

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.

B samples



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B 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	
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>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</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>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p>

Knowledge and understanding

Thinking and reasoning
Uses appropriate strategies to generate mostly correct solutions. In Q 6 the response is incorrect but a correct strategy has been used.

Knowledge and understanding Thinking and reasoning

Provides two correct answers in Table 1 and some success in Table 2.

Reflecting

Provides consistently good examples of mathematics in project context and for new situations.

Communicating

Communicates thinking and reasoning using clear mathematical working and explanation. Correct units are used regularly.

Overall grade

The purpose of this QCAT is for students to demonstrate mathematical thinking and reasoning when solving problems. Demonstrates high level of knowledge and understanding and thinking and reasoning when using money. Responses indicate reflecting and communicating skills are at a very high and high level respectively. On balance, this work is an overall B.

B 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?**

I would look at all the shops price and remember what the lowest price was in each shop and go to the one with the lowest 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?**

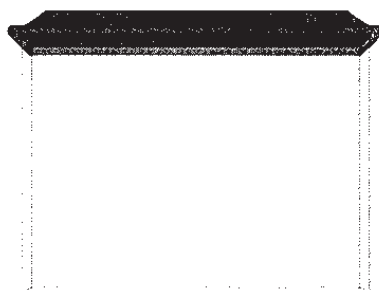
- *they give back the right amount of change and sometimes they use a calculator.*

B Sample: Response 1

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



Giant strawberry
hermit crab
\$25.00 each



Plastic carry-cage
\$18.00



Hermit crab salt
\$3.00



Hermit crab food
\$3.00
per bag



Pet book
\$6.00

Show your working.

$$\begin{array}{r} 25 \ 50 \ 53 \ 71 \ 74 \\ +25 \ +23 \ +18 \ +3 \ +6 \\ \hline 50 \ 52 \ 71 \ 74 \ 80 \end{array}$$

Total cost: 80...dollars.....

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B 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.

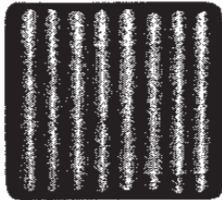


Each sausage in bread will be sold for \$1.00.

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

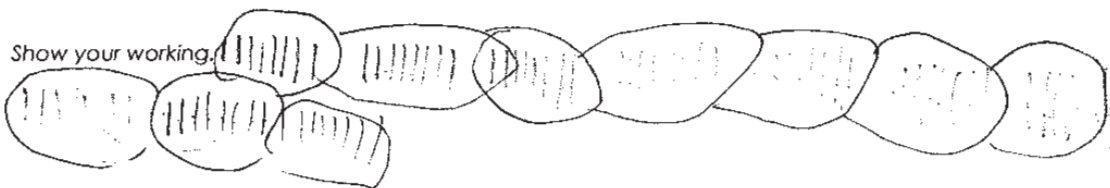
.....80..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

Show your working.



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

B 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.

$$20 + 40 + 60 + 80$$

5 loaves

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

Show your working

$$\begin{array}{r} 80 \\ - 6 \\ \hline 74 \end{array}$$

74 dollars

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B 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 am	20 minutes	11:45 am


If needed, do
your working here.

B 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				

If needed, do your working here.

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

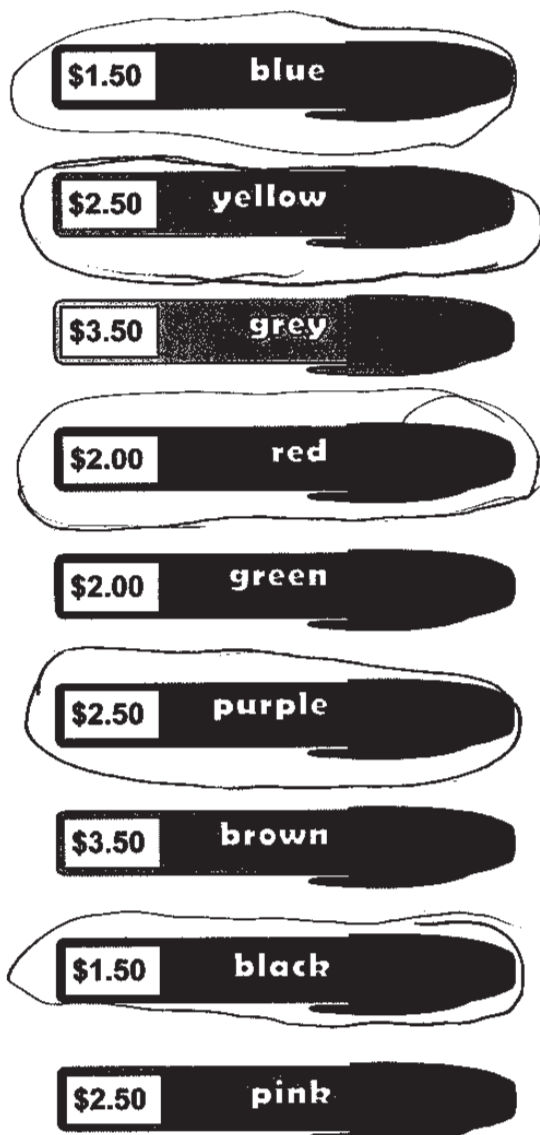
B Sample: Response 1**Spending the money**

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.

B Sample: Response 1

Show your working. $1.50 + 2.50 + 2.00 + 2.50 + 1.50 \text{ dollars} = 10.00$

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

I got all the cheapest pens and then I added.....
it all together so that I would be able to get as much pens
as possible with ten dollars.....

.....
.....
.....

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B Sample: Response 1

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



For each sentence choose a new situation.



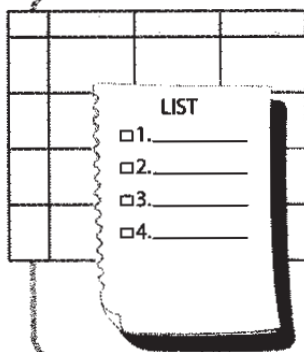
If I can add up money correctly,

I will be able to *..give..back..the..right..*
amount..of..change.....

Students	Start time	Duration	Finish time
Sam	11.45 am	25 minutes	
Ali	12.05 pm	14 minutes	
John	12.25 pm	30 minutes	
Aliya		15 minutes	1.10 pm

If I can read a timetable,

I will be able to *..find..out..when..my..students*
have..to..go..to..the..dentists.....



If I can organise information into a table or list,

I will be able to *..go..shopping..and..get..*
things..that..I..really..do..need.....

Overall grade

Demonstrates high level of knowledge and understanding and thinking and reasoning when using money and time. Responses indicate reflecting and communicating skills are at a very high and high level respectively. On balance, this work is an overall B.

Guide to making judgments — Year 4 Mathematics

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>

A

Communicates thinking and reasoning using clear and precise mathematical working or explanations. Correct units are used consistently.

B

Consistently identifies how mathematics is used in the project and how learning can be applied in three new situations.

C

Communicates thinking and reasoning using clear mathematical working and explanations.

D

Provides consistently good examples of mathematics in task context and for new situations.

E

Completes Table 1 correctly and Table 2 mostly correctly.

F

Completes Table 1 correctly and Table 2 mostly correctly.

G

Completes Table 1 correctly and Table 2 mostly correctly.

H

Completes Table 1 correctly and Table 2 mostly correctly.

I

Completes Table 1 correctly and Table 2 mostly correctly.

J

Completes Table 1 correctly and Table 2 mostly correctly.

K

Completes Table 1 correctly and Table 2 mostly correctly.

L

Completes Table 1 correctly and Table 2 mostly correctly.

M

Completes Table 1 correctly and Table 2 mostly correctly.

N

Completes Table 1 correctly and Table 2 mostly correctly.

O

Completes Table 1 correctly and Table 2 mostly correctly.

P

Completes Table 1 correctly and Table 2 mostly correctly.

Q

Completes Table 1 correctly and Table 2 mostly correctly.

R

Completes Table 1 correctly and Table 2 mostly correctly.

S

Completes Table 1 correctly and Table 2 mostly correctly.

T

Completes Table 1 correctly and Table 2 mostly correctly.

U

Completes Table 1 correctly and Table 2 mostly correctly.

V

Completes Table 1 correctly and Table 2 mostly correctly.

W

Completes Table 1 correctly and Table 2 mostly correctly.

X

Completes Table 1 correctly and Table 2 mostly correctly.

Y

Completes Table 1 correctly and Table 2 mostly correctly.

Z

Completes Table 1 correctly and Table 2 mostly correctly.

Communicating

Communicates thinking and reasoning using clear mathematical working and explanation.

Reflecting

Provides consistently good examples of mathematics in task context and for new situations.

Knowledge and

**understanding
Thinking and
reasoning**
Completes Table 1
correctly and has
some success in
Table 2.

Knowledge and

Understanding
Thinking and reasoning
Uses appropriate strategies to generate mostly correct solutions. In Q 5 student has incorrect answer but has demonstrated an appropriate strategy.

B 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



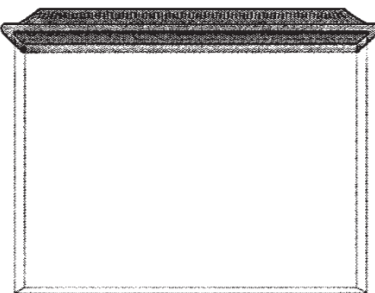

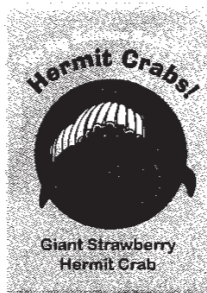
To pay for a hermit crab project a class may have to plan a fundraising stall.

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

- They would have to figure out
the change and cost

B 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.

$$\begin{array}{r}
 25 \\
 + 25 \\
 + 3 \\
 + 18 \\
 + 3 \\
 + 6 \\
 \hline
 \$80
 \end{array}$$

Total cost: **\$80**

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B 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.

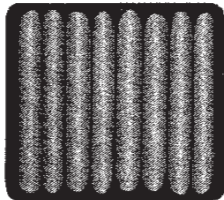


Each sausage in bread will be sold for \$1.00.

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.

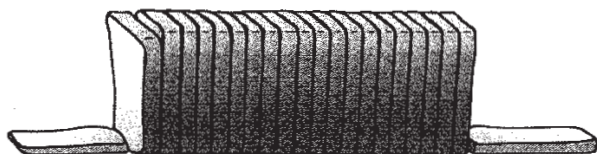
Show your working.

XXXXXXX	XXXXXXX
XXXXXXX	XXXXXXX
XXXXXXX	XXXXXXX
XXXXXXX	XXXXXXX
XXXXXXX	XXXXXXX

.....11..... packs

B 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.

$$\begin{array}{r} 20 \\ + 20 \\ 20 \\ \hline 20 \\ \hline 80 \end{array}$$

44 loaves

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

Show your working.

$$\begin{array}{r} 3 \\ \cancel{8}10 \\ - 6 \\ \hline \$74 \end{array}$$

\$74

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B 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	11:25 am	20 minutes	11:45 am

If needed, do
your working here.

B 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		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

//

B 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.

B Sample: Response 2

Show your working.

$$\begin{array}{r} 2 \\ \$1.50 \\ \$2.00 \\ \$2.50 \\ \$1.50 \\ \$2.50 \\ \hline 10.00 \end{array}$$

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

I added the numbers together
but it didn't work. So
I tried different colours
and it worked.

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

B Sample: Response 2

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



For each sentence choose a new situation.



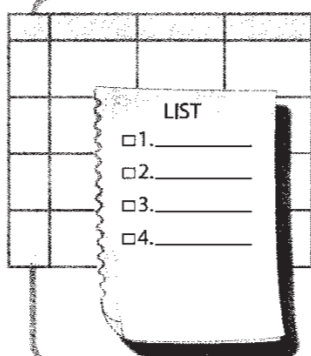
If I can add up money correctly,

I will be able to work out
the correct change.

Student	Start time	Duration	Finish time
Karl	11.45 am	20 minutes	
Sam	12.05 pm	10 minutes	
John	12.25 pm	20 minutes	
Ali		10 minutes	1.0 pm

If I can read a timetable,

I will be able to find out
I have music



If I can organise information into a table or list,

I will be able to get the
correct things from
the shops.