper cuttings with large numbers. 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 the place value of 0 in 520,764,318."	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Placing 245,836,170 on a place value chart

Hundred millions 2 | Ten millions 4 | Millions 5 | Hundred thousands 8 | Ten thousands 3 | Thousands 6 | Hundreds 1 | Tens 7 | Ones 0.

Digits are grouped in threes from the right: ones (170), thousands (836), millions (245).

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Write the place value of 7 in 731,045,286.	**Hundred millions**
2	Write the place value of 9 in 409,120,537.	**Millions**
3	In 168,254,903, which digit is in the ten millions place?	**6**
4	Write the place value of 0 in 520,764,318.	**Ten millions**

WATCH OUT FOR

Learners name the digit instead of the place. Keep asking: which column is it in?

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can name the place of each digit in a 9-digit number confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can name the place of each digit in a 9-digit number accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly name the place of each digit in a 9-digit number, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet name the place of each digit in a 9-digit number without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Place number cards on a 9-column chart and say each column name aloud.
Learners ready for more	Using 3, 8, 1, 0, 6, 5, 9, 2, 7 once each, make the largest 9-digit number. (Answer: 987,653,210)
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 "place value up to hundreds of millions" 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

Total value up to hundreds of millions

Strand 1.0 Numbers > Sub-strand 1.1 Whole Numbers | Lesson 2 of 20 | 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) find the total value of a digit; b) write a number in expanded form

KEY INQUIRY QUESTION(S)

- Why do we write numbers in words and/or symbols?
- Where do we write numbers in words or symbols?

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.
COMPETENCY	**Creativity and imagination**	Learners make up their own examples, patterns or ways of showing the idea.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
VALUE	**Unity**	Learners share materials fairly and work as one team.
VALUE	**Peace**	Learners settle differences calmly during group work.
PCI	**Financial literacy**	Examples use shillings and cents, shopping, saving and simple budgets.
PCI	**Self-esteem**	Developed through the activities in this lesson.

LEARNING RESOURCES

Place value chart up to hundreds of millions on manila paper | Number cards 0 to 9 | Newspaper cuttings with large numbers | Dummy cheque forms | 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

digit | place value | total value | hundreds of millions | round off | natural number | even | odd | prime | sequence | term

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

Inside this plan: the step-by-step lesson flow with what the teacher and learners do, the key content, practice questions with answers, a common mistake to watch for, an assessment rubric on the four CBC levels, support and extension ideas, homework and a reflection page.

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "In 345,000,000 the 3 is in the hundred millions place. How much is it worth?" 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 place value chart up to hundreds of millions on manila paper, number cards 0 to 9, newspaper cuttings with large numbers. 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: "200,000,000 + 30,000,000 + 6,000 + 5 = ?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Total value = digit × value of its place

In 627,401,350: 6 × 100,000,000 = 600,000,000; 2 × 10,000,000 = 20,000,000; 7 × 1,000,000 = 7,000,000.
4 × 100,000 = 400,000; 1 × 1,000 = 1,000; 3 × 100 = 300; 5 × 10 = 50.
Expanded form: 600,000,000 + 20,000,000 + 7,000,000 + 400,000 + 1,000 + 300 + 50 = 627,401,350.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is the total value of 8 in 842,105,600?	**800,000,000**
2	What is the total value of 5 in 315,240,000?	**5,000,000**
3	What is the total value of 4 in 290,463,118?	**400,000**
4	200,000,000 + 30,000,000 + 6,000 + 5 = ?	**230,006,005**