enVisionMATHS Online Tutorial Guide 3

Tutorial 3.1: Assessment Overview

Introduction

This guide will give an overview of enVisionMATHS assessment: what all the options are and what is provided for you.

enVisionMATHS Assessment

The focus of assessment in enVisionMATHS is both formative and summative.

The formative assessment tools are used to determine students' achievements, resulting in action plans for both teachers and students in the pursuit of learning.

The summative assessment tools are used to determine an overall measure of achievement at the end of a topic.

Formative Assessment

The formative assessment opportunities related to enVisionMATHS include:

- The pre-assessment
- The interview assessment
- The prior knowledge task, and
- During-class assessment opportunities.

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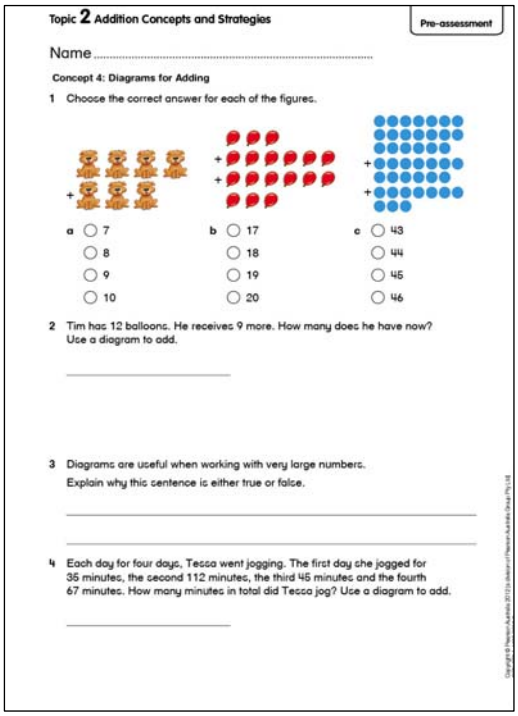
Diagnostic Pre-assessment



Topic 2 Addition Concepts and Strategies — Pre-assessment

Name .....

Concept 4: Diagrams for Adding

1 Choose the correct answer for each of the figures.

a ○ 7 ○ 8 ○ 9 ○ 10

b ○ 17 ○ 18 ○ 19 ○ 20

c ○ 43 ○ 44 ○ 45 ○ 46

2 Tim has 12 balloons. He receives 9 more. How many does he have now? Use a diagram to add.

3 Diagrams are useful when working with very large numbers. Explain why this sentence is either true or false.

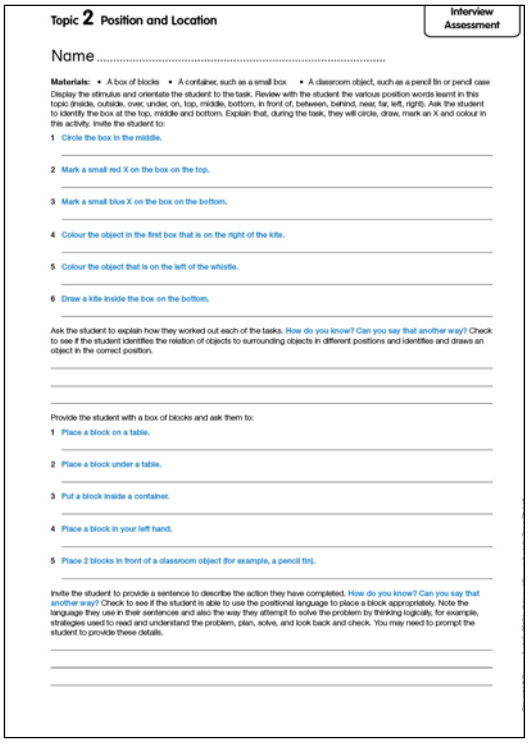
4 Each day for four days, Tessa went jogging. The first day she jogged for 35 minutes, the second 112 minutes, the third 45 minutes and the fourth 67 minutes. How many minutes in total did Tessa jog? Use a diagram to add.

Pre-assessment helps to gauge a student's ability in a particular area of Mathematics, providing information about a student's strengths and weaknesses.

The results of this assessment support teachers in customising instruction for individual student needs.

This form of assessment should be administered at the beginning of each topic. It covers both prerequisite material and new content.

Interview Assessment (Years F to 2)



Topic 2 Position and Location — Interview Assessment

Name .....

Materials: • A box of blocks • A container, such as a small box • A classroom object, such as a pencil tin or pencil case

Display the stimulus and orientate the student to the task. Review with the student the various position words learnt in this topic (inside, outside, over, under, on, top, middle, bottom, in front of, between, behind, near, far, left, right). Ask the student to identify the box at the top, middle and bottom. Explain that, during the task, they will circle, draw, mark an X and colour in this activity. Invite the student to:

1 Circle the box in the middle.

2 Mark a small red X on the box on the top.

3 Mark a small blue X on the box on the bottom.

4 Colour the object in the first box that is on the right of the kite.

5 Colour the object that is on the left of the whistle.

6 Draw a kite inside the box on the bottom.

Ask the student to explain how they worked out each of the tasks. How do you know? Can you say that another way? Check to see if the student identifies the relation of objects to surrounding objects in different positions and identifies and draws an object in the correct position.

Provide the student with a box of blocks and ask them to:

1 Place a block on a table.

2 Place a block under a table.

3 Put a block inside a container.

4 Place a block in your left hand.

5 Place 2 blocks in front of a classroom object (for example, a pencil tin).

Invite the student to provide a sentence to describe the action they have completed. How do you know? Can you say that another way? Check to see if the student is able to use the positional language to place a block appropriately. Note the language they use in their sentences and also the way they attempt to solve the problem by thinking logically, for example, strategies used to read and understand the problem, plan, solve, and look back and check. You may need to prompt the student to provide these details.

This is intended for use before teaching the topic, although there is also value in using it after a topic in certain situations.

During the Interview Assessment, the teacher will ask students to demonstrate their level of understanding by explaining the thinking behind their choices. Information on students' reasoning makes it possible to identify misconceptions and inconsistencies. It allows the teacher to identify emerging ideas in students' thinking so they can be clarified, shared and formalised.

These interview assessments can be used to assess reasoning in the early years. In Year F, these assessments often start with a visual stimulus page.

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Prior Knowledge Task (Years F to 2)

This task can be repeated and compared to see how students' conceptual understandings have changed during the course of the topic.

During a lesson

Any number of valuable assessment opportunities can occur during a classroom lesson. Some of these situations are specifically addressed throughout enVisionMATHS. For example:

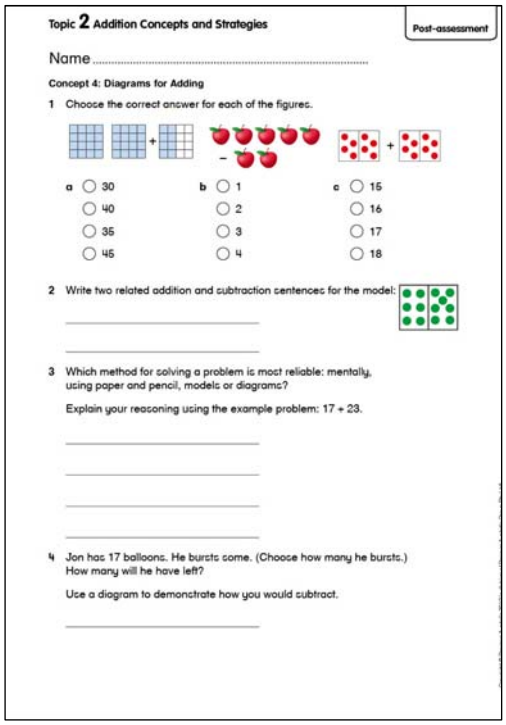
- Error intervention
- Small group interaction
- Differentiated worksheets
- Prevent misconceptions

Summative Assessment

The Post-assessment is the main form of summative assessment provided for each year level.

Diagnostic Post-assessment

A Post-assessment is provided for each topic-related maths concept for each year level.



Topic 2 Addition Concepts and Strategies

Post-assessment

Name .....

Concept 4: Diagrams for Adding

1 Choose the correct answer for each of the figures.

a ○ 30 ○ 40 ○ 35 ○ 45

b ○ 1 ○ 2 ○ 3 ○ 4

c ○ 15 ○ 16 ○ 17 ○ 18

2 Write two related addition and subtraction sentences for the model:

3 Which method for solving a problem is most reliable: mentally, using paper and pencil, models or diagrams?

Explain your reasoning using the example problem: 17 + 23.

4 Jon has 17 balloons. He bursts some. (Choose how many he bursts.) How many will he have left?

Use a diagram to demonstrate how you would subtract.

The Post-assessment provides teachers with information about a student's achievement on a particular topic that has just been studied. These results help the teacher determine whether a student requires revision or intervention in that topic. It also allows teachers to chart a student's progress from the beginning of the topic to the end and gives them information to report back to parents.

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Further Assessment

Other opportunities for assessment throughout the program include:

- Observation of a student's attitude and ability in Maths classes
- Problem-solving discussion based on each lesson's problems e.g. identifying and comparing students' approaches to answers
- A record of each student's maths thinking in the various sections of the Maths Thinking Skills Books including self assessment through reflection activities

Observable Skills

A list of observable skills for each topic is provided on the Overview of Assessment page in each Teacher Resource Booklet.

This list will help you with assessment and reporting on assessment. It will also serve as a topic-based checklist to ensure you are assessing everything required for the Australian Curriculum achievement standards.

Overview of Assessment

The focus of assessment in **enVisionMATHS** is both formative and summative assessment.

Assessment should be more than merely a test at the end of instruction to see how students perform ... it should be an integral part of instruction that informs and guides teachers as they make instructional decisions. Assessment should not merely be done to students; rather, it should also be done for students, to guide and enhance their learning.
(NCTM 2000, p. 22)

The formative assessment tools are used to determine students' achievements, resulting in action plans, for both teacher and student, in the pursuit of further learning. The summative assessment tools are used to determine an overall measure of achievement at the end of a topic. Assessments focus on the following concepts.

Maths Concepts for Addition Concepts and Strategies
1 Mental Maths (Lesson 2.1)
2 Models for Adding (Lesson 2.2)
3 Addition of Larger Numbers (Lessons 2.3 and 2.4)
4 Diagrams for Adding (Lesson 2.5)

Formative Assessment

Pre-assessment for Each Maths Concept Within the Topic

This pre-assessment helps to gauge the ability of the students in a particular area of mathematics, providing information about a student's strengths and weaknesses.

The results of the assessment guide and support teachers in customising instruction for individual student needs. This form of assessment should be administered at the beginning of each topic. It covers both prerequisite material and new content.

There are four questions in each pre-assessment: Q1 multiple choice; Q2 short answer; Q3 reasoning; and Q4 problem solving.

During a Lesson
- Error intervention
- Prevent misconceptions
- Small-group interaction
- Differentiated worksheets

Summative Assessment

Post-assessment for Each Maths Concept Within the Topic

The post-assessment provides teachers with information about a student's achievement on a particular topic that has just been studied. These results help the teacher determine whether a student requires revision of or intervention in that topic. It also allows teachers to chart a student's progress from the beginning of the topic to the end, and gives them information to report back to parents.

There are four questions in each post-assessment: Q1 multiple choice; Q2 short answer; Q3 reasoning; and Q4 problem solving.

Assessment Formats

Each of these assessments incorporates a range of assessment styles. Different approaches to and formats for assessment are required to measure the mathematical knowledge, skills and attitudes of students.

Multiple Choice

Multiple-choice assessment is helpful for teachers wanting to implement a quick and practical assessment task for students. These tests measure students' levels of mathematical fluency and allow a quick and direct opportunity for teachers to identify strengths and weaknesses in their students' maths ability. The multiple-choice style of assessment also reflects that which is used for NAPLAN at Years 3, 5, 7 and 9.

Short Answer (Free Response)

Free-response assessment helps to eliminate guessing the correct answer. Students answer a question and may have the opportunity to represent their answer pictorially.

These questions can be more open-ended but not too wordy as they could restrict some students' access to maths learning due to language barriers.

Reasoning

Students' reasoning includes their capacity for logical thought and actions such as analysing, proving, evaluating, explaining, inferring, justifying and generalising. The reasoning questions ask students to demonstrate their level of understanding by explaining their thinking behind their choices. This allows teachers to elicit a wealth of information even though the assessment instrument is a written test. Information on students' reasoning makes it possible to identify misconceptions and inconsistencies. It allows the teacher to identify emerging ideas in students' thinking so they can be clarified, shared and formalised.

Problem Solving

Problem-solving assessment allows students to demonstrate their problem-solving skills by applying various mathematical problem-solving techniques to non-routine problems. Students are assessed on how they organise information, decode graphic representations, make generalisations and justify conclusions from data.

The problem-solving assessment questions appear at the end of each assessment so students have to think about which maths tools or processes they need to apply to formulate their answers.

Diagnostic Assessments on DVD

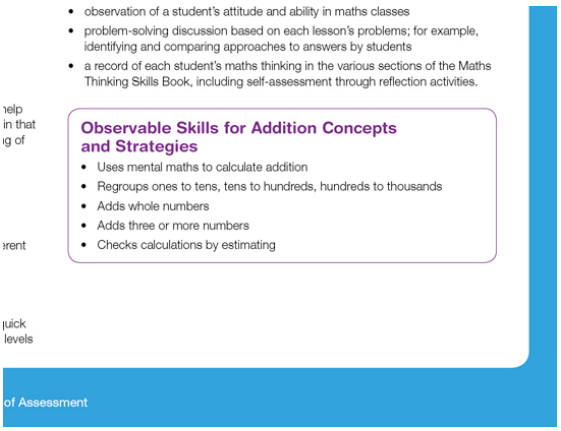
The diagnostic pre- and post-assessments are also found on the Teacher Resource DVD for Year 4. While teachers may wish to simply photocopy and administer each assessment as it appears in the following pages, the DVD format allows teachers to select and print PDFs of pre- and post-assessments for Year 3, 4 or 5.

Further Assessment

Other opportunities for assessment throughout the program include:
- observation of a student's attitude and ability in maths classes
- problem-solving discussion based on each lesson's problems; for example, identifying and comparing approaches to answers by students
- a record of each student's maths thinking in the various sections of the Maths Thinking Skills Book, including self-assessment through reflection activities.

Observable Skills for Addition Concepts and Strategies
- Uses mental maths to calculate addition
- Regroups ones to tens, tens to hundreds, hundreds to thousands
- Adds whole numbers
- Adds three or more numbers
- Checks calculations by estimating

22 Topic 2 Addition Concepts and Strategies Overview of Assessment



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