

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.

# D samples

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# D Sample: Response 1

## Overall grade

The purpose of this QCAT is for students to demonstrate mathematical thinking and reasoning when solving problems. Demonstrates a limited level of knowledge and understanding, thinking and reasoning, reflecting and communicating when solving money and time problems. On balance, this work is an overall D.

**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
Q 3-7, 10 Uses mathematical strategies to generate shopping and fundraising solutions.	Q 8, 9 Uses mathematical strategies to generate time-related solutions.	Q 1, 2, 11 Identifies the contribution of mathematics in the hermit crab project and applies new understandings to other situations.	Q 3, 8, 10 Uses everyday and mathematical language and working to communicate thinking and reasoning.
<p>↓ Uses appropriate strategies to generate correct solutions.</p> <p>↓ Uses appropriate strategies to generate mostly correct solutions.</p> <p>↓ Uses operations to generate a possible solution.</p>	<p>↓ Completes Table 1 and 2 correctly.</p> <p>↓ Completes Table 1 correctly and Table 2 mostly correctly.</p> <p>↓ Completes Table 1 correctly OR Completes two start/finish times correctly with some success in completing Table 2 using answers from Table 1.</p>	<p>↓ Consistently identifies how mathematics is used in the project and how learning can be applied in three new situations.</p> <p>↓ Identifies examples of how mathematics is used in the project and identifies new situations.</p>	<p>↓ Communicates thinking and reasoning using clear and precise mathematical working or explanations. Correct units are used consistently.</p> <p>↓ Communicates thinking and reasoning using appropriate mathematical working or explanations.</p> <p>↓ Provides some working or explanation.</p>
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
			<b>E</b>

**Knowledge and understanding  
Thinking and reasoning**  
 Uses operations to generate a possible solution in Q 7 and 10 and a correct solution in Q 3.

**Knowledge and understanding  
Thinking and reasoning**  
 Table 1 has one answer correct and there is some success in completing Table 2.

**Reflecting**  
 Provides realistic mathematics-related examples in Q 2 and responses to Q 11 apply to new situations.

**Communicating**  
 Provides appropriate working for addition and subtraction operations only.

## D 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?**

*a corner*

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?**

- *With using an add sum*

- *If they give too much money, you have to take away*

## D Sample: Response 1

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.

$$\begin{array}{r}
 1 \\
 25 \\
 + 25 \\
 \hline
 50
 \end{array}
 \quad
 \begin{array}{r}
 50 \\
 + 18 \\
 \hline
 68
 \end{array}
 \quad
 \begin{array}{r}
 68 \\
 + 3 \\
 \hline
 71
 \end{array}
 \quad
 \begin{array}{r}
 71 \\
 + 3 \\
 \hline
 74
 \end{array}
 \quad
 \begin{array}{r}
 74 \\
 + 6 \\
 \hline
 80
 \end{array}$$

Total cost: ...**\$80.00**.....

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

## D 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.



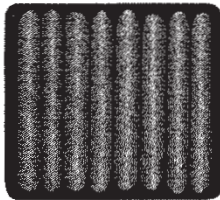
Each sausage in bread will be sold for \$1.00.

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

\$80

..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

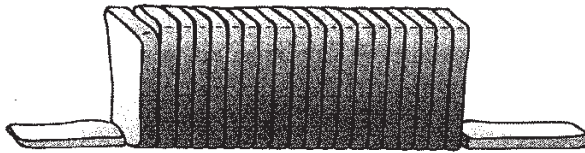
Show your working.

$$\begin{array}{r} 8 \\ \times 80 \\ \hline 64 \end{array}$$

..... 64 packs

## D 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.

..... loaves

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

Show your working.

$$\begin{array}{r} 20 \\ - 6 \\ \hline 14 \end{array}$$

$$\begin{array}{r} \$14 \\ \hline \end{array}$$

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

## D 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
Jake	11:10 am	25 minutes	11:35
Meg	11:35	20 minutes	11:45 am

If needed, do  
your working here.



## D 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	X	X
10:45 am – 11:00 am		X	X	X
11:00 am – 11:15 am			X	X
11:15 am – 11:30 am				X

If needed, do  
your working here.

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

//

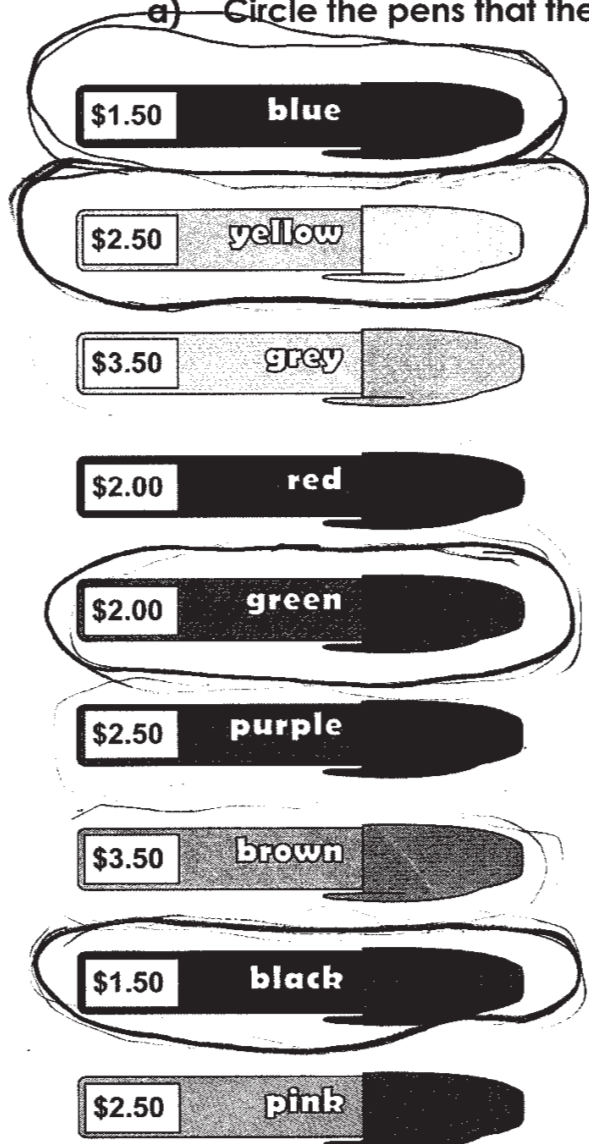
**D Sample: Response 1****Spending the money**

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.

**D Sample: Response 1**

Show your working.

$$\begin{array}{r} 1.50 \\ + 2.50 \\ \hline 4.00 \end{array}$$
$$\begin{array}{r} 4.00 \\ + 2.50 \\ \hline 6.50 \end{array}$$
$$\begin{array}{r} 6.00 \\ + 1.50 \\ \hline 7.50 \end{array}$$

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

.....

.....

.....

.....

.....

.....

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

## D Sample: Response 1

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



For each sentence choose a new situation.



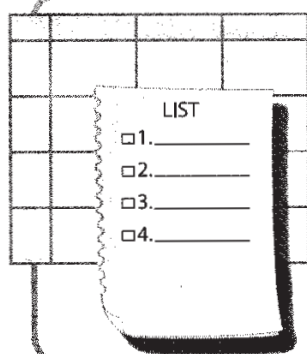
If I can add up money correctly,

I will be able to Buy anything that adds up to my money.

Student	Start Time	Duration	Finish Time
Wend	11:45 am	30 minutes	
Ed	12:05 pm	15 minutes	
Jake	12:25 pm	20 minutes	
Max		10 minutes	1:10 pm

If I can read a timetable,

I will be able to get into my class without running late.



If I can organise information into a table or list,

I will be able to Find out more about things you want to know.

## D Sample: Response 2

### Overall grade

Demonstrates a limited level of knowledge and understanding, thinking and reasoning, and communicating when solving money and time problems. On balance, this work is an overall D.

### 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>
<p>Uses appropriate strategies to generate correct solutions.</p> <p>Uses appropriate strategies to generate mostly correct solutions.</p> <p>Uses operations to generate a possible solution.</p> <p>Provides some progress towards a solution.</p>	<p>Completes Table 1 and 2 correctly.</p> <p>Completes Table 1 correctly and Table 2 mostly correctly.</p> <p>Completes Table 1 correctly OR Completes two start/finish times correctly with some success in completing Table 2 using answers from Table 1.</p> <p>Completes one start or finish time in Table 1 correctly.</p>	<p>Consistently identifies how mathematics is used in the project and how learning can be applied in three new situations.</p> <p>Identifies examples of how mathematics is used in the project and identifies new situations.</p> <p>Makes statements unrelated to mathematics.</p>	<p>Communicates thinking and reasoning using clear and precise mathematical working or explanations. Correct units are used consistently.</p> <p>Communicates thinking and reasoning using appropriate mathematical working or explanations.</p> <p>Provides some working or explanation.</p>

### Knowledge and understanding Thinking and reasoning

Provides some progress towards a solution in Q 3, 6 and 10.

### Knowledge and understanding Thinking and reasoning

Table 1 has two answers correct. No attempt made in Table 2.

### Reflecting

One response has direct mathematical relationship, although very little detail provided. In Q 11, responses relate to new situations but lack detail.

### Communicating

Provides some working for addition and subtraction operations only.

## D 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 shop .....

.....

.....

.....


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?**

- ..... tak money chang .....
- ..... use brane .....

## D Sample: Response 2

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



The shopping list items and their prices are as follows:

Item	Price
Giant strawberry hermit crab (2 each)	\$25.00 each
Hermit crab salt	\$3.00
Plastic carry-cage	\$18.00
Hermit crab food (per bag)	\$3.00
Pet book	\$6.00

Show your working.

$$\begin{array}{r}
 25 \\
 + 18 \\
 + 3 \\
 + 3 \\
 + 6 \\
 \hline
 \end{array}$$

Total cost: .....55.....

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



## D 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.

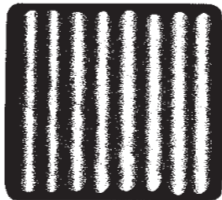


Each sausage in bread will be sold for \$1.00.

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

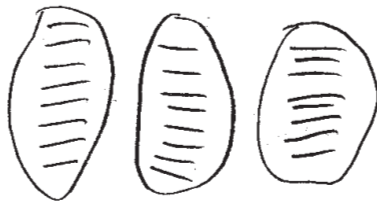
.....or 11..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

Show your working.

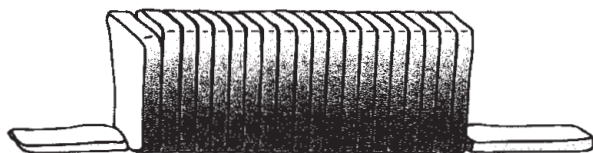


..... packs



## D 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.

$$\begin{array}{r} 22 \\ - 2 \\ \hline 20 \end{array}$$

..... loaves

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

Show your working.

.....

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

D 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	<del>11:10</del>
Jake	11:10 am	25 minutes	11:35
Meg	12:00	20 minutes	11:45 am

If needed, do  
your working here.

## D 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			
10:45 am – 11:00 am				
11:00 am – 11:15 am				
11:15 am – 11:30 am				

If needed, do  
your working here.

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

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**D 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.

**D Sample: Response 2**

Show your working.

$$1 + 2 + 3 + 2 + 2$$

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

added.....  
.....  
.....  
.....  
.....  
.....

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

## D 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 ...bank.....

.....

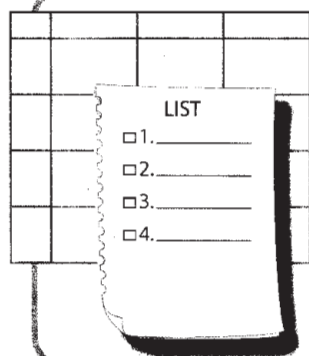
.....

Student	Start time	Duration	Finish time
Sam	11:45 am	20 minutes	12:05 pm
Elvi	12:05 pm	15 minutes	12:20 pm
Joan	12:20 pm	25 minutes	12:45 pm
May	12:45 pm	15 minutes	1:10 pm

If I can read a timetable,

I will be able to ...na...when...stuff...  
is hapening.....

.....



If I can organise information into a table or list,

I will be able to ...shap...right.....

.....

.....