

Summary of students' performance by the end of Kindergarten

Reasoning and problem solving

Students solve simple practical problems involving numbers, shapes or objects. They represent a mathematical problem and its solution with pictures or objects. They explain and give simple reasons for their methods.

Number

Students count, order, add and subtract numbers when solving practical problems involving up to 10 objects. They read and write numerals up to 10. They recognise up to five objects without counting.

Geometry and measures

Students use shapes to make models, pictures or patterns, or other shapes. They describe properties of lines, shapes, positions and directions using everyday language. They identify and name a cube, cone, circle, square and triangle. They make direct comparisons of the length, weight or capacity of two or three common objects. They describe time using words such as *today*, *tomorrow*, *morning*, *afternoon*, and the names of the days of the week.

Data handling

Students identify similarities or differences between two common objects. They sort a set of common objects using a criterion that they have chosen.

Content and assessment weightings for Kindergarten

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 Kindergarten, about 30% of the teaching and assessment of each of the other three strands should be devoted to reasoning and problem solving.

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

Number and algebra	Geometry and measures	Data handling
60%	35%	5%

The standards are numbered for easy reference. Those in shaded rectangles, e.g. 1.2, are the performance standards for all students.

The standards for Kindergarten should be reviewed and consolidated in Grade 1 since not all students will have experienced Kindergarten education.

Reasoning and problem solving

By the end of Kindergarten, students solve simple practical problems involving numbers, shapes or objects. They represent a mathematical problem and its solution with pictures or objects. They explain and give simple reasons for their methods.

Students should:

1 Solve practical mathematical problems

- 1.1 Find their own way of solving simple practical problems involving numbers, shapes or objects.

Pack this set of solid shapes into this box.

Try to fit them all in.

Find out which of these three containers will hold the most water.

Here are five buttons.

How many more buttons are needed to make up a set of eight buttons?

- 1.2 Represent a problem and its solution with pictures or objects.

- 1.3 Explain orally their way of solving a problem and their reasons.

Number

By the end of Kindergarten, students count, order, add and subtract numbers when solving practical problems involving up to 10 objects. They read and write numerals up to 10. They recognise up to five objects without counting.

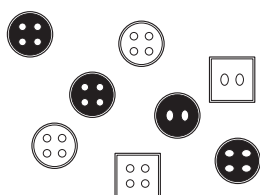
Students should:

2 Understand, order and use whole numbers up to 10 in real or play situations

- 2.1 Recite the sequence *one, two, three, ...* up to ten.

- 2.2 Count up to 10 objects and say how many there are.

Count these buttons.



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.

Kindergarten students are not expected to read or write answers to examples. It is assumed that the teacher asks these and similar questions orally.

Reciting numbers to 10

Include:

- counting backwards;
- continuing a sequence such as 3, 4, 5, ...

2.3 Given a spoken number to 10, represent it using real objects.

Put out nine toy cars.

2.4 Know that if a set of objects is rearranged, then the number of objects remains the same (conservation of number).

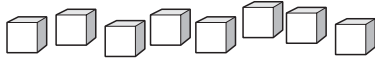
2.5 Visualise up to five objects without counting.

2.6 Recognise *zero* when counting.

2.7 Read and write numerals to 10, including 0.

2.8 Write a number to indicate the number of objects in a set.

How many cubes are there? Write the number.



2.9 Given a written number to 10, represent it using real objects or drawings.

Draw 7 squares.

2.10 Compare two sets of objects and identify which set has more or less objects.

2.11 Identify the number that is 1 more/less than a given number to 10.

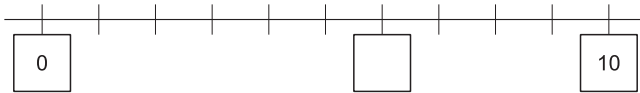
Add one more flower to this set of 7 flowers.

How many flowers are there now?



2.12 Order numbers to 10 and position them on a number line.

What number goes in the box?



3 Understand, order and use whole numbers up to 20 in real or play situations

3.1 Recite the sequence *one, two, three, ...* up to twenty.

3.2 Count up to 20 objects and say how many there are.

3.3 Read and write numerals 11 to 20.

3.4 Write a number to indicate the number of objects in a set of 11 to 20 objects.

3.5 Given a spoken or written number to 20, represent it using real objects or drawings.

3.6 Compare three sets of objects, and identify which set has more than, the same numbers as or fewer objects than another.

3.7 Identify the number that is 1 more/less than a given number to 20.

3.8 Order numbers to 20 and position them on a number line.

4 Understand, carry out and describe simple additions and subtractions in real or play problem situations

4.1 Relate addition to combining two groups of objects, and to counting on.

4.2 Relate subtraction to taking away a number of objects and finding how many are left, and to counting back.

Representing numbers

Exclude reading and writing numbers.

Representing numbers

Include reading and writing numbers.

Comparing

Include the vocabulary *more than, less than, fewer than*.

Reciting numbers to 20

Include:

- counting backwards;
- continuing a sequence such as 13, 14, 15, ...

Comparing

Include the vocabulary *more than, less than, fewer than*, and finding *how many more* and *how many less*.

- 4.3** Use real objects to determine answers to addition and subtraction problems involving numbers up to 10.

There are four cups on the table.

Put two more cups on the table, one for Saif and one for Mosa.

How many cups are on the table now?

There were five cubes in this box.

Hessa has taken out two of the cubes.

How many cubes are left in the box?

- 4.4** Build up knowledge of doubles of numbers to 5 (e.g. 4 and 4 is 8).

- 4.5** Use knowledge of doubles of numbers to 5 to develop other facts (e.g. use knowledge that $4 + 4 = 8$ to work out $4 + 5 = 9$, $4 + 3 = 7$).

- 4.6** Build up knowledge of pairs of numbers with a sum of 10, without counting, and begin to remember them (e.g. $8 + 2 = 10$).

Adding and subtracting

Exclude any written recording of calculations in a number sentence or equation, e.g. $2 + 4 = 6$.

Doubles

Encourage the use of fingers.

Geometry and measures

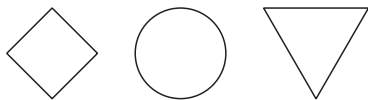
By the end of Kindergarten, students use shapes to make models, pictures or patterns, or other shapes. They describe properties of lines, shapes, positions and directions using everyday language. They identify and name a cube, cone, circle, square and triangle. They make direct comparisons of the length, weight or capacity of two or three common objects. They describe time using words such as *today*, *tomorrow*, *morning*, *afternoon*, and the names of the days of the week.

Students should:

5 Describe geometric features of common objects in the environment

- 5.1** Name and describe common geometric shapes, e.g. circle, square, triangle, cube, cone.

Which of these shapes is a square?



- 5.2** Recognise and describe the shape of lines, using words like *straight*, *curved*, *wavy*, *zigzag*.

- 5.3** Describe the position or direction of an object using everyday language, e.g. *near*, *far*, *up*, *down*, *left*, *right*, *in front of*, *behind*, *next to*, *above*, *below*, ...

Here are pictures of a ball, a horse, and a boat.

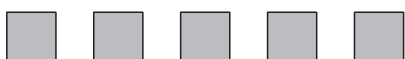
Put the picture of the ball above the picture of the horse.

Put the picture of the boat to the left of the picture of the ball.

- 5.4** Use flat and solid shapes to create models, pictures and patterns, or other shapes.

Here are five squares of the same size.

Use some or all of the squares to make a bigger square.



Shapes

Include both flat and solid shapes.

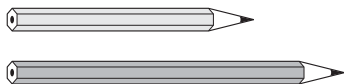
Creating shapes

Include describing the models, pictures and patterns that are made.

6 Understand that objects have properties that can be compared, such as length, weight or capacity

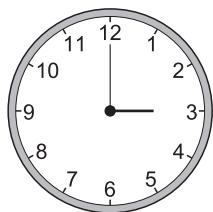
- 6.1 Make direct comparisons of two or three objects by noting which is: taller, tallest; shorter, shortest; longer, longest; heavier, heaviest; lighter, lightest; holds more, holds most; holds less, holds least.

Which pencil is longer?



7 Recognise that time passes and name parts of the day, week or year

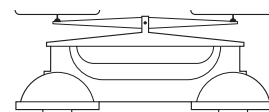
- 7.1 Use terms such as *day, week, morning, afternoon, evening; today, tonight, yesterday, tomorrow, birthday, Eid*.
- 7.2 Name the days of the week in order.
- 7.3 Read time to the hour on a clock face.



- 7.4 Identify the time to the nearest hour of everyday events, such as ‘lunchtime is 1 o’clock’, ‘bedtime is 8 o’clock’, ‘prayers are at 12 o’clock’, and relate these times to the position of hands on a clock face.

Weight

Compare directly in hands, or using a lever balance.



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

Data handling

By the end of Kindergarten, students identify similarities or differences between two common objects. They sort a set of common objects using a criterion that they have chosen.

Students should:

8 Sort and classify common objects

- 8.1 Choose own criterion for sorting a set of common objects (e.g. plain, patterned; with holes, without holes; square, not square).
- 8.2 Identify how two or more common objects are the same or different.

Describe how these two buttons are the same.



How are they different?