Day 1 Session 1 — 90 minutes

The mathematics standards

Objectives

By the end of this session teachers will:

- know the aims of the workshop and the programme for the five days;
- be familiar with the main features of the new curriculum standards for mathematics.

Resources

For the trainer

- Computer with data projector, Microsoft PowerPoint and Presentation 1.ppt
- Whiteboard or flipchart
- *Curriculum Standards for mathematics: Grades K to 12*

For each teacher

- *Teacher's pack: Part 2*
  Handouts 1.1a and 1.1b
- *Curriculum Standards for mathematics: Grades K to 12*

Session outline

Introduction Slide 1.1	Introduction to the day Task 1: Listing questions	10 minutes
Background to the standards Slides 1.2–1.13	Whole group presentation and discussion	40 minutes
The mathematics in the standards Slides 1.14–1.16	Whole group presentation and discussion Task 2: Comparing standards with a scope and sequence chart	20 minutes
A quiz on the standards Handouts 1.1a and 1.1b	Task 3: A quiz Small groups	15 minutes
Summary Slides 1.17–1.20	Summary of key points Whole group	5 minutes

Introduction

10 minutes

Welcome everyone and make introductions. Deal with any domestic or administrative matters. Ask for mobile phones to be switched off.

Explain that the theme for this workshop is discussing the new standards and their implications for planning the curriculum, teaching, learning and assessment. During the workshop, there will be opportunities to discuss the preliminary articles that they have read.

Refer to the *Teacher's pack: Part 2*. Point out the aims of the workshop, the programme for the five days, the evaluation forms for completion at the end of each day and the reduced copies of the slides at the back of the pack.

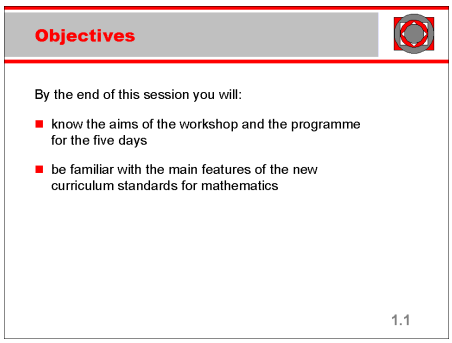
Introduce the objectives for the first session, shown on **slide 1.1**.

Before everyone arrives, brief any interpreter about the key points of the session.

Make sure that there is a copy of the standards for each teacher.

Put out copies of the **Teacher's pack: Part 2**. Load **Presentation 1.ppt**.

Aim to start promptly. There is a lot to cover in this first session.



Say that you are aware that some teachers will already be familiar with the standards and that this session is mainly for the benefit of those for whom the standards are relatively new.

Task 1: Listing questions

Ask teachers to work in groups of four to six for a few minutes and to list three or four questions about the standards that they would like to have answered during this session and the rest of the workshop. Say that these questions will be answered later during this and subsequent sessions.

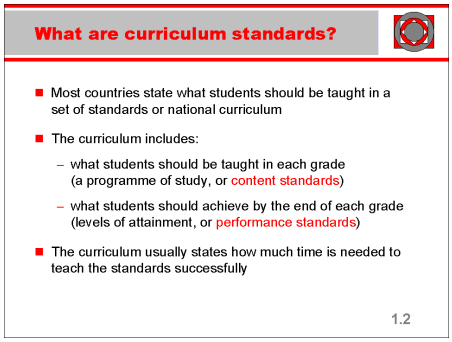
Make sure that the groups include teachers from different schools.

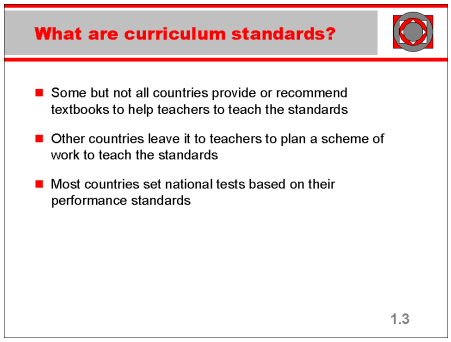
Background to the standards

40 minutes

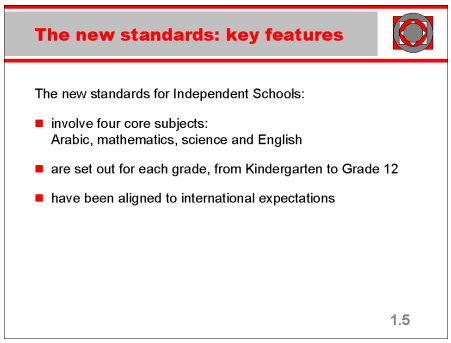
Explain that you are going to discuss the main features of the new standards. Say that anyone can ask questions at any point.

Show **slides 1.2 and 1.3** to explain the meaning of 'curriculum standards'.





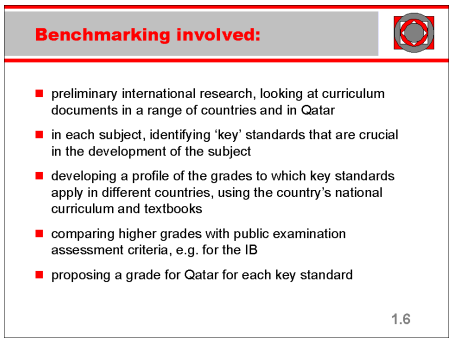
Refer teachers to the *Curriculum Standards for mathematics: Grades K to 12*. Show **slides 1.4 and 1.5** to explain the purposes and key features of Qatar's new standards in the context of the curriculum reforms.

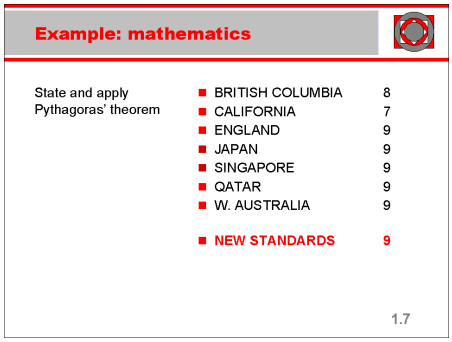


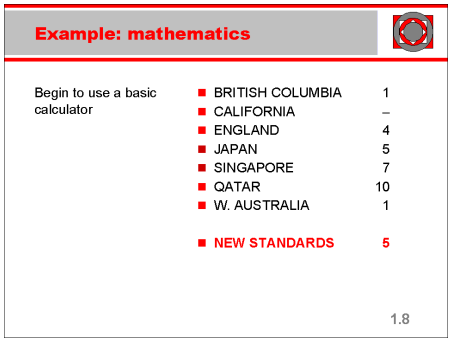
Explain these points about the key features.

- The standards for each subject are contained in a single ring binder. It is a good idea to keep the standards for a number of grades together as teachers need to look at the standards for the previous and next grades when they are planning and teaching. For example, a preparatory school teacher for Grades 7 to 9 may need to look at all the standards from Grade 4 to Grade 12.
- Kindergarten standards are there for children who attend. It is hoped that over time Kindergarten will become more fully subscribed. However, not all children attend Kindergarten. It is essential that Grade 1 teachers also teach the Kindergarten standards, integrating them with Grade 1 standards.

Show slides **1.6 to 1.8** to explain and illustrate international benchmarking.

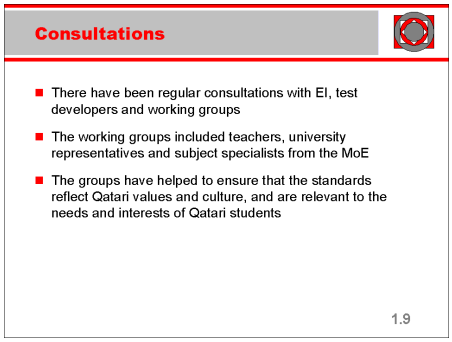




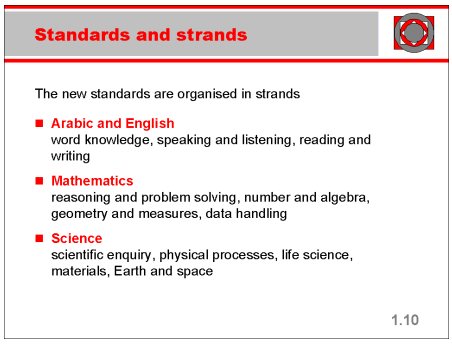


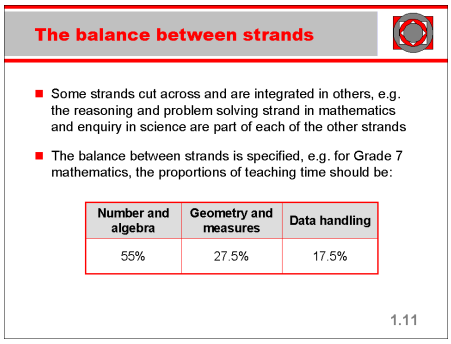
Say that there is often considerable agreement across countries about where to position a topic in the curriculum but, as with the use of calculators, this is sometimes not the case. California leaves the decision to individual schools.

Show **slide 1.9**. Say that the CfBT team of international experts who developed the standards received considerable help from local teachers and the Education Institute to ensure that the standards reflect Qatari values and culture.



Show **slides 1.10 and 1.11**. Explain that the strands for mathematics are subdivisions to help to organise the standards in a way that is easy to follow. Turn to one of the grades, for example Grade 7, page 133, and look at the way each of the strands is described in turn. Point out the table on page 134 showing how teaching time for mathematics in Grade 7 should be balanced across the strands. (The table also includes Grades 8 and 9.)



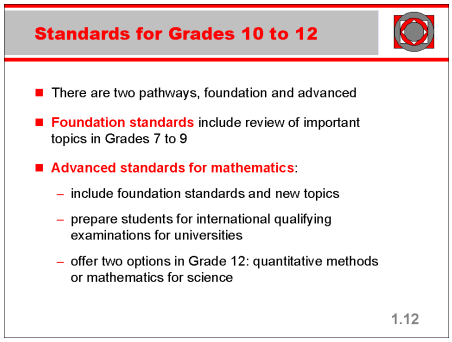


Stress these points.

- The standards are not a programme of study or scheme of work, or listed in the order in which they should be taught.
- The three content strands of number and algebra, geometry and measures, and data handling set out the knowledge, skills and understanding that students should acquire at each grade level. The reasoning and problem solving strand consists of generic standards that relate to each of the content strands.
- The percentages of teaching time are approximations: in Grade 6 just over half of teaching time should be spent on number and algebra, about one third on geometry and measures, and about one tenth on data handling.
- The relative proportion of teaching time for the three content strands changes from grade to grade (point out the table on page 14 of the Introduction to the standards showing the changes from one grade to the next).
- Reasoning and problem solving is not given specific teaching time because it should be taught and assessed as part of the three content strand (point out the statement on page 120 that says: 'For Grade 6, about 60% of the teaching and assessment of each of the other three strands should be devoted to reasoning and problem solving.').
- The proportion of the three content strands to be devoted to reasoning and problem solving increases steadily from grade to grade, so that by the time that Grade 12 is reached, problem solving and reasoning should be fostered in almost all lessons.

Show **slide 1.12** and discuss the structure of the standards for Grades 10 to 12.

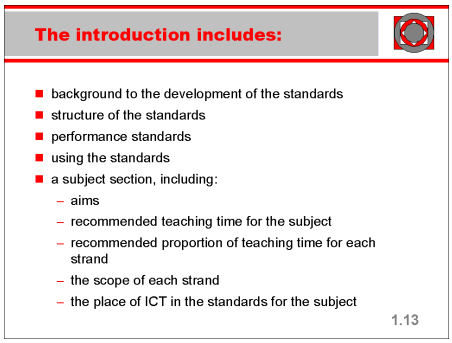
You may wish to omit slide 1.12 if the audience consists of primary teachers only.



Emphasise that:

- advanced students in Grade 12 choose either mathematics for science or quantitative methods, but not both;
- students will need career advice in Grade 9 and at the start of Grade 10 about which route to follow: foundation or advanced;
- there are implications for secondary school timetables to allow students to follow their chosen route.

Show **slide 1.13**. Talk through the Introduction to the standards, which begins on page 9. Ask the teachers to turn over the pages as you do so.



Pause at this point to see whether the teachers have any questions about the general background to the standards and the way that they are structured. Point out in particular the section on teaching time on pages 12 and 13 of the Introduction. Remind everyone about the article on teaching time that they read before they came to the course. Ask whether there are any issues that they would like to discuss in relation to it.

If teachers have concerns about the amount of teaching time, stress that each school can decide for itself how much time to offer each subject. If teachers feel that they need more time, their school can provide more time.

Refer to the questions that teachers listed at the start of the session. Ask them to tick off any that they now know the answers to. Spend a few minutes dealing with any remaining questions. If there are still unanswered questions when it is time to move on, say that you will answer them during the rest of the day.

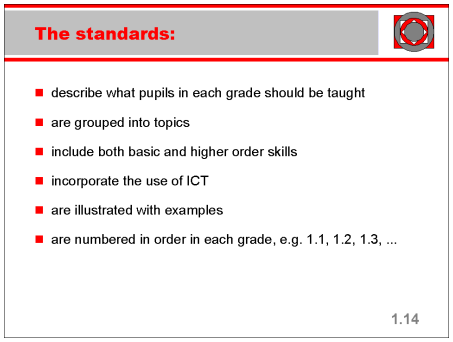
The mathematics in the standards

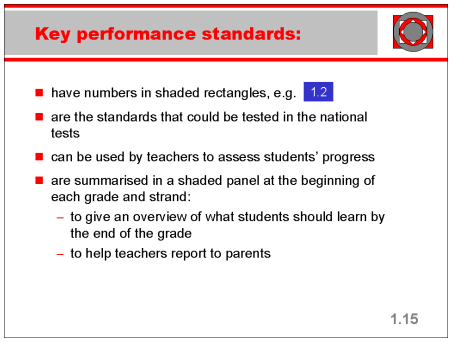
20 minutes

Say that you will now look in detail at one particular grade.

For an audience of primary teachers, use Grade 4; for preparatory and secondary teachers, use Grade 8; for a mixed audience, use Grade 6.

Show **slides 1.14 and 1.15**. Illustrate the bullet points on the slides by looking through the standards in the number and algebra strand.



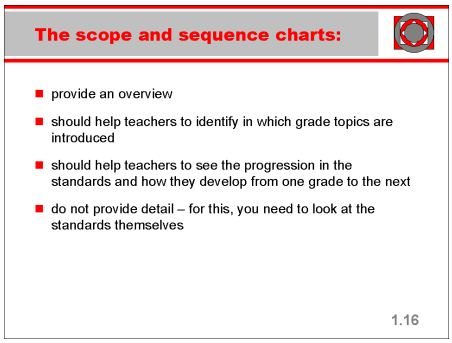


Explain that the purpose of the examples is to help to amplify the intention of the particular standard and the range of what might be involved.

Discuss with the teachers the extent to which the standards for the particular grade are the same or are different from what they teach now. Through the discussion, aim to establish that:

- not everything is new – some standards reflect what students in that grade have been taught in the Ministry of Education schools;
- there are some aspects of the new standards that are not given much priority at present, e.g. mental mathematics and visualisation, the use of ICT in mathematics, problem solving in all grades, real-world applications in the higher grades.

Explain the purpose of the scope and sequence charts. Show **slide 1.16**.



ICT stands for information and communication technology.

Visualisation activities involve students in imagining and manipulating shapes or arrangements of objects. For example:

Imagine a large yellow square on the table in front of you. Imagine a small, blue right-angled triangle lying inside the square.

Push the right-angled triangle so that its right angle fits into a corner of the square.

Now draw the yellow shape that is left. What is its name? Compare with the rest of your group.

Task 2: Comparing standards with a scope and sequence chart

Ask teachers to spend a few minutes comparing the contents of the grade that they have looked at with the scope and sequence chart for that grade.

A quiz on the standards

15 minutes

Say that, for the final few minutes of this part of the session, there is a quiz for everyone to work on in teams. Refer them to **Handout 1.1a** or **Handout 1.1b** in their *Teacher's pack*. The quiz can easily be adapted if you wish.

Refer primary schools to **Handout 1.1a** and preparatory or secondary schools to **Handout 1.1b**.

The quiz is optional. If you are short of time, leave it out. Simply refer teachers to it, saying that they should now have enough knowledge of the standards to answer the questions.

Task 3: A quiz

Ask them to work in groups of four. Tell them that the winner will be the first group to answer all the questions correctly. Give them a maximum of 10 minutes to find the answers.

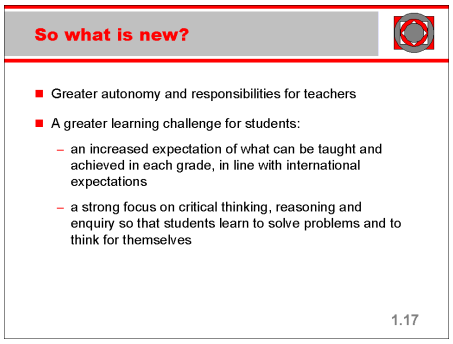
When the time is up, take feedback on the answers.

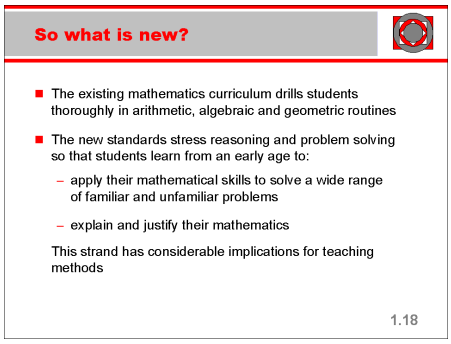
	Primary quiz
1	Arabic, English, mathematics, science
2	Four strands
3	145 hours
4	Use reasoning
5	Numbers in shaded rectangles
6	30%
7	40%
8	Grade 3
9	Grade 5
10	Carroll diagram
11	Yes
12	Grade 3
13	Yes
14	No

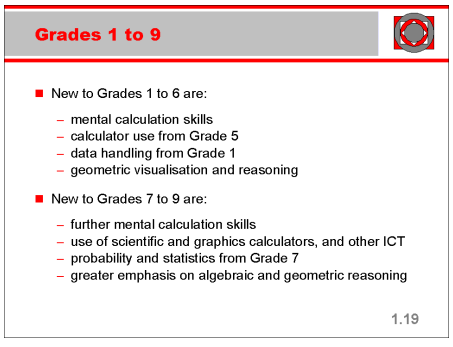
	Preparatory/secondary quiz
1	Arabic, English, mathematics, science
2	Four strands
3	Probability and statistics
4	120 hours
5	Use reasoning
6	Numbers in shaded rectangles
7	27.5%
8	All lessons
9	Grade 11 advanced
10	Grade 8 (standard 5.1)
11	Yes
12	Yes
13	Grade 10
14	Grade 7

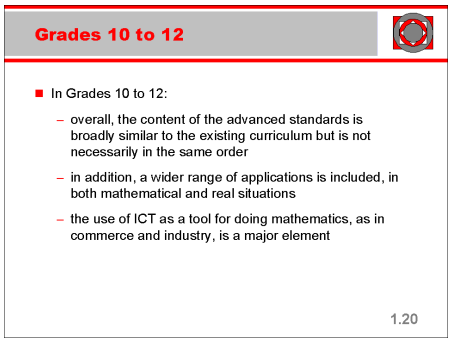
Conclusion — 5 minutes

Round off the session by summarising what is new about the standards. Show **slides 1.17 to 1.20**.









Say that the next session will start to consider the implications of the standards for teaching and learning.