

Initial mathematics assessment for pupils learning English as an Additional Language (EAL)

Introduction

In carrying out a mathematics assessment, it is important to bear in mind that bilingual pupils may not be able to perform certain tasks. This may be because they have not been taught a specific area of mathematics or because they are not familiar with the presentation of the tasks - rather than because they do not have the mathematical ability to accomplish them. Different ways of approaching the same problem are therefore important to give a true picture of a pupil's ability.

Try to make any assessment feel as informal as possible. For example, introduce assessments through number games, objects the pupil is familiar with or exemplars from the pupil's home culture.

Be prepared to use non-visual communication, for example, gestures, pointing, etc. to communicate and help the pupil understand the tasks.

Record the pupil's response in the 'comments' section of the checklist proforma and use this information to begin planning learning, including language learning, for your bilingual pupil.

Note: Any assessment of children learning EAL should take into account previous educational experience. This will help to put into context progress or otherwise.

Information on previous education should be collected as part of the induction and assessment process when the pupil first arrives at the school.

This is a resource by Lois Francis, Ethnic Minority Achievement Adviser, Integra Schools, South Gloucestershire Council. The original version of the assessment below, with resources, can be found in the booklet *Mathematics and English as an additional language: guidance for working with pupils new to English*, available from emtas@southglos.gov.uk.

Equipment needed

- number lines, a 100 square (in the pupil's first language if possible), counting materials such as cubes, buttons and basic counters
- numbers and number names written on individual cards
- calculations written on cards and arithmetic sheets
- fraction and % dominoes
- fraction cards and decimal cards
- 2D and 3D shapes and names written on cards
- a calendar with a year view
- days of the week and months of the year written on cards
- a clock and clock dominoes
- pictures depicting daily routines, e.g. morning, afternoon and night-time routines
- bilingual mathematics key words

All the activities for the assessment can be carried out in the pupil's first language. The E maths website provides bilingual glossaries of mathematics-specific words for EAL students. These glossaries have a wide range of mathematical vocabulary translated into different languages, which could be useful to support your bilingual learner.

A parent, family member or an interpreter from an interpreting service can also help with a first language assessment.

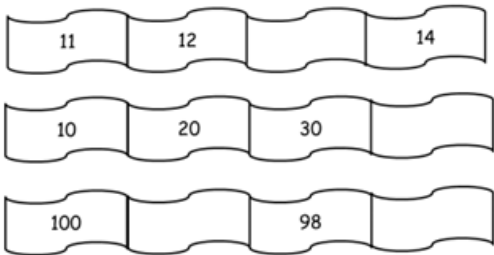
Initial Mathematics Checklist

Name: Date of assessment:

Home language/s: Date of arrival in the UK:

Year: Assessed by:

Numbers

Area of Mathematics	Tasks	Tick/comment
<p>Counting up to 10, 20, 100</p> <p>If the pupil has limited English, be prepared to use pointing, gestures, visuals, etc. to ascertain the pupil's mathematical ability.</p> <p>Use number words from the pupil's first language if appropriate.</p>	<ul style="list-style-type: none"> Using a number line, point to a number and start counting forwards in 1s. Use your finger to point to each number as you say it aloud. Ask the pupil to join in, then carry on alone. Repeat this for counting back. (You might need to use a vertical number line as well as a horizontal one.) Use a numbered hundred square. Point to a number and start counting in 1s, pointing at numbers as you say them aloud. Ask the pupil to join in and then carry on alone. Repeat for counting back. Repeat both of the above, but counting in 10s up and back. Ask the pupil to fill in the missing numbers on these banners: <div style="text-align: center; margin: 10px 0;">  </div> Ordering numbers - model ordering a set of numbers, then ask the pupil: <ul style="list-style-type: none"> - Can you order these numbers? e.g. 7, 4, 9, 1. - What about this set? e.g. 24, 14, 34, 44. - Then extend to 3-digit/4-digit numbers. 	

Area of Mathematics	Tasks	Tick/comment
<p>Place value</p> <p>Names and numbers value of digits</p> <p>Use number words in the pupil's first language, if appropriate.</p>	<ul style="list-style-type: none"> Give the pupil a collection of numbers and number names and ask them to match them. Ask the pupil to match the numbers and words below: <div data-bbox="751 443 1257 607" style="text-align: center;"> <p>five thirteen six fifteen four</p> </div> <ul style="list-style-type: none"> Ask the pupil to make or draw the following numbers: 7, 23, 32, 15, 34, 67, 145, 387. Give the pupil a set of simple calculations one at a time. These could be written out on a whiteboard or provided on a set of cards. Have practical apparatus, number line and 100 square available for the pupil. Calculations could include, for example, $5 + 2$, $13 + 1$, $15 + 12$, $10 - 7$, $19 - 1$. Give the pupil the appropriate arithmetic sheet. 	

Area of Mathematics	Tasks	Tick/comment
<p>Multiplication</p> <p>Tables</p> <p>Short multiplication</p> <p>Long multiplication</p>	<ul style="list-style-type: none"> Check knowledge of multiplication facts. Give the pupil a set of simple calculations (see above for instructions), e.g. 2×6, 3×8, 12×4, 4×5, 6×9. Give the pupil the appropriate arithmetic sheet. 	

<i>Area of Mathematics</i>	<i>Tasks</i>	<i>Tick/comment</i>
Division Short division Long division	<ul style="list-style-type: none"> Give the pupil a simple set of calculations (see above for instructions), e.g. $10 \div 2$, $24 \div 3$, $15 \div 3$, $20 \div 4$, $88 \div 8$. Give the pupil the appropriate arithmetic sheet. 	

<i>Area of Mathematics</i>	<i>Tasks</i>	<i>Tick/comment</i>
Fractions Cut up and use percentage/decimal cards	<ul style="list-style-type: none"> Use fraction cards and fraction images. Ask the pupil to: <ul style="list-style-type: none"> - identify/name fractions. - match images to fraction names. 	

<i>Area of Mathematics</i>	<i>Tasks</i>	<i>Tick/comment</i>
Percentages Cut up and use percentage/decimal cards	<ul style="list-style-type: none"> Use percentage and decimal cards. Ask the pupil to: <ul style="list-style-type: none"> - identify/name percentages and decimals. - match percentage and equivalent decimals. 	

Shapes

Area of Mathematics	Tasks	Tick/comment
<p>Identifying and naming 2D shapes</p> <p>Circle, triangle, square</p> <p>For older children, you could do the same task with other 2D shapes, e.g. pentagon, hexagon, octagon.</p> <p>Use shape names in the pupil's first language, if appropriate.</p>	<ul style="list-style-type: none"> Have 2D shape cards and matching names available. Model what you want the pupil to do with one shape. Ask the pupil to: <ul style="list-style-type: none"> - identify shapes. - match the word name to the shape; or Use the picture below: ask the pupil to match the label to the shape and say the name, or to make their own shape picture and add labels. <div data-bbox="778 757 1220 1137" data-label="Image"> </div>	

Area of Mathematics	Tasks	Tick/comment
<p>Identifying and naming 3D shapes</p> <p>Cube, cuboid, cylinder</p> <p>If the pupil can identify and name these shapes, you could do the same activity with other 3D shapes, e.g. sphere, pyramid, prism.</p> <p>Use shape names in the pupil's first language, if appropriate.</p>	<ul style="list-style-type: none"> Have 3D shape cards and matching names available. Model with a sphere. Ask the pupil to: <ul style="list-style-type: none"> - identify the shape. - match the word name to the shape; or - match the shapes and words as shown. <div data-bbox="758 1664 831 1749" data-label="Image"> </div> <div data-bbox="1093 1675 1161 1709" data-label="Text"> <p>cuboid</p> </div> <div data-bbox="758 1787 823 1906" data-label="Image"> </div> <div data-bbox="1098 1807 1153 1839" data-label="Text"> <p>cube</p> </div> <div data-bbox="743 1930 895 2024" data-label="Image"> </div> <div data-bbox="1096 1939 1179 1973" data-label="Text"> <p>cylinder</p> </div>	

Area of Mathematics	Tasks	Tick/comment
<p>Calendar</p> <p>Days of the week</p> <p>Months of the year</p> <p>Have a calendar in front of you for this activity.</p> <p>Use names of days of the week and months of the year in the pupil's first language, if appropriate.</p>	<ul style="list-style-type: none"> • Show a calendar and point to the names of the days of the week. Ask the pupil to name them as you point to them. This could be done in their first language. • Write the days of the week on cards and ask the pupil to name and order them. Examples of extended questions you could ask: <ul style="list-style-type: none"> - Can you tell me the days of the week in order? - What day comes after Monday? etc. - What day comes before Friday? etc. • Show a calendar (perhaps one with pictures or a year view). Ask the pupil to name the months as you point to them. This could be done in the pupil's first language. • Write the months of the year on cards and ask the pupil to name and order them. Examples of extended questions you could ask: <ul style="list-style-type: none"> - Can you tell me the names of the months in order? What months make up winter, spring, summer, autumn? (Use pictures) - What month comes after May? etc. - Can you tell me what month your birthday is in? Show a birthday card and ask the pupil to point to the date on the calendar when their birthday is. - Can you read the date? • Use a collection of pictures depicting different activities you would do throughout the day, e.g. having breakfast, eating lunch, having a bath, walking to school, going to bed. Ask the pupil to order some of the pictures. Examples of questions you could ask: <ul style="list-style-type: none"> - Which of these activities would you do in the morning? afternoon? evening? 	