ISA
Mathematical Literacy
Sample Materials

Grade 5
Grade 6
Grade 7

Sample

ISA Mathematical Literacy Sample Materials
Grade 5, Grade 6 and Grade 7

This collection of mathematical literacy sample materials represents a typical range of mathematics material in ISA tests from Grade 5 to Grade 7. The purpose of this collection is to show teachers examples of the kinds of mathematical literacy that are used in the ISA.

Questions in context

This collection has 5 Units containing a total of 12 questions. Each Unit establishes a context for the questions associated with it. An actual ISA mathematical literacy test has 15-20 Units set in a wide variety of contexts, with a total of 30-35 questions.

The pages following the sample Units show the classification, descriptor and marking guide for each question.

Classification of questions

Questions are classified by competency –

Reproduction, Connection or Reflection

and by content –

Quantity, Change and Relationships, Space and Shape, or Uncertainty.

Question descriptors

The *descriptors* for each question provide the basis for the described scales of achievement on which ISA results are reported.

Question format

This collection has 3 multiple-choice questions and 9 open-ended questions requiring students to write a response. An actual ISA test has approximately 50 per cent multiple-choice questions and 50 per cent open-ended questions. Some of the open-ended questions only require a short answer, others require a calculation or an explanation. Examples of both kinds of open-ended questions are included. The marking guide shows how the open-ended questions are scored.

This collection of materials is not a test.

The materials in this collection have NOT been selected to represent the typical range of difficulty of an ISA test. An actual ISA test is carefully constructed to ensure that the range of difficulty of the questions reflects the range of mathematical ability of the population for each grade.

The materials in this collection cover Grades 5, 6 and 7. Some materials may be too hard for Grade 5 and some materials may be too easy for Grade 7. If a teacher wants to use some of these materials for students to practise on, it is important that the teacher only selects the Units that are of an appropriate level of difficulty for their students.

Teachers should use this material as a model. Teachers can develop questions that assess similar kinds of skills using their own mathematics materials.

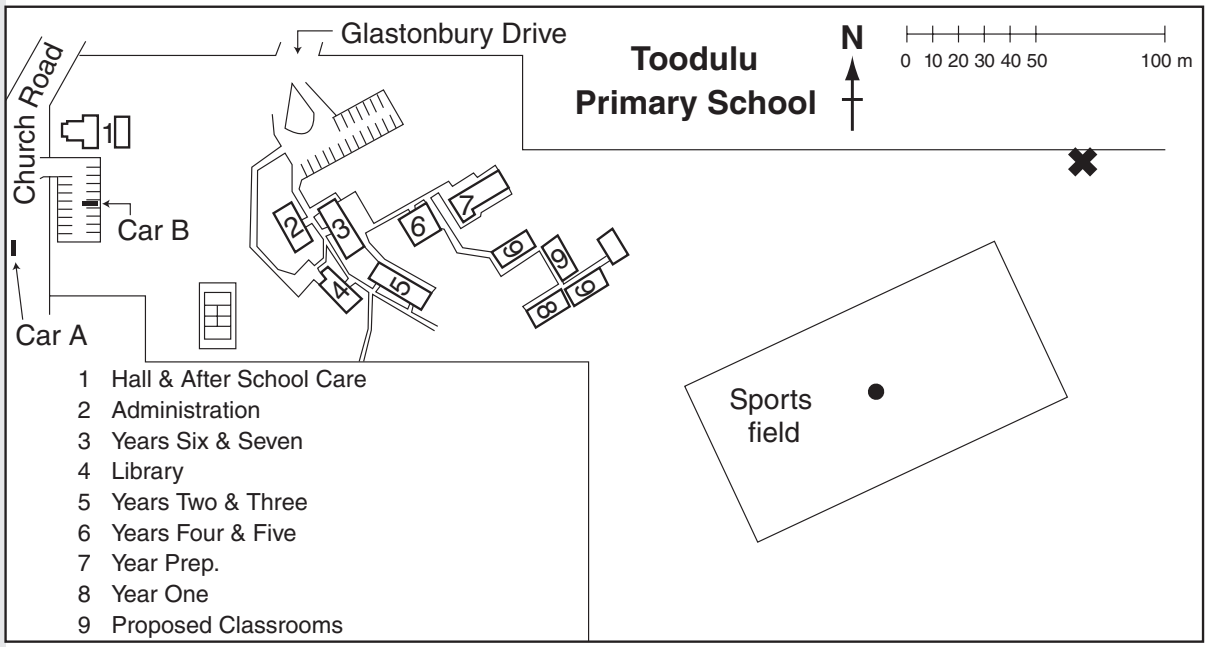
Other ISA Sample Mathematical Literacy Collections:

- Grades 3, 4 and 5
- Grades 7, 8, 9 and 10.

Treasure Hunt

A teacher has organised a Treasure Hunt for her class.

This is a map of the school.



S35014

1 About how far do the students need to walk from the centre of the sports field to the treasure at ✖?

_____ m

S35013

2 A driver in Car A, heading north on Church Road, wishes to enter the car park off Church Road and park next to Car B.

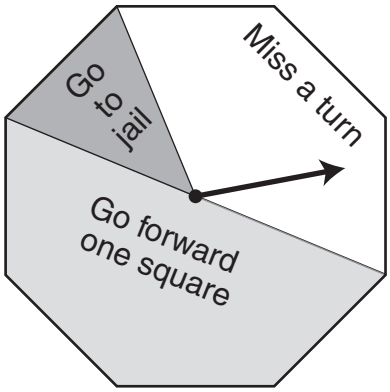
Which turns should the driver make?

- ❏ Turn left, turn left, turn right
- ❏ Turn right, turn left, turn right
- ❏ Turn right, turn left, turn left
- ❏ Turn right, turn right, turn left
- ❏ Turn right, turn right, turn right

Spinner

In a game, this 8-sided spinner is used.

In the diagram the spinner shows 'Miss a turn'.



S35003

3 The spinner was spun 200 times. About how many times would you expect the result 'Go to jail'?

_____

S35004

4 In one game, the spinner landed on 'Miss a turn' 30 times. What is the most likely number of times that the spinner was spun?

Show your working.

_____

_____

_____

Bean Plant

Week 1 Week 2 Week 3 Week 4

Angelique measured the height of a bean plant each Saturday for four weeks.

Her measurements are shown in the table.

Week	Date	Height
1	March 1	2 cm
2	March 8	8 cm
3	March 15	14 cm
4	March 22	20 cm

Use this calendar to answer the next two questions.

March						
S	M	T	W	T	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

April						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Bean Plant

S33031

5 What height would you expect Angelique's plant to be on Saturday April 5 if it keeps growing in the same way?

_____ cm

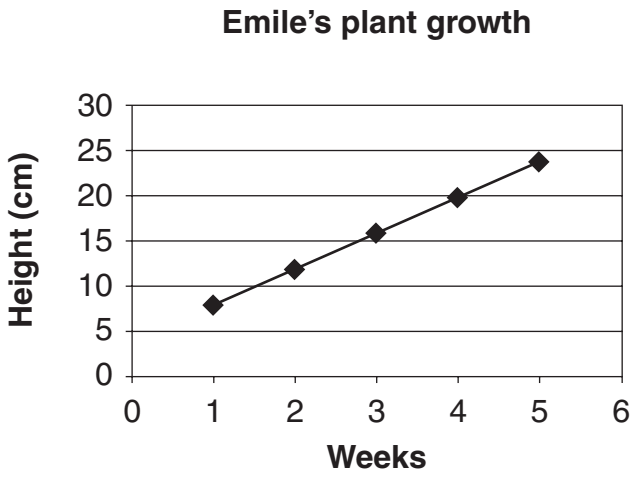
S33032

6 On what **date** would you expect Angelique's plant to reach 50 cm if it keeps growing in the same way?

_____

Angelique's friend Emile started measuring a different bean plant on Saturday in Week 1 also.

He decided to make a graph of the growth of his plant.

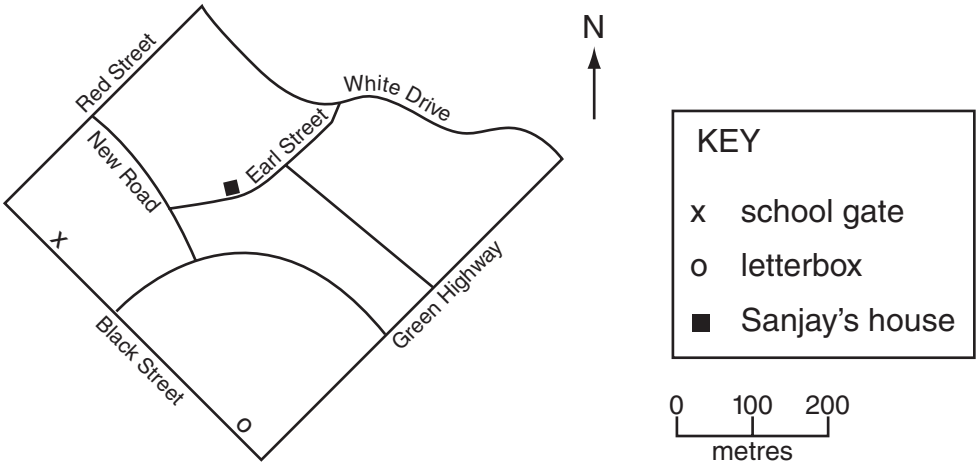


S33034

7 In which week did Angelique's plant have the **same** height as Emile's plant?

_____

Walking for Charity



M073023

8 Estimate the distance from the school gate to the letterbox in metres.

_____ metres

M073024

9 Sanjay walked along Black Street from the school gate to the letterbox.

In which direction did he walk?

- ❑ NE
- ❑ NW
- ❑ SE
- ❑ SW

M073025

10 To walk home from school, Sanjay turned from Black Street into Red Street, then into New Road and finally into Earl Street.

The turns he made were

- ❑ right, right and left.
- ❑ right, right and right.
- ❑ left, left and right.
- ❑ left, left and left.

Keep going

M073026

11 Sanjay collected money for charity by walking a circuit around his neighbourhood.

For every circuit, Sanjay collected 2.00 zeds from his mother and 1.50 zeds from his father.

Sanjay collected a total of 17.50 zeds from his mother and father.

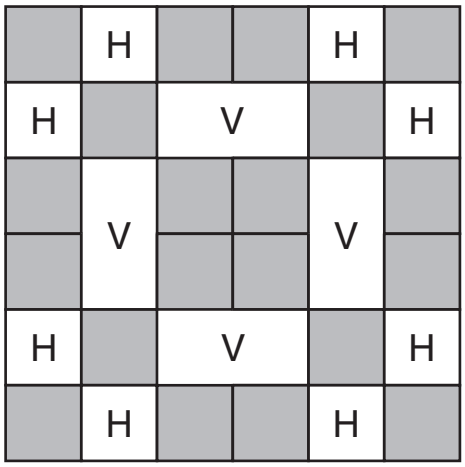
How many circuits did he complete?

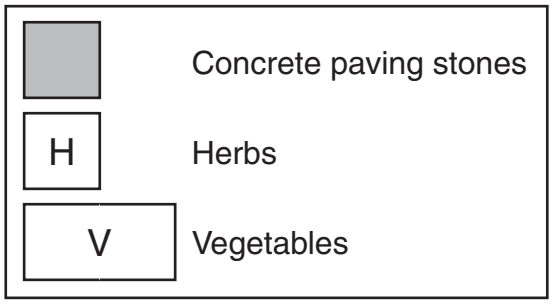
_____ circuits

Herb Garden

This is a design for a square garden. Part of the garden is planted with herbs (H) and vegetables (V).

The shaded squares are concrete paving stones.





M042501

12 The garden design is symmetrical.

Draw in all the lines of symmetry on the diagram.

STOP HERE

TREASURE HUNT

Q1 **About how far do the students need to walk from the centre of the sports field to the treasure at ✖?**

Competency: Connection
Content: Shape and Space
Descriptor: Estimate distance in metres on a map using a simple scale.

Marking guide

Code 1 Any answer between 110 and 130
Code 0 Other
Code 9 Missing

Q2 **A driver in Car A, heading north on Church Road, wishes to enter the car park off Church Road and park next to Car B.**

Which turns should the driver make?

Competency: Reproduction
Content: Shape and Space
Descriptor: Read a map and determine the turn directions (left/right) needed to get from point A to point B.
Key: D – Turn right, turn right, turn left

SPINNER

Q3 **The spinner was spun 200 times. About how many times would you expect the result 'Go to jail'?**

Competency: Connection
Content: Uncertainty
Descriptor: Demonstrate a correct method to find the expected number of occurrences of an event with a known probability from a given number of trials.

Marking guide

Code 2 25, 'About 25', or '20–30'. Working not required. Correct method is 1/8 of 200, 200 ÷ 8, or repeated halving 200, 100, 50, 25
Code 1 Correct method but incorrect answer or incomplete
Code 0 Other
Code 9 Missing

Q4 **In one game, the spinner landed on 'Miss a turn' 30 times. What is the most likely number of times that the spinner was spun?**

Show your working.

Competency: Connection

Content: Uncertainty

Descriptor: Demonstrate a correct method for finding the most likely number of trials needed to achieve a given number of occurrences of a chance event.

Marking guide

Code 2 80. *Working not required.*
Correct method is one of: trial-and-error (e.g. 3/8 of 200 = 75, too big; 3/8 of 160 = 60, too big)

OR "If 3/8 of n = 30, then 1/8 of n = 10 and so n = 80"

OR other acceptable method (e.g. allocating 10 to each side of the octagon)

Code 1 Correct method but incorrect answer or incomplete
(e.g. 30 ÷ 8; 30 × 8 = 240)

Code 0 Other including 30 × 3 = 90

Code 9 Missing

BEAN PLANT

Q5 **What height would you expect Angelique's plant to be on Saturday April 5 if it keeps growing in the same way?**

Competency: Reproduction

Content: Change and Relationships

Descriptor: Find a value on a given date, combining information from a calendar and a table showing a pattern of growth.

Marking guide

Code 1 32

Code 0 Other, including marks/calculations on the previous page

Code 9 Missing (i.e. no marks on either page)

Q6 **On what date would you expect Angelique's plant to reach 50 cm if it keeps growing in the same way?**

Competency: Connection

Content: Change and Relationships

Descriptor: Given a new value, extrapolate from a table showing a pattern of growth to find a date on a calendar.

Marking guide

Code 1 April 26 or just '26' or 'April 20–26'

Code 0 Other, such as week 9

Code 9 Missing

Q7 In which week did Angelique's plant have the same height as Emile's plant?

Competency: Connection
Content: Change and Relationships
Descriptor: Compare growth data in a table with those in a linear graph.

Marking guide

Code 1 Week 4 (or just '4') or March 22

Code 0 Other

Code 9 Missing

WALKING FOR CHARITY

Q8 Estimate the distance from the school gate to the letterbox in metres.

Competency: Connection
Content: Quantity
Descriptor: Use simple scale to estimate distance on map.

Marking guide

Code 2 Any number in the range [325, 375] metres

Code 1 Any number in the range [300, 325) or (375, 400]

Code 0 Other

Code 9 Missing

Q9 Sanjay walked along Black Street from the school gate to the letterbox.

In which direction did he walk?

Competency: Reproduction
Content: Shape and Space
Descriptor: Determine compass direction of route on map.
Key: C – SE

Q10 **To walk home from school, Sanjay turned from Black Street into Red Street, then into New Road and finally into Earl Street.**

The turns he made were

Competency: Connection
Content: Shape and Space
Descriptor: Select the set of instructions that match a given route on a map.

Key: A – right, right and left

Q11 **Sanjay collected money for charity by walking a circuit around his neighbourhood.**

For every circuit, Sanjay collected 2.00 zeds from his mother and 1.50 zeds from his father.

Sanjay collected a total of 17.50 zeds from his mother and father.

How many circuits did he complete?

Competency: Connection
Content: Quantity
Descriptor: Solve a multi-step word problem involving money.

Marking guide

Code 1 5 circuits

Code 0 Other

Code 9 Missing

HERB GARDEN

Q12 **The garden design is symmetrical.**

Draw in all the lines of symmetry on the diagram.

Competency: Reproduction
Content: Shape and Space
Descriptor: Draw all the lines of symmetry on a common geometric figure.

Marking guide

Code 2 All 4 lines of symmetry as shown. Accept dotted or broken lines

Code 1 Any 2 (or 3) lines of symmetry

Code 0 Other (1 line of symmetry or lines too inaccurately drawn)

Code 9 Missing