

Summary of students' performance by the end of Grade 1

Reasoning and problem solving

Students represent and interpret mathematical problems using objects, numbers, symbols or simple diagrams. They explain their solutions orally. They describe a simple relationship between two numbers, quantities, shapes or objects using appropriate mathematical terms.

Number and algebra

Students count up to 100 objects reliably, read and write numbers to 100, and use ordinal numbers. They use their knowledge of place value in two-digit numbers to order numbers and to calculate. They know by heart addition and subtraction facts to 10 and pairs of numbers with a total of 20, and know that adding or subtracting 0 leaves a number unchanged. They work out calculations such as $42 + 7$, $26 - 4$, $30 + 50$ and $76 - 20$, if necessary with the support of real objects or a number line, recording calculations in a number sentence using the symbols $+$, $-$ and $=$. They solve missing-number problems such as $3 + \square = 9$ or $8 - \square = 5$. They choose, use and explain the appropriate operation and mental calculation strategies to solve simple routine and non-routine problems involving the addition and subtraction of numbers, money or non-standard measures.

Geometry and measures

Students use mathematical names for common 2-D shapes and describe simple properties such as the number of sides and corners. They extend or complete repeating patterns according to shape, size, position or colour. They measure length, weight and capacity using everyday non-standard units. They order a set of familiar events, read the time on a clock to the hour or half hour, and name in order the days of the week and the months of the year.

Data handling

Students sort objects according to a single criterion, and represent them on a diagram. They make and interpret a simple pictogram in which the symbol represents one unit. They solve simple addition and subtraction problems by using data from graphs.

Content and assessment weightings for Grade 1

The mathematics standards for Grades K to 9 are grouped into four strands: reasoning and problem solving; number and algebra; geometry and measures; and data handling.

The reasoning and problem solving strand cuts across the other three strands and should be integrated with them in teaching and assessments. For Grade 1, about 30% of the teaching and assessment of each of the other three strands should be devoted to reasoning and problem solving.

For Grades 1 to 6, the weightings of the three content strands relative to each other are as follows:

Number and algebra	Geometry and measures	Data handling
60%	30%	10%

The standards are numbered for easy reference. Those in shaded rectangles, e.g. 1.2, are the performance standards for all students. The national tests for mathematics will be based on these standards.

Grade 1 teachers should also teach the Kindergarten standards, integrating them with Grade 1 standards, since some students may not have attended Kindergarten.

Reasoning and problem solving

By the end of Grade 1, students represent and interpret mathematical problems using objects, numbers, symbols or simple diagrams. They explain their solutions orally. They describe a simple relationship between two numbers, quantities, shapes or objects using appropriate mathematical terms.

Students should:

1 Solve practical mathematical problems

- 1.1** Represent a problem and its solution by using objects, numbers, symbols or simple diagrams.

There are 10 crayons in each box.



How many crayons are there altogether?

Draw a line on this square to make two triangles.



- 1.2** Explain orally in own words the method used to solve a simple problem.

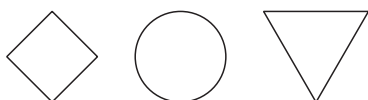
- 1.3** Describe a simple relationship between two numbers, quantities, shapes or objects using appropriate mathematical terms.

Write the missing number in each box.

19 is 1 less than \square .

19 is 10 less than \square .

Describe this arrangement of shapes so that other students can draw it.



Using a structured set of shapes (e.g. four shapes, in three colours, two sizes, two thicknesses), create a pattern in which there is just one difference between each shape and the next. Describe the difference.

Key standards

Key performance standards are shown in shaded rectangles, e.g. **1.2**.

Cross-references

Standards are referred to using the notation RP for reasoning and problem solving, NA for number and algebra, GM for geometry and measures and DH for data handling, e.g. standard NA 2.4.

Examples of problems

The examples of problems in italics are intended to clarify the standards, not to represent the full range of possible problems.

Grade 1 students are not expected to read the examples. It is assumed that the teacher asks the majority of these and similar questions orally.

Number and algebra

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Students should:

2 Understand place value in and order whole numbers to 100

2.1 Use ordinal numbers (*first, second, third, ..., tenth*) to describe the position of an object in a row of objects or the order of a set of events.

2.2 Count to 100 and back to zero by reciting *zero, one, two, three, ...*

Count from 48 to 63.

Count back from 95 to 67.

2.3 Count reliably and give a reasonable estimate of up to 100 objects.

2.4 Read and write numbers 0 to 100 in numerals and words.

2.5 Represent the place value of two-digit numbers (tens and ones) using real objects, models and expanded notation, e.g. $43 = 40 + 3$.

What number is the arrow pointing to?



2.6 Compare and order two-digit numbers and position them on a number line.

This number square is torn.

What was the largest number on the square?

1	2	3	4	5
6	7	8	9	10
11	12	13	14	
16	17	18		
21	22			

2.7 Know that a two-digit number lies between two multiples of 10, e.g. know that 46 lies between 40 and 50.

2.8 Identify the number that is 10 more/less than a given two-digit number.

2.9 Identify whole numbers lying between two given two-digit whole numbers, e.g. the whole numbers lying between 38 and 43.

3 Continue simple number patterns

3.1 Count groups of objects, e.g. put 20 items into groups of 5 and count the number of groups.

Ordinal numbers

Exclude the term *ordinal numbers*.

Counting to 100

Include counting backwards.

Counting objects and representing numbers

Include counting by grouping, e.g. four groups of 10 and 3 make 43.

Represent numbers using models such as a number line, abacus or 100-square, or using place value cards.

Ordering

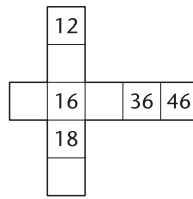
Include arranging numbers in ascending and descending order.

10 more and 10 less

Link to counting in tens as in standard NA 3.3.

3.2 Count to 100 and back to zero in 10s, 5s and 2s.

Write the numbers that are missing from these sequences.



3.3 Count on or back from a given two-digit number in 1s or 10s.

4 Add and subtract whole numbers and apply these skills to solving routine and non-routine problems

Addition and subtraction

4.1 Understand addition as *putting together*, and subtraction as *taking away*, *comparing* or *finding the difference*, by adding and subtracting using real objects or counting on or back on a number line or 100-square.



4.2 Understand the meaning of the symbols +, −, = and use them to record additions and subtractions in a number sentence.

4.3 Know that adding or subtracting 0 to or from a number leaves the number unchanged.

4.4 Know by heart:

- all addition and subtraction facts to 10, e.g. $8 - 5$, $3 + 6$;
- pairs of numbers with a total of 20.

4.5 Represent equivalent forms of a number to 20 using models such as objects, diagrams, a number line, number expressions.

e.g. represent 12 as $4 + 4 + 4$, $10 + 2$, $20 - 8$, $3 + 3 + 3 + 3$, $15 - 3$

4.6 Know doubles of numbers 1 to 10 (e.g. 7 and 7 is 14), and corresponding halves; use this knowledge to develop other facts, e.g. $7 + 8 = 15$.

At noon, there are 4 rokaas and 4 sajdas.

How many rokaas and sajdas are there altogether?

4.7 Use and explain mental methods to add and subtract, without crossing the tens boundary, supported by a model such as a number line or 100-square:

- a multiple of 10 and ones
e.g. $50 + 7$, $40 - 8$
- a two-digit number and ones
e.g. $32 + 6$, $47 - 2$
- two multiples of 10
e.g. $30 + 50$, $90 - 60$
- a two-digit number and tens
e.g. $53 + 20$, $96 - 50$

4.8 Use known facts to add and subtract mentally in special cases.

e.g. add/subtract 9 by adding/subtracting 10 and adjusting by 1.

Counting in tens

Link to standard NA 2.8.

Adding and subtracting

Initially, use numbers in the range 0–20.

Include finding *how much more* and *how much less* one number is than another.

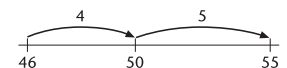
Number facts

Include:

- writing number stories for each number to 10;
- completing equations such as:
 $\square + 2 = 7$, $3 + \square = 9$

Mental methods

Exclude formal written methods in columns. Use informal recording on a number line or 100-square, e.g. for $46 + 9$.



- 4.9 Know that the commutative law applies to addition but not subtraction and use it to simplify mental additions by putting the larger number first.

Example of commutative law of addition

$$5 + 18 = 18 + 5$$

Problem solving involving whole numbers

- 4.10 Given a problem ‘story’ or ‘situation’ involving the addition or subtraction of numbers, money or measures, identify a relevant operation, write a related number sentence and do the required calculation, supported where necessary by real objects or a number line.

Fatma is 9 years old.

Her sister is 13 years old.

How many years older is Fatma’s sister?

Circle which of these you could use to work out the answer.

$$20 - 13 \quad 13 + 9 \quad 13 - 9 \quad 20 - 9$$

Ahmad has finished reading page 4 of his book.

There are 16 pages in his book.

How many more pages has he left to read?

- 4.11 Given a number sentence involving addition or subtraction, create a problem ‘story’ that might lead to it.

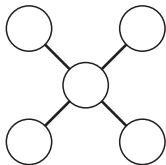
- 4.12 Understand the use of symbols such as \square to stand for an unknown number; solve problems such as $\square + 4 = 7$, $10 - \square = 3$, supported at first by real objects or a number line.

- 4.13 Solve non-routine problems, such as simple number puzzles.

Use all the numbers 1 to 5.

Write one number in each circle.

Each line must have a total of 8.



Amna has less than 20 cubes.

She counted the cubes in twos. She had 1 left over.

She counted the cubes in fives. She had 3 left over.

How many cubes does Amna have?

5 Solve simple problems involving money

- 5.1 Identify the values of Qatari coins and bank-notes to QR 100.
- 5.2 Identify different combinations of notes with the same value, e.g. know that a QR 10 note is equivalent in value to two QR 5 notes or ten QR 1 notes, or that two half riyal coins or four quarter riyal coins are equivalent to QR 1.

Ali buys a book for QR 35.

He pays exactly QR 35 with five bank-notes.

What could the five notes be?

Commutative law

Exclude knowing the name of the law.

Problem solving

Include finding *how much more* and *how much less* and *difference between*.

Missing-number problems

Keep within the range 0–10 inclusive.

Money

Include the notation QR.

Use simulated bank-notes.

5.3 Find simple totals and work out change for amounts up to QR 100.

Jassim has QR 50.

He wants to buy a football.



football QR 75

How much more money does Jassim need?

6 Recognise halves and quarters in everyday situations

6.1 Recognise that one whole is equivalent to two identical halves or four identical quarters. For example:

- find halves and quarters of paper shapes by paper folding;
- estimate the quantity of water in a cylindrical container using phrases like *about half full*, *about one quarter full*;
- make half turns and quarter turns in outdoor games.

Geometry and measures

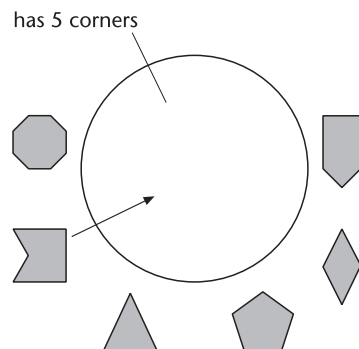
By the end of Grade 1, students use mathematical names for common 2-D shapes and describe simple properties such as the number of sides and corners. They extend or complete repeating patterns according to shape, size, position or colour. They measure length, weight and capacity using everyday non-standard units. They order a set of familiar events, read the time on a clock to the hour or half hour, and name in order the days of the week and the months of the year.

Students should:

7 Name common 2-D shapes and describe their properties using everyday language

7.1 Identify and name the circle, square, triangle and rectangle; describe simple properties of shapes using everyday language.

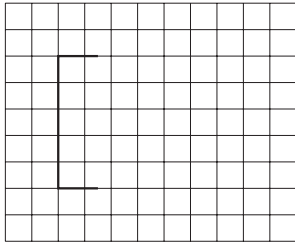
Draw arrows to show which shapes belong in the set.



Identifying 2-D shapes

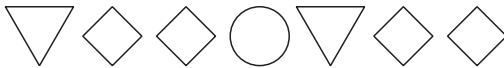
Include faces of 3-D objects.

Complete this shape so that it is a square.



- 7.2** Describe, extend or complete repeating patterns made from shapes, according to shape, size, position or colour.

Draw the next two shapes in this pattern.



Continue the pattern in the next two circles.



8 Use direct comparison and non-standard units to measure and compare objects

- 8.1** Compare the length, weight or capacity of two or more everyday objects by using direct comparison or non-standard units.

Five children used cubes to balance one of their shoes. This table shows the number of cubes they needed.

	cubes
Adel	16
Taleb	13
Najib	18
Sadeq	20
Idris	15

Whose shoe was heaviest?

Whose shoe was two cubes lighter than Najib's shoe?

Aziza measured the height of these two dolls.

She used blocks.

How many blocks taller is the large doll?



Weight

Strictly speaking, mass, not weight, is compared. But in the lower grades, mass and weight are treated as the same, so 'weight' is used.

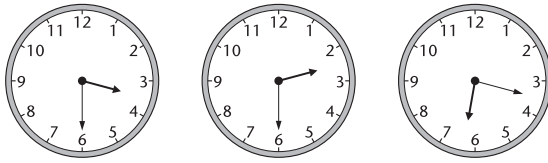
Comparing lengths

Include the use of simple approximations, e.g. *about 3 pencils long*.

9 Relate time to familiar events

9.1 Read the time on a clock to the hour and half hour.

Which of these clocks shows half past 3?



*Tamim went to the beach.
He left home at half past 10.
The journey took half an hour.
What time did he get to the beach?*

9.2 Relate events to clock time using vocabulary such as *before 3 o'clock*, *after half past 6*, *between 4 o'clock and 5 o'clock*.

9.3 Order a set of familiar events.

9.4 Use units of time such as *week*, *month*, *year* to describe the duration of an event or when it will take place.

9.5 Name the days of the week and the months of the year in order.

Time

Exclude the notation 10:30.

Vocabulary of time

Include terms used in Kindergarten.

Data handling

By the end of Grade 1, students sort objects according to a single criterion, and represent them on a diagram. They make and interpret a simple pictogram in which the symbol represents one unit. They solve simple addition and subtraction problems by using data from graphs.

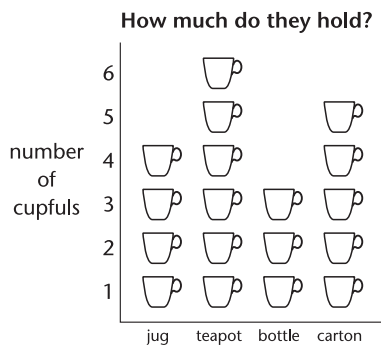
Students should:

10 Make and interpret simple pictograms

10.1 Collect a simple set of data, organise it and represent it in a pictogram in which the symbol represents one unit.

10.2 Interpret simple pictograms in which the symbol represents one unit.

Some children made this graph about four containers.



*How many more cups of water does the teapot hold than the jug?
How many bottles can the teapot fill?*

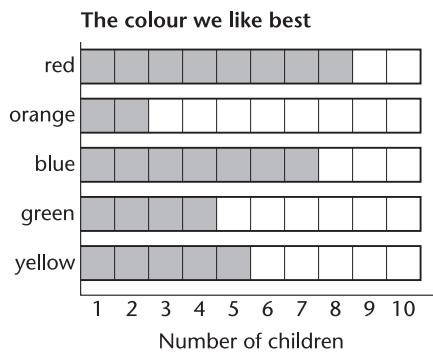
Pictograms

Exclude graphs where the symbol represents more than one unit.

Include both horizontal and vertical formats.

10.3 Solve simple addition and subtraction problems by using data from graphs.

Some children made this graph.



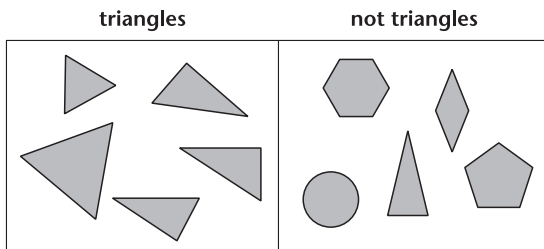
How many children liked red best?

How many more children liked yellow than orange?

10.4 Sort a set of common objects according to a single criterion, and represent them on a diagram.

These shapes have been sorted.

Put a cross () on the shape that is in the wrong place.*



Graphs

Graphs like these lay the foundation for later work on bar charts.

Sorting

Represent the objects using the objects themselves, pictures of objects or drawings.

The diagram shown is a Carroll diagram; exclude knowing the name of the diagram.