

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.

C samples

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# C 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 Tip</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>
A	B	C	

### Overall grade

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

### Knowledge and understanding Thinking and reasoning

Appropriate strategies are sometimes used to generate correct solutions in Q 3, 7 and 10. In Q 6 the sample has an incorrect answer but the student has demonstrated an appropriate strategy to generate a possible solution.

### Knowledge and understanding Thinking and reasoning

Table 1 has two answers correct and there is some success in Table 2.

### Reflecting

Identifies some relevant examples of how mathematics is used in the project and demonstrates some understanding of how mathematics can be applied in new situations.

### Communicating

Mathematical working or explanation are appropriate but lack detail.

## C 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 shop because its  
cheap

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?


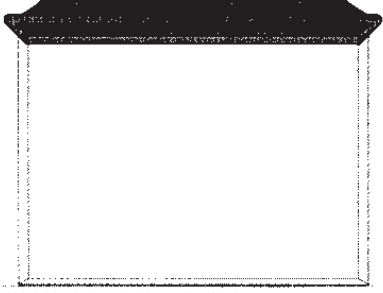

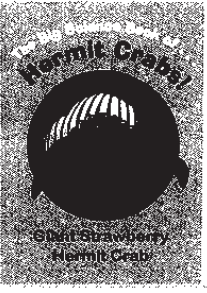
- with using the price tags
- and how much change to give back and the right amount of money with a calculator.

## C 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.

$$\$25 + \$25 + \$18 + \$3 + \$3 + \$6 = \$80$$

Total cost: \$ 80

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

## C 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.

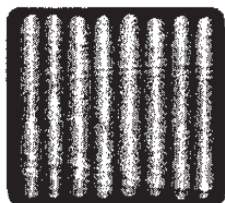


Each sausage in bread will be sold for \$1.00.

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.

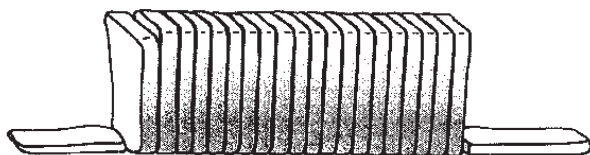
Show your working.

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

.....64. .... packs

## C 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.

$$20 + 20 + 20 + 4 = 64$$

.....6..... 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.....

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

## C 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.



## C 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	
11:15 am – 11:30 am				X

If needed, do  
your working here.

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

//

## C 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.

**\$1.50**    **blue**

**\$2.50**    **yellow**

**\$3.50**    **grey**

**\$2.00**    **red**

**\$2.00**    **green**

**\$2.50**    **purple**

**\$3.50**    **brown**

**\$1.50**    **black**

**\$2.50**    **pink**

!

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

## C Sample: Response 1

Show your working.

$$250 + 150 + 200 + 250 + 150 =$$

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

because if cheap prices you  
can buy more but if you  
buy expensive things you don't  
get lots.

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

## C 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 ...add the...  
...Sausages for the party.

Student	Start time	Duration	Finish time
Neil	11:42 am	20 minutes	
Sam	12:00 pm	10 minutes	
John	12:20 pm	20 minutes	
Aliq		10 minutes	1:00 pm

If I can read a timetable,

I will be able to know which...  
...Friends can come.


LIST

☐ 1. \_\_\_\_\_

☐ 2. \_\_\_\_\_

☐ 3. \_\_\_\_\_

☐ 4. \_\_\_\_\_

If I can organise information into a table or list,

I will be able to ...make a...  
...time table for the  
...Party.

## C Sample: Response 2

### Overall grade

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

### 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.	A
<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
				C
				D
				E

#### Knowledge and understanding Thinking and reasoning

Appropriate strategies used to generate a possible solution for Q 3 and 5. Based on incorrect answer in Q 3 answers for Q 6 and 7 are correct.

#### Knowledge and understanding Thinking and reasoning

Table 1 has two answers correct and there is some success in Table 2.

#### Reflecting

Some statements relate to mathematics.

#### Communicating

Demonstrates appropriate mathematical working. Explanation of thinking and reasoning requires greater mathematical detail.

## C 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 the shops and ask the

.....

.....

.....

.....


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?**


- Right down on the computer the amount of
- Money they gave you and then Press take away
- .....
- .....

## C Sample: Response 2

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




Giant strawberry hermit crab  
\$25.00 each




Salt

Hermit crab salt  
\$3.00




Plastic carry-cage  
\$18.00



Food

Hermit crab food  
\$3.00 per bag



The Big Science Book of...

Pet book  
\$6.00

Show your working.

$$\begin{array}{r}
 25.00 \\
 + 25.00 \\
 + 18.00 \\
 + 6.00 \\
 + 3.00 \\
 + 3.00 \\
 \hline
 \$70
 \end{array}$$

Total cost: \$70.....

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

## C 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.

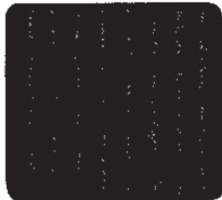


Each sausage in bread will be sold for \$1.00.

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

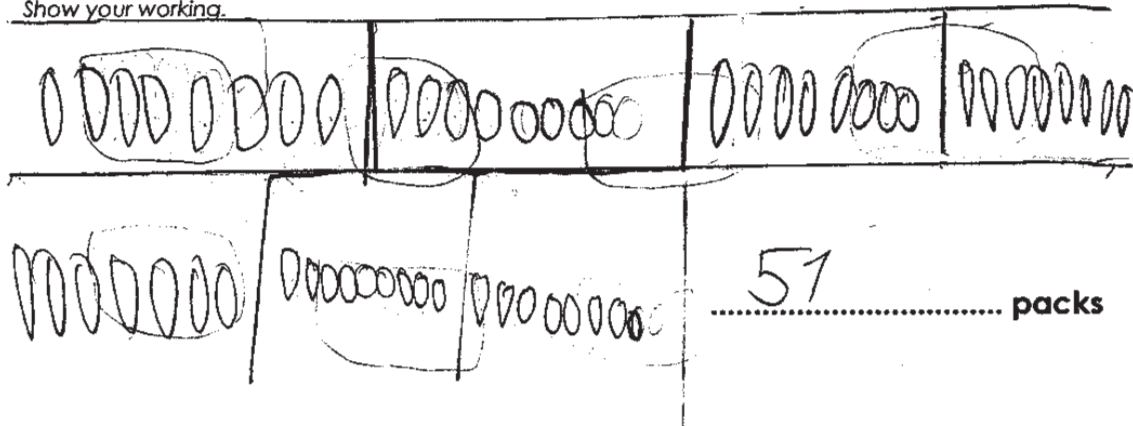
70 ..... sausages in bread

5. How many packs of sausages will be needed?



Sausages come in packs of 8.

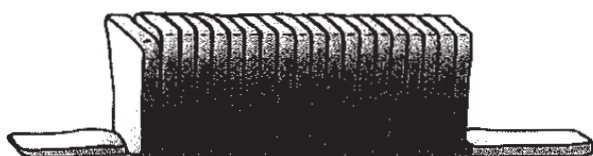
Show your working.





## C 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.

\$64

.....

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

## C 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	11:30 am	20 minutes	11:45 am

If needed, do  
your working here.

## C 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	
11:15 am – 11:30 am			X	X

If needed, do  
your working here.

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

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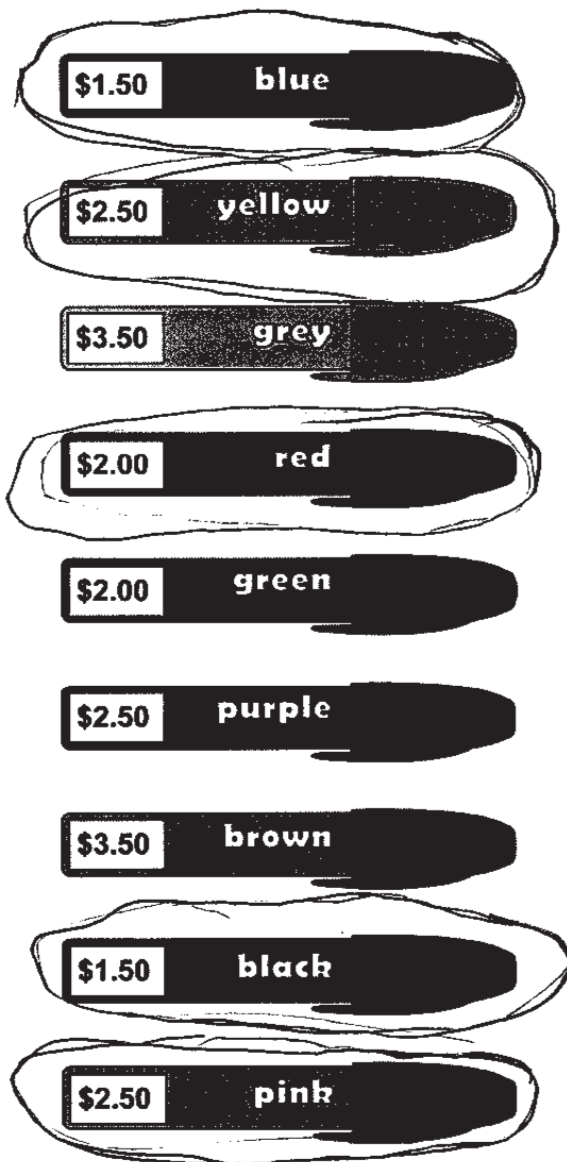
**C Sample: Response 2****Spending the money**

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.

**C Sample: Response 2**

Show your working.

$$\begin{array}{r} \$1.50 \\ +1.50 \\ \hline \$3.00 \end{array}$$

$$\begin{array}{r} \$2.50 \\ +\$2.50 \\ \hline \$5.00 \end{array}$$

$$\begin{array}{r} +2.00 \\ \hline \$5.00 \end{array}$$

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

I added all my numbers together and got an  
answer.

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

## C Sample: Response 2

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



For each sentence choose a new situation.



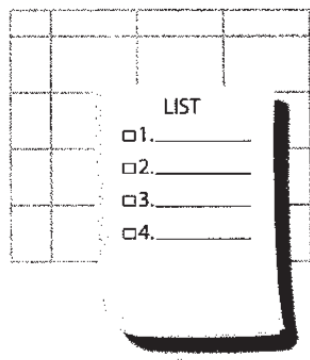
If I can add up money correctly,

I will be able to ... Plan what i could  
buy at the shops.

Students	Start time	Duration	Finish time
Neil	11:45 pm	30 minutes	12:15 pm
Sam	12:01 pm	15 minutes	12:16 pm
John	12:25 pm	20 minutes	12:45 pm
Ang	12:45 pm	10 minutes	1:00 pm

If I can read a timetable,

I will be able to ... Make one



If I can organise information into a table or list,

I will be able to ... Make one