ISA

Mathematical Literacy Sample Materials

Grade 3
Grade 4
Grade 5

ACER

ISA Mathematical Literacy Sample Materials

Grade 3, Grade 4 and Grade 5

This collection of mathematical literacy sample materials represents a typical range of mathematics material in ISA tests from Grade 3 to Grade 5. 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 13 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 units included in this marking guide are:

- Toy Prices
- Wet Days
- The Windows
- Treasure Hunt
- Bean Plant

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

Classification of questions

Questions are classified by Process –

Formulating, Employing or Interpreting

and by Content –

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

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 6 multiple-choice questions and 7 open-ended questions requiring students to write a response. An actual ISA test has 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 or the population for each grade.

The materials in this collection cover Grade 3, 4 and 5. Some materials may be too hard for Grade 3 and some materials may be too easy for Grade 5. 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:

- Grade 5, 6 and 7
- Grade 8, 9 and 10

Toy Prices

23 zeds

32 zeds
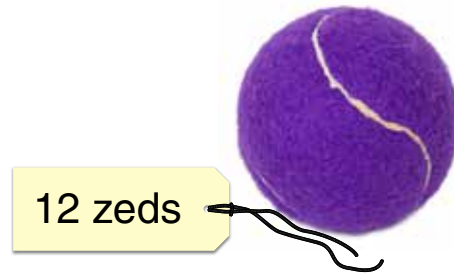
19 zeds

12 zeds

L03011

1 Toys at the shop cost 32 zeds, 12 zeds, 19 zeds and 23 zeds.

Write these prices in increasing order, starting with the smallest.

_____ zeds,   _____ zeds,   _____ zeds,   _____ zeds.

L03012

2 Stefan has 60 zeds. He wants to buy three of the toys.
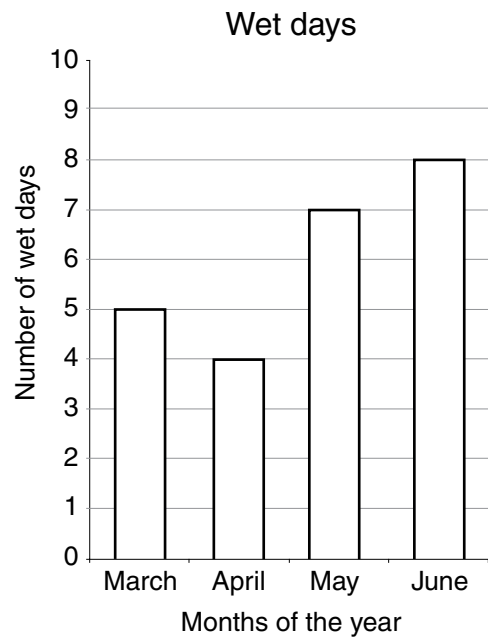
Can Stefan afford to buy three of these toys?

☐   Yes   ☐   No

Select 'Yes' or 'No' and explain why.

Wet Days

This graph shows the number of wet days during March, April, May and June.
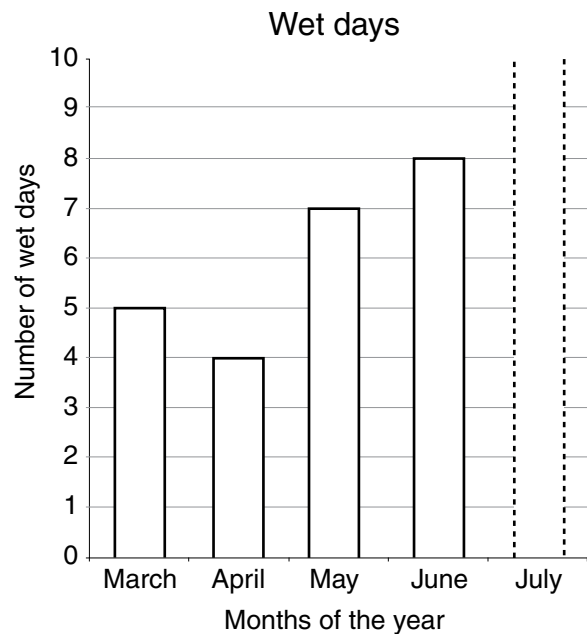
Wet days

L13071

3 Which two months together had 13 wet days?

☐ March and April   ☐ May and June

☐ April and May   ☐ March and June

L13072

4 In July there were nine wet days.

Complete the graph to include July.
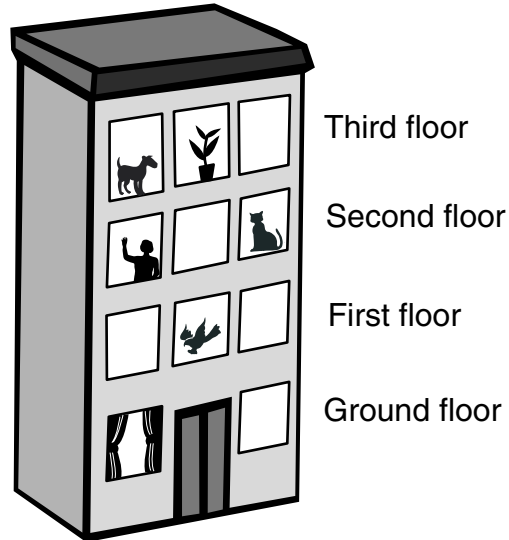
Wet days

L13073

5 Which month had the smallest number of wet days?

☐ March   ☐ May

☐ April   ☐ June

The Windows

Teresa looked in the windows of the apartment across her street.

This is what she saw.

Third floor

Second floor

First floor

Ground floor

**6** What can be seen in the second floor window third from the left?

☐

☐

☐

☐

7 Which window has a in it?

☐ The ground floor window, first from the left
☐ The first floor window, second from the right
☐ The second floor window, second from the left
☐ The third floor window, first from the left
☐ The third floor window, second from the left

Treasure Hunt

A teacher has organised a Treasure Hunt for her class.

This is a map of the school.
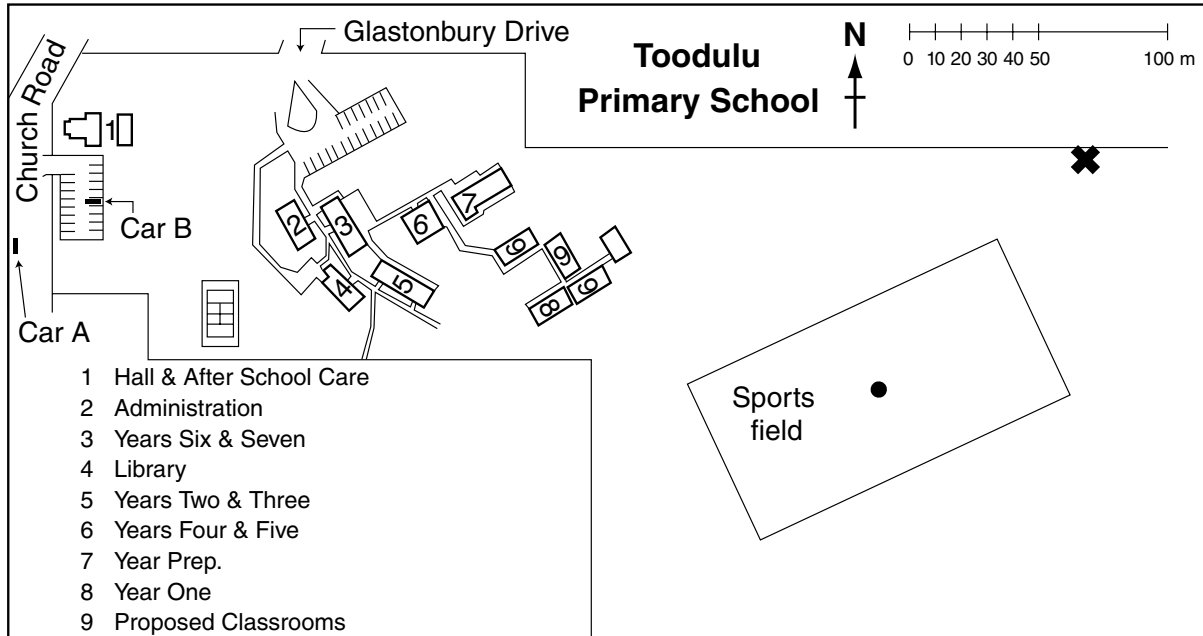
S35014

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

_____ m

S35013

9 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

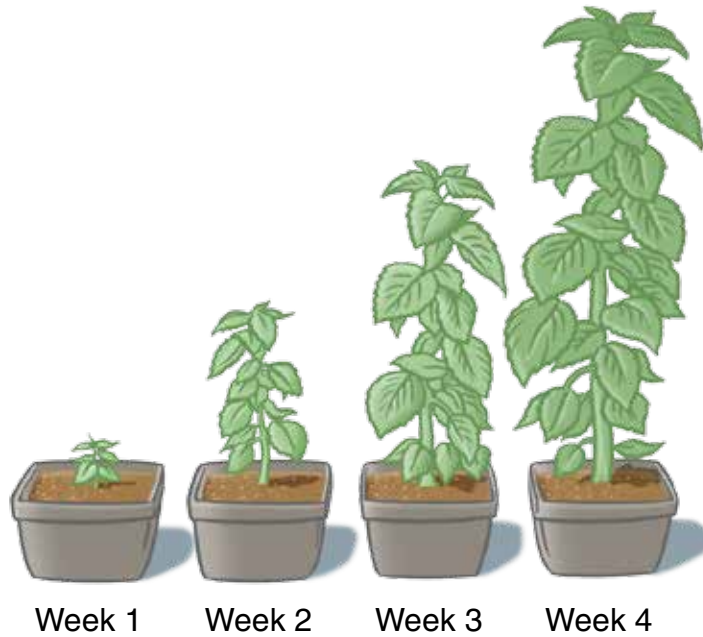# Treasure Hunt

10 The Treasure Hunt begins at 11.45 am.

The winner finds the treasure at 1.15 pm.

The table below contains statements about the Treasure Hunt.

Select 'True' or 'False' for each statement.

Statement	True	False
It takes the winner exactly 30 minutes to find the treasure.	☐	☐
The winner finds the treasure at 13.15.	☐	☐

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

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

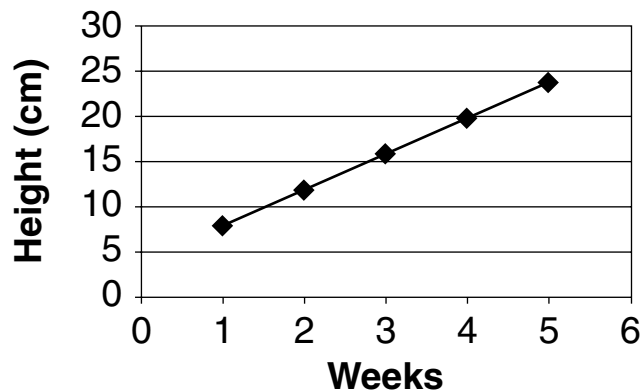_____ cm

12 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.

Emile's plant growth

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

_____

Marking Guides
Grade 3, Grade 4 and Grade 5

Toy Prices

Q1 **Toys at the shop cost 32 zeds, 12 zeds, 19 zeds and 23 zeds. Write these prices in increasing order.**

Process:	Employing
Content:	Quantity
Descriptor:	List four 2-digit numbers in increasing order.

Marking guide

Code 2	12, 19, 23, 32
Code 1	32, 23, 19, 12 (decreasing order)
Code 0	Other
Code 9	Missing

Q2 **Stefan has 60 zeds. He wants to buy three of the toys.**

Can Stefan afford to buy three of these toys?

Select 'Yes' or 'No' and explain why.

Process:	Formulating
Content:	Quantity
Descriptor:	Solve a word problem involving addition and subtraction of 2-digit numbers in context.

Marking guide

Code 1	Yes AND an explanation indicating that he can buy the 3 cheapest toys because their prices add to less than 60.
Code 0	Other responses
Code 9	Missing

Wet Days

Q3 **Which two months together had 13 wet days?**

Process: Employing

Content: Uncertainty and Data

Descriptor: Find two columns that add to a given value on a simple column graph.
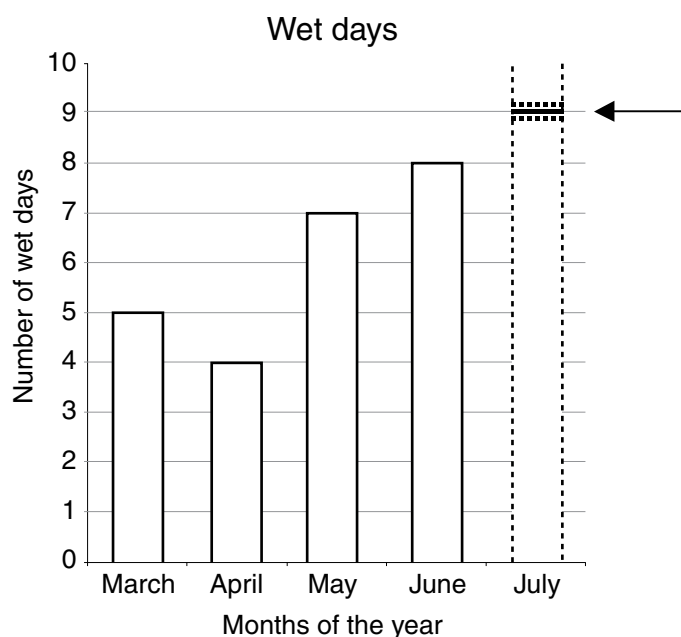
Key: D – March and June

Q4 **In July there were nine wet days.**

Complete the graph to include July.

Process: Employing

Content: Uncertainty and Data

Descriptor: Completes a bar graph to represent a given frequency.

Wet days

Code 1 As shown (line added)
Dotted lines show acceptable range

Code 0 Other

Code 9 Missing

Q5 **Which month had the smallest number of wet days?**

Process: Employing

Content: Uncertainty and Data

Descriptor: Find the least frequent category by interpreting a simple column graph.

Key: B – April

The Windows

Q6 **What can be seen in the second floor window third from the left?**

Process:　　　　　Employing

Content:　　　　　Shape and Space

Descriptor:　　　　Use location language to identify position.

Key:　　　　　　　C

Q7 **Which window has a 🐕 in it?**

Process:　　　　　Employing

Content:　　　　　Shape and Space

Descriptor:　　　　Use location language to identify position.

Key:　　　　　　　D – The third floor window, first from the left

Treasure Hunt

Q8 **About how far do the students need to walk from the centre of the sports field to the treasure at ✖?**

Process:　　　　　Employing

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

Q9 **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?

Process:　　　　　Employing

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

Q10 The Treasure Hunt begins at 11.45 am.

The winner finds the treasure at 1.15 pm.

The table below contains statements about the Treasure Hunt.

Select 'True' or 'False' for each statement.

Process:	Employing
Content:	Quantity
Descriptor:	Determine the accuracy of statements regarding elapsed time and conversion between 24 and 12 hour time format.

Marking guide

Code 1	Two correct: False, True in that order
Code 0	Less than two correct.
Code 9	Missing

Bean Plant

Q11 What height would you expect Angelique's plant to be on Saturday April 5 if it keeps growing in the same way?

Process:	Employing
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)

Q12 On what date would you expect Angelique's plant to reach 50 cm if it keeps growing in the same way?

Process:	Employing
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

Q13 In which week did Angelique's plant have the same height as Emile's plant?

Process:	Interpreting
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