QCATs
Queensland Comparable Assessment Tasks
4
2009
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.

E samples

Queensland Government
Queensland Studies Authority
Partnership and innovation

## Contact information:

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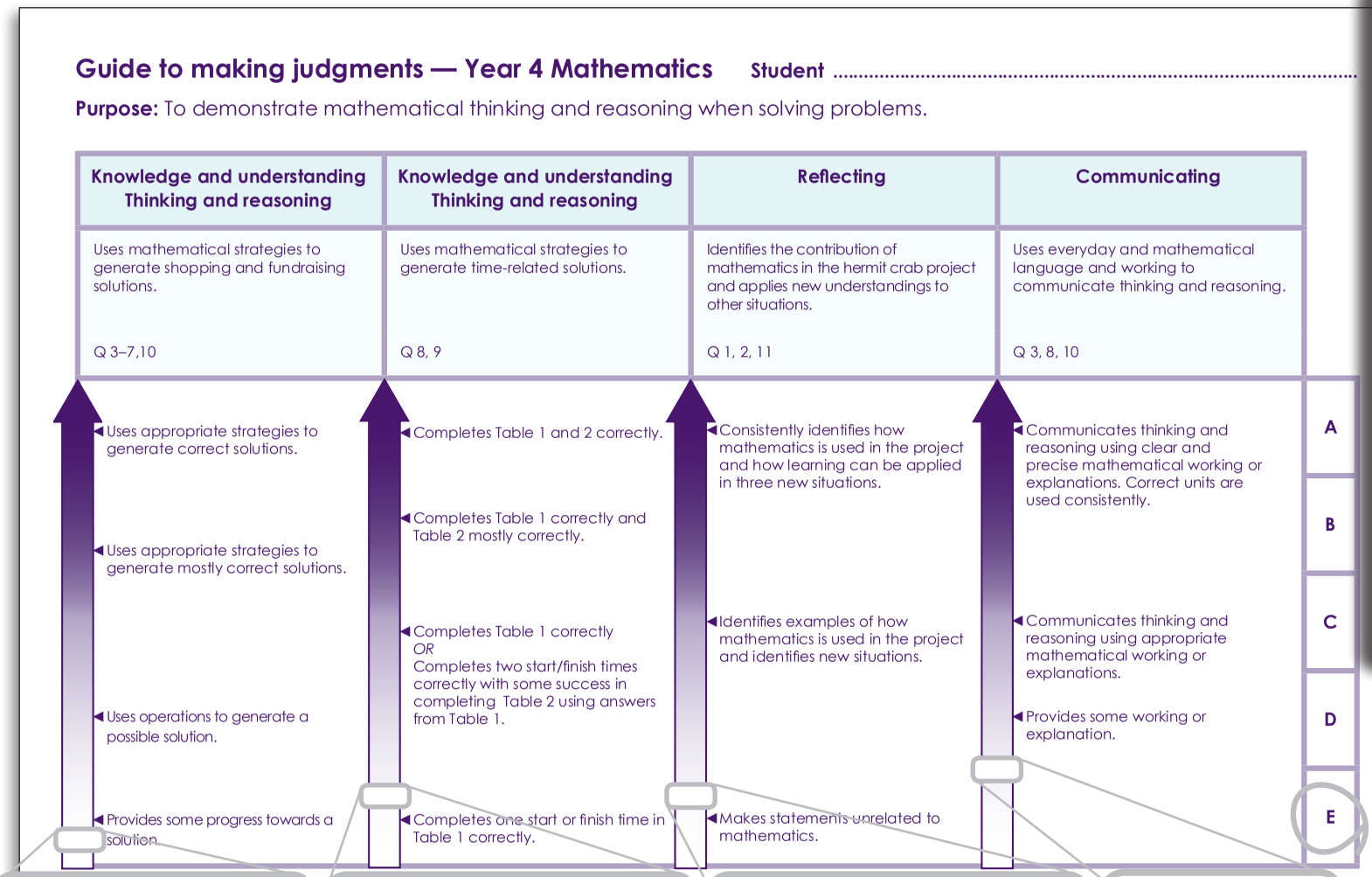
# E Sample: Response 1



## 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. | A |
| Uses appropriate strategies to generate mostly correct solutions. | Completes Table 1 correctly and Table 2 mostly correctly. | | | B |
| Uses operations to generate a possible solution. | Completes Table 1 correctly OR Completes two start/finish times correctly with some success in completing Table 2 using answers from Table 1. | Identifies examples of how mathematics is used in the project and identifies new situations. | Communicates thinking and reasoning using appropriate mathematical working or explanations. | C |
| Provides some progress towards a solution. | Completes one start or finish time in Table 1 correctly. | Makes statements unrelated to mathematics. | Provides some working or explanation. | D |
| | | | | E |

**Overall grade**
The purpose of this QCAT is for students to demonstrate mathematical thinking and reasoning when solving problems. This response demonstrates a very 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 E.

**Knowledge and understanding Thinking and reasoning**
Provides some progress towards a solution in Q 3 and Q 10.

**Knowledge and understanding Thinking and reasoning**
Table 1 has no answers correct. Based on responses in Table 1, the responses in Table 2 are incorrect.

**Reflecting**
The response to Q 2 has a direct mathematical relationship, although very little detail is provided. In Q 11, two responses relate to new situations but lack detail.

**Communicating**
Provides minimal working and explanation, or none in some cases.

# E 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?**

phone

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

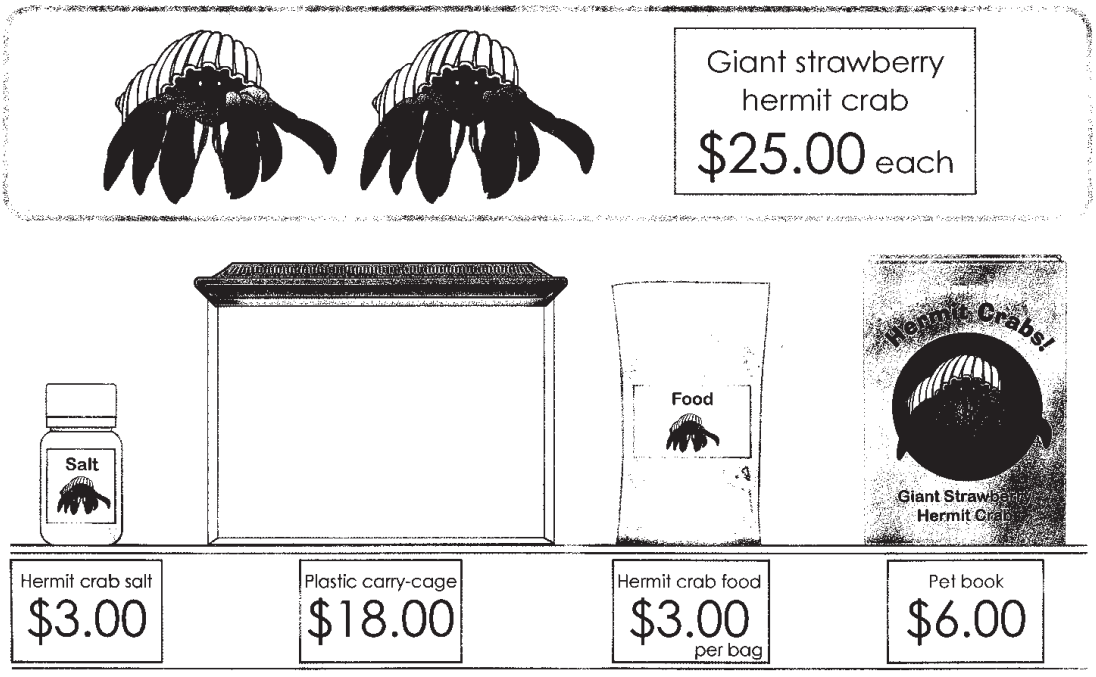
2. **How would you use mathematics when serving customers at a fundraising stall?**

- money count

4

# E Sample: Response 1

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




*Show your working.*

25
6
3
10
---
47

**Total cost: .....**

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

7

# E Sample: Response 1

## Organising a fundraising stall

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

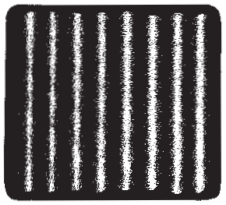
The sausages, bread and sauce have been given to the class by a parent for free.

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?**

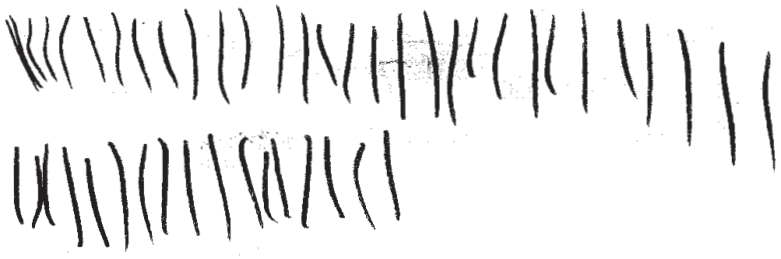
.....1..... **sausages in bread**

**5. How many packs of sausages will be needed?**



Sausages come in packs of 8.

*Show your working.*

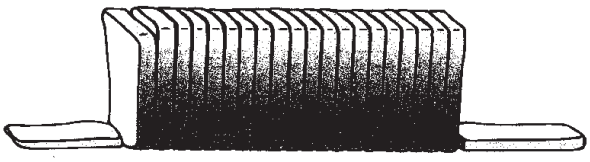


..... **packs**

8

# E 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.*

8 **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**

9

# E 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 |
| **Jake** | 11:10 am | 25 minutes | 11:45 |
| **Meg** | 12:10 | 20 minutes | 11:45 am |

*If needed, do your working here.*

10

# E Sample: Response 1

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

**9. In Table 2, cross ✕ 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 | ✕ | | | ✕ |
| 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**

11

# E Sample: Response 1

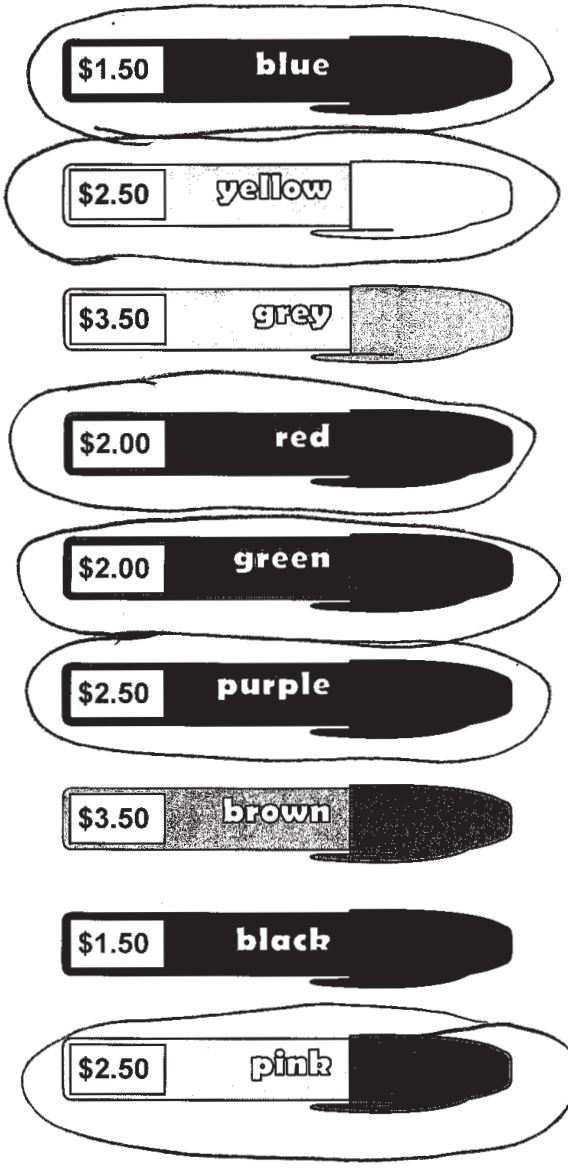
## Spending the money

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.

12

# E Sample: Response 1

*Show your working.* 1.50 2.50 200 2.50
2.50

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

colrs

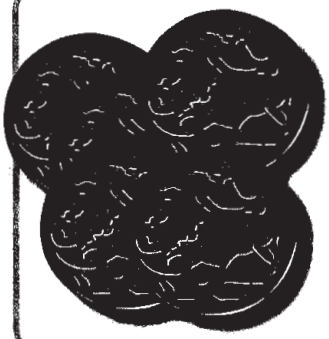
**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

13

# E Sample: Response 1

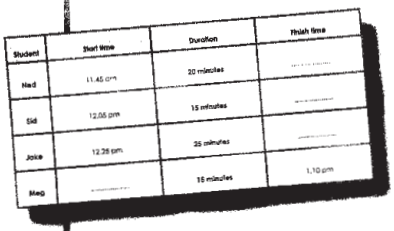
**11. Complete each sentence to show how you can use mathematics in other situations.**

For each sentence choose a new situation.



If I can add up money correctly,

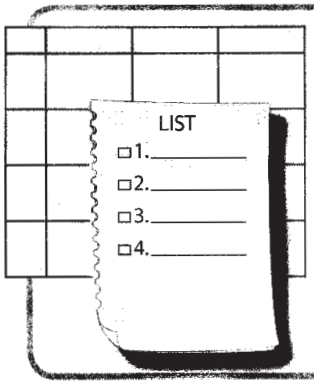
I will be able to ~~buy~~ ~~wtit~~ go bank



| Student | Start time | Duration | Finish time |
|---|---|---|---|
| Ned | 11.45 am | 30 minutes | ..... |
| Sid | 12.05 pm | 15 minutes | ..... |
| Joice | 12.25 pm | 25 minutes | ..... |
| Meg | ..... | 15 minutes | 1.10 pm |

If I can read a timetable,

I will be able to watch tv




If I can organise information into a table or list,

I will be able to .....

15

# E Sample: Response 2

## 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.<br>Q 3–7,10 | Uses mathematical strategies to generate time-related solutions.<br>Q 8, 9 | Identifies the contribution of mathematics in the hermit crab project and applies new understandings to other situations.<br>Q 1, 2, 11 | Uses everyday and mathematical language and working to communicate thinking and reasoning.<br>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. | A |
| Uses appropriate strategies to generate mostly correct solutions. | Completes Table 1 correctly and Table 2 mostly correctly. | | | B |
| Uses operations to generate a possible solution. | Completes Table 1 correctly<br>*OR*<br>Completes two start/finish times correctly with some success in completing Table 2 using answers from Table 1. | Identifies examples of how mathematics is used in the project and identifies new situations. | Communicates thinking and reasoning using appropriate mathematical working or explanations.<br>Provides some working or explanation. | C<br>D |
| Provides some progress towards a solution. | Completes one start or finish time in Table 1 correctly. | Makes statements unrelated to mathematics. | | E |

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

**Knowledge and understanding Thinking and reasoning**
Provides some progress towards a solution in Q 3.

**Knowledge and understanding Thinking and reasoning**
Table 1 and 2 have no answers correct.

**Reflecting**
Most statements are unrelated to mathematics.

**Communicating**
Provides minimal working and explanation, or none in some cases.

# E 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?**

nic peple

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

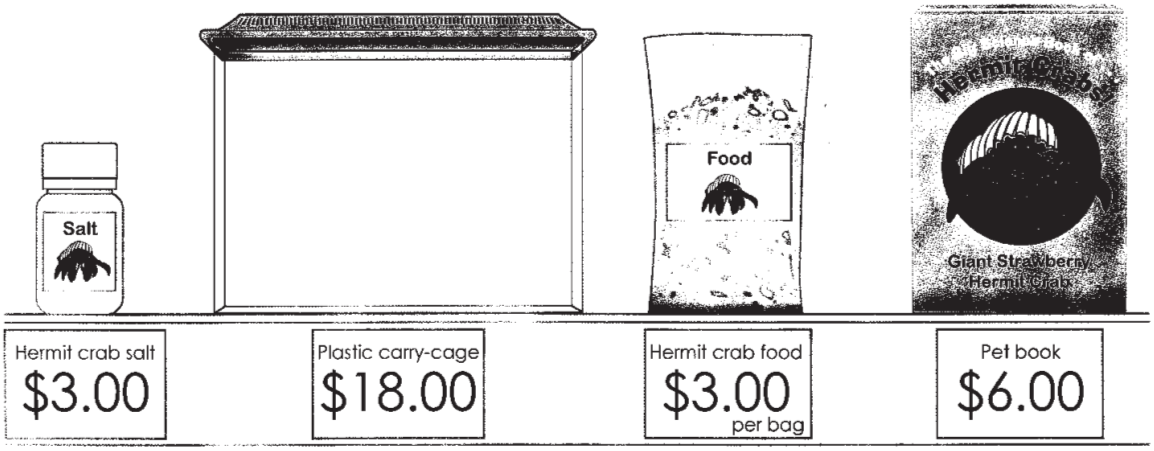
2. **How would you use mathematics when serving customers at a fundraising stall?**

- helo
- buy

4

# E Sample: Response 2

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


*Show your working.*

6+3+18+3+28

**Total cost: .....**

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

**7**

# E Sample: Response 2

## Organising a fundraising stall

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

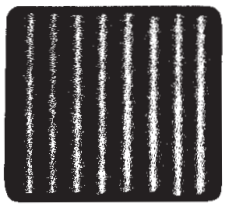
The sausages, bread and sauce have been given to the class by a parent for free.

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?**

.....28..... **sausages in bread**

**5. How many packs of sausages will be needed?**



Sausages come in packs of 8.

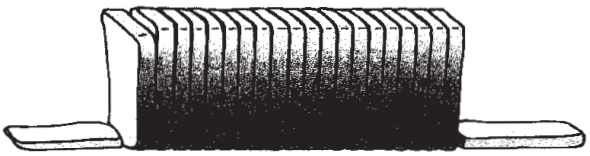
*Show your working.*

.....8..... **packs**

8

# E 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.*

..... **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**

9

# E 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 | 10:00 |
| **Jake** | 11:10 am | 25 minutes | 12 |
| **Meg** | 11 | 20 minutes | 11:45 am |

*If needed, do your working here.*

*10*

# E Sample: Response 2

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

**9. In Table 2, cross ✕ 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 | ✕ | | | |
| 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**

11

# E Sample: Response 2

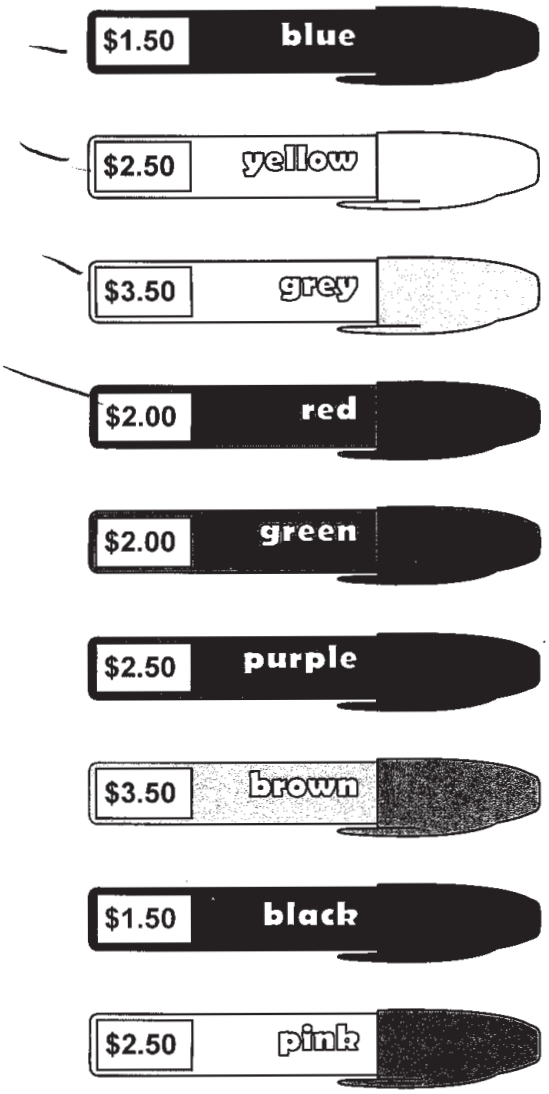
## Spending the money

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.

12

# E Sample: Response 2

*Show your working.*

blue
yellow
grey
red

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

cntd

.....

.....

.....

.....

.....

.....

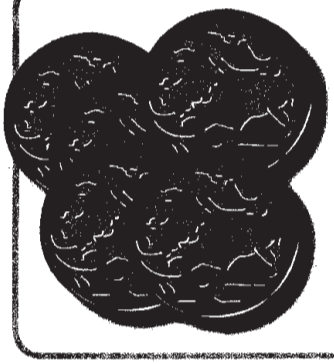
**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

13

# E Sample: Response 2

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

For each sentence choose a new situation.

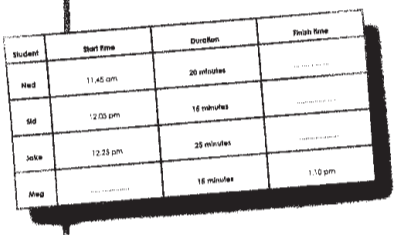


If I can add up money correctly,

I will be able to ....spnd.....

.....

.....



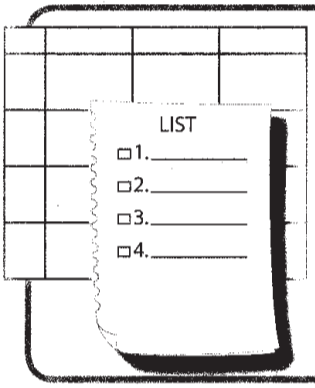
| Student | Start time | Duration | Finish time |
|---|---|---|---|
| Ned | 11.45 am | 20 minutes | ..... |
| Sid | 12.05 pm | 15 minutes | ..... |
| Jake | 12.25 pm | 25 minutes | ..... |
| Meg | ..... | 15 minutes | 1.10 pm |

If I can read a timetable,

I will be able to .....shop.....

.....

.....




If I can organise information into a table or list,

I will be able to .....shop.....

.....

.....

15