

4

MATHEMATICS

STUDENT BOOKLET



Hermit crabs

Given name:

Family name:

School:

Setting the scene: Group discussion

Giant strawberry hermit crabs make great pets. They are easy to care for and interesting to watch.

Hermit crabs can make an interesting class project.

Students care for hermit crabs by feeding them special food, giving them clean water and cleaning the carry cages.

The carry cages can be used to take the hermit crabs home each night.

Image: Adapted from Hermit crab, a Creative Commons Attribution 2.0 generic licensed photo from Vonlohmann's Flickr stream, accessed 12 Jan, 2009, <<http://flickr.com/search/?q=crab&w=w%142941%40N00>>.



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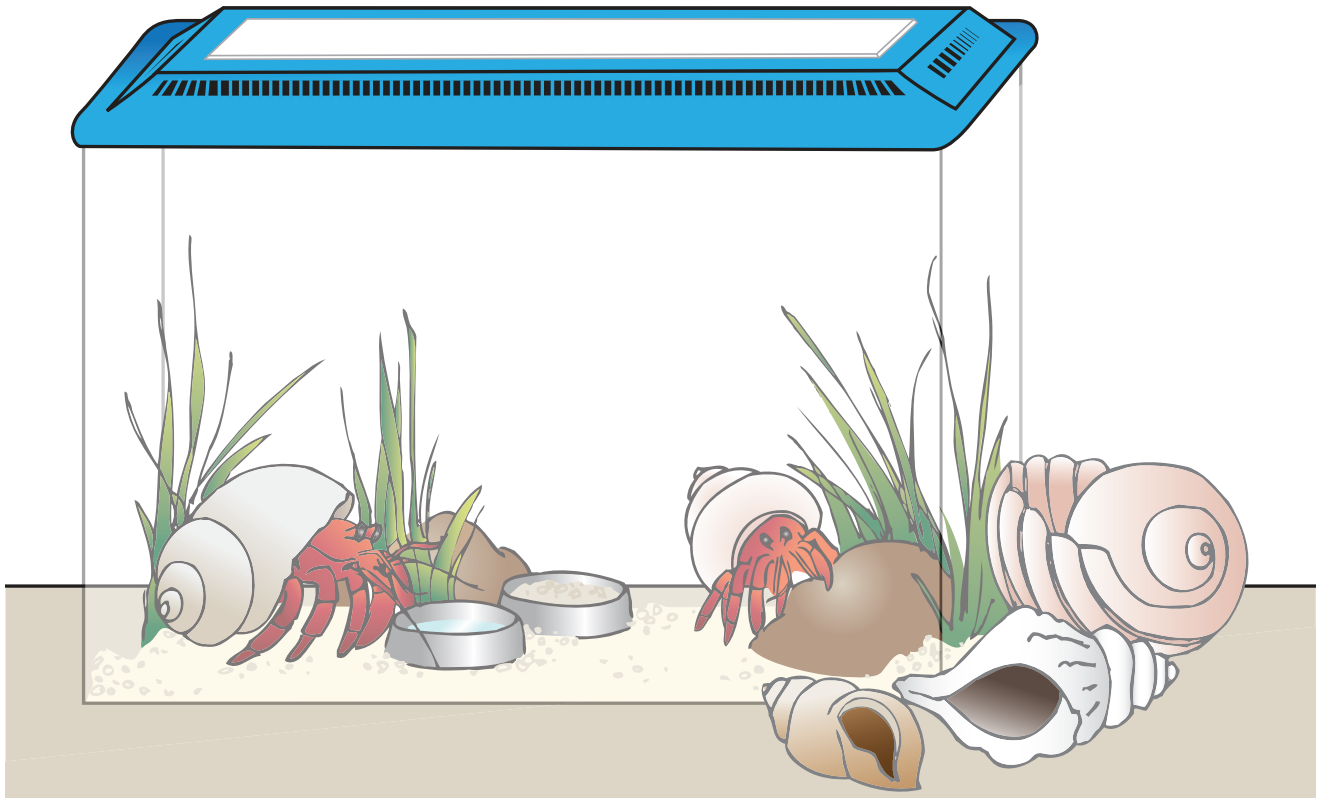
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Students also observe hermit crabs moving around their cage and record measurements as the crabs grow.

As the hermit crabs outgrow their shells, students provide them with larger shells to move into. Sometimes students enjoy painting these shells with a special type of paint.



A class would need to prepare for such a project.

Your teacher will discuss with you:

- what things are needed for such a class project
- how a class would cover the cost for such a project.

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

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?

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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?

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STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

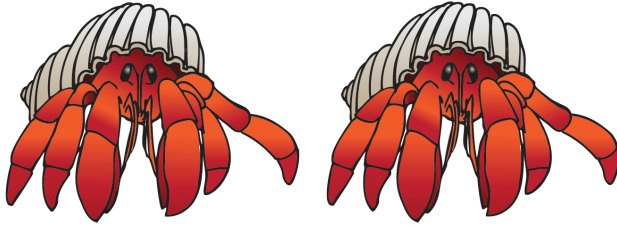
Working out the costs

This is a shopping list of the items needed to set up a hermit crab project.

SHOPPING LIST

- 2 giant strawberry
hermit crabs
- 1 plastic carry-cage
- 1 bottle of hermit crab salt
- 1 bag of hermit crab food
- 1 hermit crab pet book

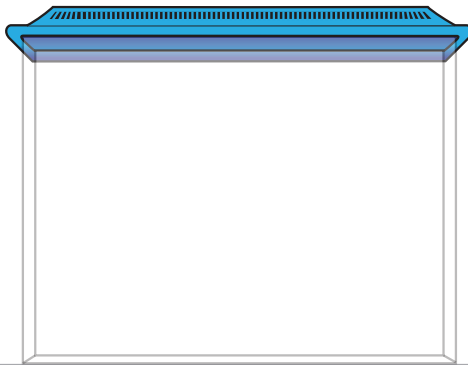
3. Work out the total cost of all the items on the shopping list.



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.

Total cost:

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

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.

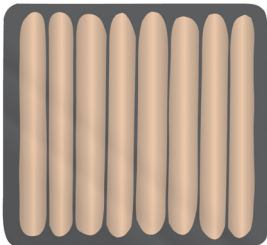


Each sausage in bread will be sold for \$1.00.

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

..... sausages in bread

5. How many packs of sausages will be needed?

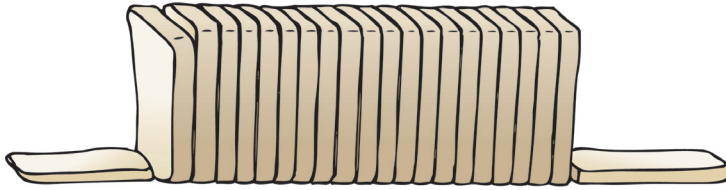


Sausages come in packs of 8.

Show your working.

..... packs

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

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	
Jake	11:10 am	25 minutes	
Meg		20 minutes	11:45 am

If needed, do your working here.

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

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.

Show your working.

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

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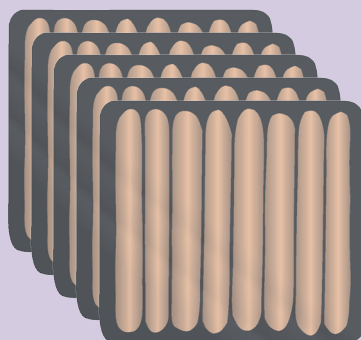
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STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

Now I can ...

In this task you have been using mathematics to solve the problems. You can use mathematics in other situations.

Example:



If I can work out how many sausages to order,

I will be able to ***plan how much food to have for a birthday party.***

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



For each sentence choose a new situation.



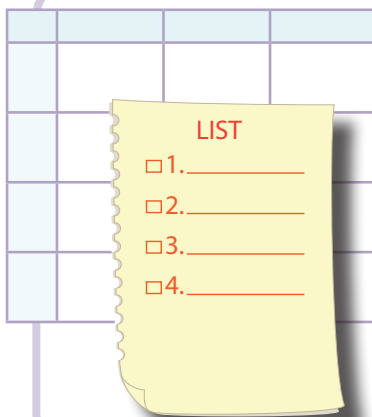
If I can add up money correctly,

I will be able to

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



If I can organise information into a table or list,

I will be able to

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 mostly correct solutions.	Completes Table 1 correctly and Table 2 mostly correctly.	Identifies examples of how mathematics is used in the project and identifies new situations.	Communicates thinking and reasoning using appropriate mathematical working or explanations.
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.	Makes statements unrelated to mathematics.	Provides some working or explanation.
Provides some progress towards a solution.	Completes one start or finish time in Table 1 correctly.		

Feedback

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