



هيئة التعليم

EDUCATION INSTITUTE

Mathematics workshop 2

for teachers of Grades 1 to 6

Teacher's pack: Part 1

Developed for the Education Institute by CfBT

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Aims of the workshop

The purpose of the five-day mathematics workshops is to consider the curriculum standards for mathematics and to discuss the implications for planning the curriculum, teaching, learning and assessment.

The workshops aim to help subject leaders and teachers to:

- become more familiar with the new curriculum standards;
- consider the implications of the standards for planning, teaching and assessment;
- start or refine the planning of a mathematics scheme of work based on the standards, and related lesson plans;
- support colleagues as they implement the standards.

Throughout the workshop, time is allowed for you to study sections of the curriculum standards, to consider points for action arising from the sessions, and to make brief notes.

Many of the sessions in the second workshop have different themes, depending on the age range of students in the school.

Workshop programme for primary schools

Day 1: Developing number sense 1

| | | |
|--------------------------|-----------------------|------------|
| 08:00 | Registration | |
| Session 1 08:30–10:00 | Place value | 90 minutes |
| Session 2 10:30–12:00 | Mental calculation 1 | 90 minutes |
| Session 3 13:00–14:30 | Mental calculation 2 | 90 minutes |
| Session 4 15:00–16:30 | Working with measures | 90 minutes |

Day 2: Developing number sense 2

| | | |
|--------------------------|--|------------|
| 10:45 | Registration | |
| Session 5 11:10–12:30 | Mental activities and assessment | 80 minutes |
| Session 6 13:30–14:50 | Written calculations 1: addition and subtraction | 80 minutes |
| Session 7 15:10–16:30 | Written calculations 2: multiplication and division | 80 minutes |

Day 3: Developing number sense 3

| | | |
|--|--|-------------|
| 10:45 | Registration | |
| Session 8a 11:10–12:30 | Grades 1 to 4: Early number work 1 | 80 minutes |
| Session 9a 13:30–14:50 | Grades 1 to 4: Early number work 2 | 80 minutes |
| Session 10a 15:10–16:30 | Grades 1 to 4: Number games and puzzles | 80 minutes |
| Session 8b 11:10–12:30 and 13:30–14:10 | Grades 5 to 9: Fractions, decimals and percentages | 120 minutes |
| Session 9b 14:20–16:20 | Grades 5 to 9: Calculators | 120 minutes |

Day 4: Geometry and word problems

| | | |
|---------------------------|-----------------------|------------|
| 10:45 | Registration | |
| Session 11 11:10–12:30 | Geometry 1 | 80 minutes |
| Session 12 13:30–14:50 | Geometry 2 | 80 minutes |
| Session 13 15:10–16:30 | Solving word problems | 80 minutes |

Day 5: Problem solving

| | | |
|---------------------------|--|------------|
| 10:45 | Registration | |
| Session 14 11:10–12:30 | Problems and investigations 1 | 80 minutes |
| Session 15 13:30–14:50 | Problems and investigations 2 | 80 minutes |
| Session 16 15:10–16:20 | The interactive whiteboard Summing up | 70 minutes |

Objectives of each session

Day 1: Developing number sense 1

Session 1: Place value

By the end of the session you will:

- have explored a range of place value activities you could use in your lessons;
- have identified activities to remedy students' misconceptions of and problems with place value.

Sessions 2 and 3: Mental calculation 1 and 2

By the end of Sessions 2 and 3 you will:

- have identified and discussed strategies for calculating mentally;
- have considered the role of recording in mental work.

Session 4: Working with measures

By the end of the session you will:

- have considered activities to teach aspects of work on measures: choosing appropriate units, estimating measures, reading scales, converting and comparing measures;
- have considered some ICT resources for supporting work on measures.

Day 2: Developing number sense 2

Session 5: Mental activities and assessment

By the end of the session you will:

- have discussed some activities to keep mental skills sharp;
- have considered the assessment of mental skills.

Session 6: Written calculations 1: addition and subtraction

By the end of the session you will:

- have considered approaches to written methods for addition and subtraction.

Session 7: Written calculations 2: multiplication and division

By the end of the session you will:

- have considered approaches to written methods for multiplication and division.

Day 3 (Grades 1 to 4): Developing number sense 3

Session 8a: Early number work 1

By the end of the session you will:

- understand what is involved in helping young children to count and calculate.

Session 9a: Early number work 2

By the end of the session you will:

- know which are the most important areas in early number work;
- have considered models and images that help children to understand and develop skills in these areas.

Session 10a: Number games and puzzles

By the end of the session you will:

- have considered a range of games and puzzles to develop and practise number skills in Grades 1 to 4.

Day 3 (Grades 5 to 9): Developing number sense 3

Session 8b: Fractions, decimals and percentages

By the end of the session you will:

- have discussed how students learn;
- have seen how visualisation is a key component in teaching fractions;
- have considered some strategies for teaching that are consistent across grades.

Session 9b: Calculators

By the end of the session you will:

- have considered how to teach students to use a calculator, and some of the difficulties that they can have;
- have tried out some calculator activities to use in lessons.

Day 4: Geometry and word problems

Session 11 and 12: Geometry 1 and 2

By the end of Sessions 11 and 12 you will:

- have explored activities involving angles and shapes;
- have considered how to help students to understand angle;
- have considered how practical work underpins more advanced analytical work in later grades.

Session 13: Solving word problems

By the end of the session you will:

- be familiar with the range of skills students need to solve word problems;
- have considered how to teach these skills.

Day 5: Problem solving

Session 14: Problems and investigations 1

By the end of the session you will:

- have considered different kinds of mathematical problems and puzzles;
- have considered the strategies that students can use to solve these problems.

Session 15: Problems and investigations 2

By the end of the session you will:

- have considered what is important about investigation work in mathematics;
- have tried out some investigation activities to use in lessons;
- have considered some strategies to get students started on an investigation.

Session 16: The interactive whiteboard

By the end of the session you will:

- have viewed and discussed some ICT resources;
- have considered how the workshop should be followed up in school.

Before the workshop

Before coming to the workshop, you are asked to complete the tasks given to you at the end of the first workshop. These tasks were:

- 1 Finish your discussion of the action points to follow up the first workshop. Discuss relevant points with your principal, and what would help to maximise the benefits to other teachers.
- 2 Tell other colleagues what you learned on the workshop and discuss with them the implications for what you need to do as a subject team.
- 3 Refine your scheme of work.
- 4 Plan, teach, demonstrate and evaluate a lesson based on your new scheme of work.
- 5 Read these articles, which can be found the Internet. They are written in Arabic:
 - an article about problem solving
www.mathdar.com/search11.htm
 - a general article about learning
www.almoultaqa.com/ar13.html

You may also find the articles on this website to be of interest:
www.almekbel.net

Materials you need to bring to the workshop

When you come to the workshop, please bring with you:

- *Curriculum Standards for mathematics: Kindergarten to Grade 12*
- *Sample lesson plans for mathematics: Grades 1 to 12*
- a writing pad on which to make notes.

Each day you will need to bring with you the *Teacher's pack* that you will be given on the first day of the workshop.

Tasks to do between the second and third workshop (gap tasks)

At the end of the workshop, you will be given some tasks to do before the next workshop. The tasks for primary schools will include:

- discussing with your school principal, and SSO support team, any implications of the second workshop;
- feeding back to other colleague what has been learned on the second workshop and discussing any action needed;
- some preliminary reading;
- some tasks to give to students so that you can bring with you to the third workshop some examples of students' work.

Guidance on how to do these tasks will be given at the workshop.