

4

# MATHEMATICS

## SAMPLE RESPONSES



### Hermit crabs

This booklet is designed to help teachers make overall, on-balance judgments by providing examples of student responses. The responses are not an exhaustive set.

A samples

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# A Sample: Response 1

## Guide to making judgments — Year 4 Mathematics Student

Purpose: To demonstrate mathematical thinking and reasoning when solving problems.

Knowledge and understanding Thinking and reasoning	Knowledge and understanding Thinking and reasoning	Reflecting	Communicating
Uses mathematical strategies to generate shopping and fundraising solutions. Q 3–7, 10	Uses mathematical strategies to generate time-related solutions. Q 8, 9	Identifies the contribution of mathematics in the hermit crab project and applies new understandings to other situations. Q 1, 2, 11	Uses everyday and mathematical language and working to communicate thinking and reasoning. Q 3, 8, 10
Uses appropriate strategies to generate correct solutions.	Completes Table 1 and 2 correctly.	Consistently identifies how mathematics is used in the project and how learning can be applied in three new situations.	Communicates thinking and reasoning using clear and precise mathematical working or explanations. Correct units are used consistently.
Uses appropriate strategies to generate correct solutions.	Completes Table 1 correctly and Table 2 mostly correctly.		
Knowledge and understanding Thinking and reasoning Uses appropriate strategies to generate correct solutions.	Knowledge and understanding Thinking and reasoning Completes Tables 1 and 2 correctly.	Reflecting Provides detailed examples in Q 1 and 2 of mathematics in the project. The examples in Q 11 relate to new situations and are logical.	Communicating Demonstrates clear and precise mathematical working and explains thinking in detail. Correct units are used in most situations.
Table 1 correctly.	Table 1 correctly.	mathematics.	
solution.			

Feedback

### Overall grade

The purpose of this QCAT is for students to demonstrate mathematical thinking and reasoning when solving problems. This response demonstrates very high level knowledge and understanding, thinking and reasoning, reflecting and communicating and to solve time- and money-related problems. On balance, this work is an overall A.

## A Sample: Response 1

### Getting started

Mathematics can be used to help set up a hermit crab project.

To set up a hermit crab project a class would have to buy items from a shopping list.

1. **How would you use mathematics to help choose a shop that sells items for the best price?**

Go to each of the shops and write down the price, quality, and the amount. Compare the prices with the amount, then compare the quality, then you can make a final decision.

To pay for a hermit crab project a class may have to plan a fundraising stall.

2. **How would you use mathematics when serving customers at a fundraising stall?**


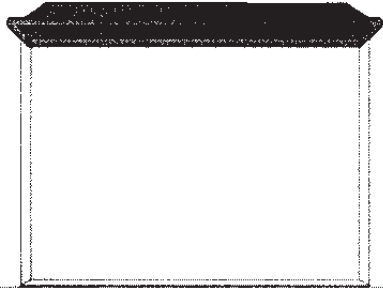


- Listen to what they want, then add up the price on the cash register, then serve them.
- If they want to buy several of one object, multiply the price by the amount they bought.

## A Sample: Response 1

3. Work out the total cost of all the items on the shopping list.



Giant strawberry  
hermit crab  
\$25.00 each

 Salt		 Food	
Hermit crab salt \$3.00	Plastic carry-cage \$18.00	Hermit crab food \$3.00 per bag	Pet book \$6.00

Show your working.

$$\begin{aligned}
 & \$25.00 \times 2 = \$50.00 \\
 & \$50.00 + \$3.00 = \$53.00 \\
 & \$53.00 + \$18.00 = \$71.00 \\
 & \$71.00 + \$3.00 = \$74.00 \\
 & \$74.00 + \$6.00 = \$80.00
 \end{aligned}$$

Total cost: 80 dollars

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 1

### Organising a fundraising stall

Students are going to sell sausages in bread at a fundraising stall.

The sausages, bread and sauce have been given to the class by a parent for free.

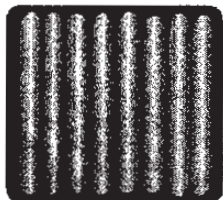


Each sausage in bread will be sold for \$1.00.

4. How many sausages in bread must be sold to cover the cost of items on the shopping list?

*eighty*  
..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

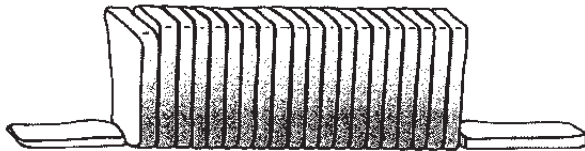
Show your working.

$$\begin{array}{r} 80 \\ \div 8 \\ \hline 10 \end{array}$$

*ten*  
..... packs

## A Sample: Response 1

6. How many loaves of bread will be needed for all the sausages?



There are 22 slices (including the crusts) in each loaf of bread. The two crusts will not be used.

Show your working.

$$\begin{array}{r} 80 \\ \div 20 \\ \hline 4 \end{array}$$

four ..... loaves

7. If six sausages in bread are not sold, how much money is raised?

Show your working.

$$\begin{array}{r} \$80.00 \\ - \$6.00 \\ \hline \$74.00 \end{array}$$

\$74.00 .....

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 1

### Organising helpers

Every student in the class must have a turn helping at the sausage stall.

Four students will be at music lessons for some of the time of the stall.

8. Complete Table 1 to show when each student has their music lesson.

Table 1

Student	Start time	Duration	Finish time
Ned	10:15 am	25 minutes	10:40 am
Sid	10:40 am	30 minutes	11:10 am
Jake	11:10 am	25 minutes	11:35 am
Meg	11:25	20 minutes	11:45 am

If needed, do  
your working here.



## A Sample: Response 1

The sausage stall will be held from 10:30 am until 11:30 am.

9. In Table 2, cross **X** the boxes to show when each student cannot help at the stall.

Ned has been done for you.



Use the information in Table 1 on page 10 to help you.

Table 2

Time	Ned	Sid	Jake	Meg
10:30 am – 10:45 am	X	X		
10:45 am – 11:00 am		X		
11:00 am – 11:15 am		X	X	
11:15 am – 11:30 am			X	X

If needed, do  
your working here.

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 1

### Spending the money

At the pet shop there is a sale.

The class has \$10.00 left over to spend. They decide to buy paint pens to decorate hermit crab shells.

**10. The class must spend all of the \$10.00 to buy as many different-coloured pens as possible.**

**a) Circle the pens that they should buy.**



- Buy as many different-coloured pens as possible.
- Spend all of the \$10.00.

**A Sample: Response 1**

Show your working.

$$\begin{aligned} \$1.50 + \$2.50 &= \$4.00 \\ \$4.00 + \$2.00 &= \$6.00 \\ \$6.00 + \$1.50 &= \$7.50 \\ \$7.50 + \$2.50 &= \$10.00 \end{aligned}$$

**b) Explain how you used mathematics to get your answer.**

Buy the lowest priced pens, if they  
don't add up to ten, increase the price of  
a pen, by swapping it for another one.  
When you have done this, keep checking until  
it is correct.

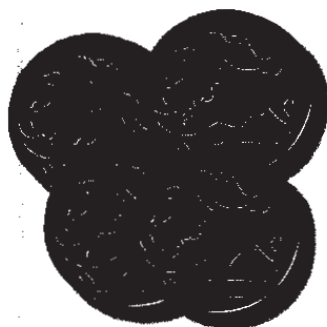
**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 1

11. Complete each sentence to show how you can use mathematics in other situations.



For each sentence choose a new situation.



If I can add up money correctly,

I will be able to *go shopping.*

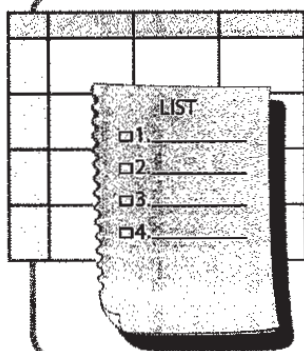
.....  
.....

Start time	Start time	Duration	Finish time
Start	11:45 am	30 minutes	
Stop	12:05 pm	10 minutes	
Start	12:35 pm	35 minutes	
Stop		10 minutes	1:10 pm

If I can read a timetable,

I will be able to *Get things done in the correct amount of time.*

.....



If I can organise information into a table or list,

I will be able to *Organise a calendar.*

.....  
.....

## Overall grade

Demonstrates a very high level of knowledge and understanding, and thinking and reasoning. Also demonstrates a high level of reflecting and communicating to solve time- and money-related problems. On balance, this work is an overall A.

Guide to making judgments — Year 4 Mathematics Student .....

**Purpose:** To demonstrate mathematical thinking and reasoning when solving problems.

Knowledge and understanding Thinking and reasoning	Knowledge and understanding Thinking and reasoning	Reflecting	Communicating
<p>Uses mathematical strategies to generate shopping and fundraising solutions.</p> <p>Q 3–7, 10</p>	<p>Uses mathematical strategies to generate time-related solutions.</p> <p>Q 8, 9</p>	<p>Identifies the contribution of mathematics in the hermit crab project and applies new understandings to other situations.</p> <p>Q 1, 2, 11</p>	<p>Uses everyday and mathematical language and working to communicate thinking and reasoning.</p> <p>Q 3, 8, 10</p>

**Knowledge and understanding  
Thinking and reasoning**

Uses appropriate strategies to generate correct solutions.

**Communicating**

Demonstrates clear mathematical working where necessary. Explanations are satisfactory but lack detail.

**Knowledge and understanding  
Thinking and reasoning**

Uses appropriate strategies to generate correct solutions.

**Reflecting**

Provides informed examples in Q 1 and 2 of mathematics in the project. The examples in Q 11 relate to new situations and are logical.

**Knowledge and understanding  
Thinking and reasoning**

Uses appropriate strategies to generate correct solutions.

**Communicating**

Demonstrates clear mathematical working where necessary. Explanations are satisfactory but lack detail.

## Feedback:

## A Sample: Response 2

### Getting started

Mathematics can be used to help set up a hermit crab project.

To set up a hermit crab project a class would have to buy items from a shopping list.

1. **How would you use mathematics to help choose a shop that sells items for the best price?**

go to each shop and look at  
the stuff and price

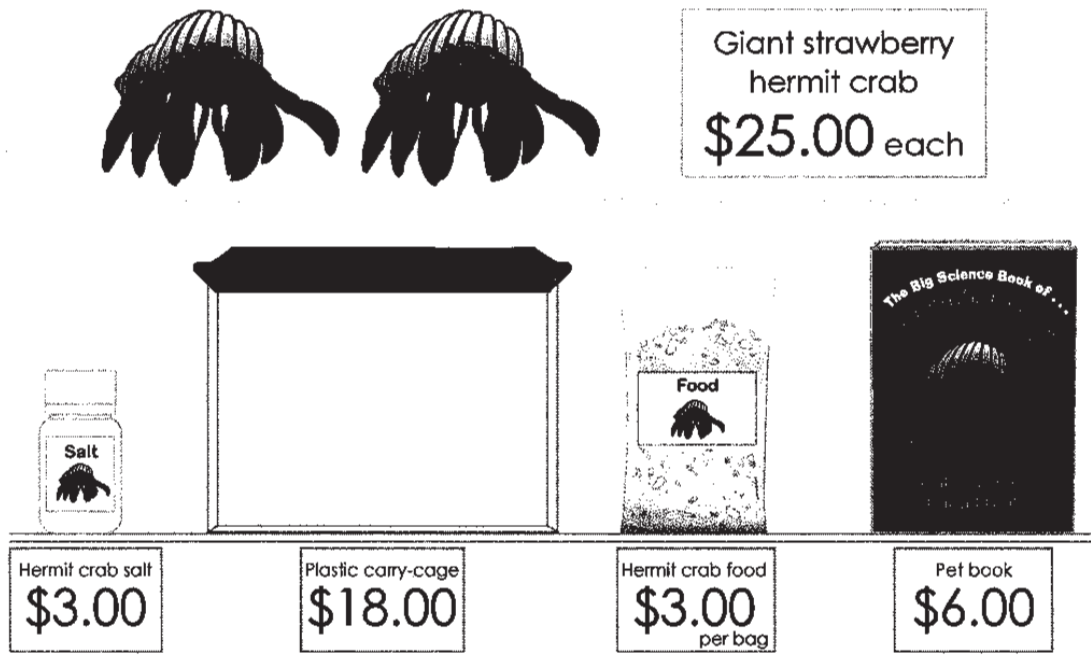
To pay for a hermit crab project a class may have to plan a fundraising stall.

2. **How would you use mathematics when serving customers at a fundraising stall?**

• They would have to figure out  
the change and cost

## A Sample: Response 2

3. Work out the total cost of all the items on the shopping list.



Giant strawberry hermit crab  
\$25.00 each

Hermit crab salt  
\$3.00

Plastic carry-cage  
\$18.00

Hermit crab food  
\$3.00 per bag

Pet book  
\$6.00

Show your working.

$$25 + 25 = 50$$

$$71 + 3 = 74$$

$$50 + 3 = 53$$

$$\begin{array}{r} 53 \\ + 18 \\ \hline \end{array}$$

$$71 = 71$$

Total cost: \$80

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 2

### Organising a fundraising stall

Students are going to sell sausages in bread at a fundraising stall.

The sausages, bread and sauce have been given to the class by a parent for free.



Each sausage in bread will be sold for \$1.00.

4. How many sausages in bread must be sold to cover the cost of items on the shopping list?

.....80..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

Show your working.

$$8 + 8 = 16$$

$$16 + 8 = 24$$

$$24 + 8 = 32$$

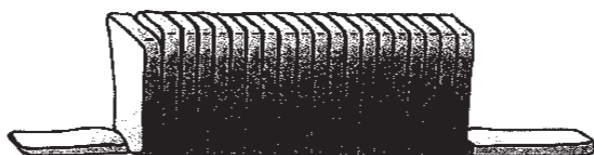
$$32 + 8 = 40$$

.....10..... packs



## A Sample: Response 2

6. How many loaves of bread will be needed for all the sausages?



There are 22 slices (including the crusts) in each loaf of bread. The two crusts will not be used.

Show your working.

.....4..... loaves

7. If six sausages in bread are not sold, how much money is raised?

Show your working.

$$80 - 6 = 74$$

.....74.....

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 2

### Organising helpers

Every student in the class must have a turn helping at the sausage stall.

Four students will be at music lessons for some of the time of the stall.

8. Complete Table 1 to show when each student has their music lesson.

Table 1

Student	Start time	Duration	Finish time
Ned	10:15 am	25 minutes	10:40 am
Sid	10:40 am	30 minutes	11:10 am
Jake	11:10 am	25 minutes	11:35 am
Meg	11:35 am	20 minutes	11:45 am

If needed, do  
your working here.

## A Sample: Response 2

The sausage stall will be held from 10:30 am until 11:30 am.

9. In Table 2, cross **X** the boxes to show when each student cannot help at the stall.

Ned has been done for you.



Use the information in Table 1 on page 10 to help you.

Table 2

Time	Ned	Sid	Jake	Meg
10:30 am – 10:45 am	X	X		
10:45 am – 11:00 am		X		
11:00 am – 11:15 am		X	X	
11:15 am – 11:30 am			X	X

If needed, do  
your working here.

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

//

## A Sample: Response 2

### Spending the money

At the pet shop there is a sale.

The class has \$10.00 left over to spend. They decide to buy paint pens to decorate hermit crab shells.

10. The class must spend all of the \$10.00 to buy as many different-coloured pens as possible.

a) Circle the pens that they should buy.



- Buy as many different-coloured pens as possible.
- Spend all of the \$10.00.

## A Sample: Response 2

Show your working.

$$\begin{array}{r}
 \$1.50 \\
 + \\
 \$2.50 \\
 + \\
 \$2.00 \\
 + \\
 \$2.50 \\
 + \\
 \$1.50 \\
 \hline
 \$10.00
 \end{array}$$

b) Explain how you used mathematics to get your answer.

I went along looking witched  
 added up to ten dollarse I  
 used cheep pens first.

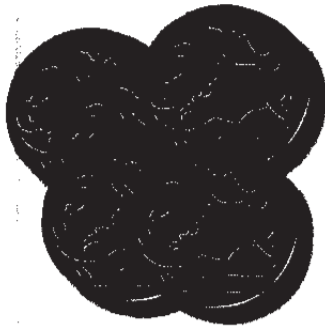
**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

## A Sample: Response 2

11. Complete each sentence to show how you can use mathematics in other situations.



For each sentence choose a new situation.



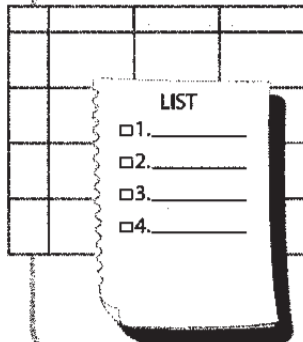
If I can add up money correctly,

I will be able to ..... buy a .....  
birthday cake .....

Day	Start Time	Duration	Finish Time
Wed	11.45 am	20 minutes	12.05 pm
Thu	12.00 pm	10 minutes	12.10 pm
Fri	12.25 pm	10 minutes	12.35 pm
Sat	1.00 pm	1.00 pm	2.00 pm

If I can read a timetable,

I will be able to ..... know time .....  
for bus .....



If I can organise information into a table or list,

I will be able to ..... shop a lot .....  
easier .....