

JAMAICA

SAMPLE

PEEP

Mathematics

Performance Task

Practice Papers

GRADE

6

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How to use this book

This term you will write your final maths performance task. The information in this section and the six new practice tasks in this book are all designed to help you prepare for this task and to make sure that you know what to expect and how to answer questions so that you can do your very best.

What to expect ...

You did performance tasks in Grade 4 and Grade 5. The Grade 6 performance task will be similar. That means:

- You will have to answer questions about a topic from everyday life.
- There will be four or five parts to the task.
- Information that you need to answer the questions will often be given in words, tables and diagrams, so you need to read these carefully.
- Some questions will be open-ended. That means there is more than one right answer, and you are asked to make decisions and show what you think the answer is.
- You will get credit for showing your ideas and your working out even if you do not have the correct answers.

Performance tasks are different to multiple choice curriculum tests or ability tests. The aim is for you to apply what you know and use your reading, maths and thinking skills to answer the questions. To get a good result, you must show clear evidence of your learning. You cannot just guess the answer or circle the correct choice.

Your performance task will be done in class at a specific time. You must finish it in class and you cannot take it home to complete it.

How can you prepare for a performance task?

You cannot study for a performance task in the same way that you might study for a maths test. This is because you do not know beforehand what topics will be covered in the task or what you are going to be asked to do. What you do know is that the task will focus on things you have already learned. You will not be expected to do any unfamiliar maths.

Even though you do not need to study for a performance task, there are many things that you can do to prepare yourself and make sure you do well.

Set realistic goals

Think about what you would like to achieve. Your work will be assessed and rated using a four-level scale.

1 Beginning	2 Developing	3 Proficient	4 Highly proficient
Answers show no evidence or very little evidence that the student understands the concepts.	Answers show some evidence that the student partly understands the concepts.	Answers show that the student is competent and understands most of the concepts.	Answers show that the student understands all the concepts very well and may have found the task quite easy.

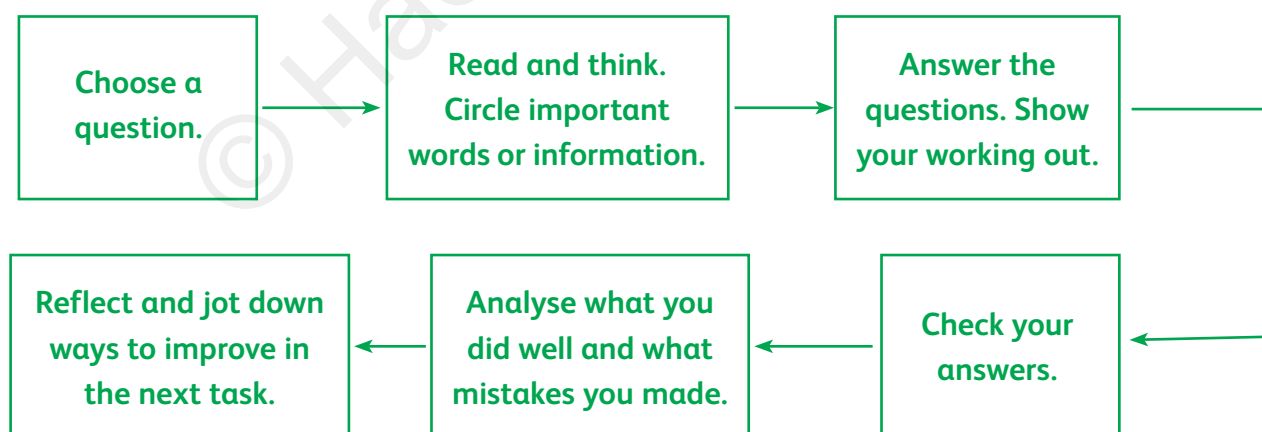
Ideally, you should aim to be rated 3 or 4 on the task.

Revise by working through model tasks

There are six model tasks in this book. You can use these to prepare for your in-school performance task.

- Work through the task on your own or with a partner. Remember that working in pairs or groups can help you learn.
- Check your own answers.
- Reflect on your work. Identify what you did well and which areas you need to improve. Decide what you will do to make the improvements you need.

The flow diagram shows the process of revising using the model tasks.



When you are preparing, you do not need to work through the entire task at one time, you can do one or two questions. It is important to try to do at least one whole task to help you develop good techniques.

Developing good techniques

Practice tasks can help you develop some good techniques for managing your in-class tasks. These include:

- managing your time
- breaking down the task into manageable pieces
- reading and making sense of questions and what you need to do
- choosing suitable strategies for different types of questions
- developing clear ways of showing your working out and thinking
- writing your answer clearly so that it makes sense.

Practicing and learning how to manage tasks can also help you feel less anxious and pressurised because you are prepared and you know how to work through any type of task.

Well-being tips

Stress and pressure can affect your performance and, if you are tired, you are more likely to make careless mistakes. It is important that you take good care of yourself and that you eat well and exercise while you are preparing for tasks and tests.

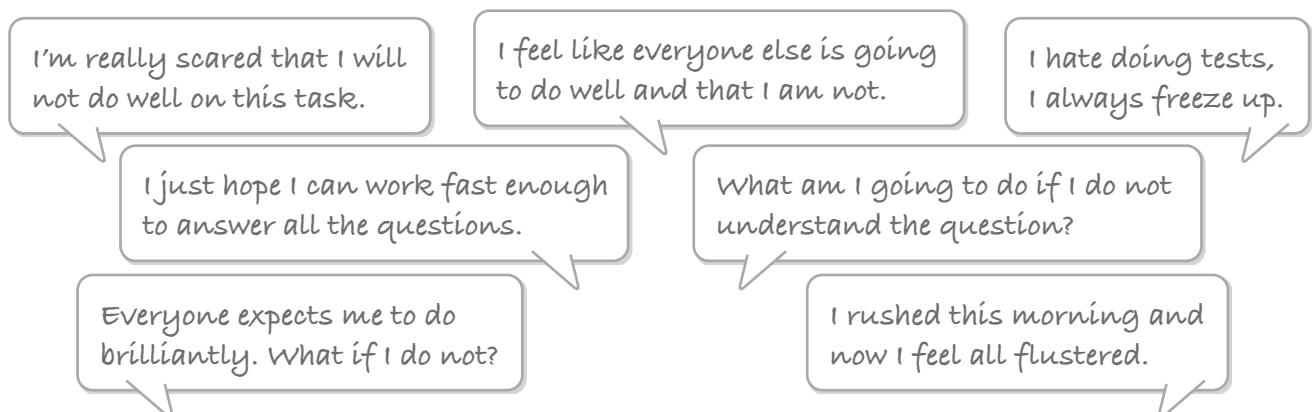
The night before a task or test, try to get a good rest.

Get up on the morning of the test and get ready for the day. Have a healthy breakfast and make sure you are organised and that you have the things you will need (pencil, ruler, eraser and calculator).

Try to get to school on time so you do not need to rush.

Stay positive and remember that you are well-prepared and that you know what is expected.

Read these thoughts. Do you ever think like this?



When you feel anxious or stressed out, you can try a technique called box-breathing. Fire-fighters and other emergency workers use this technique to help them remain calm in difficult situations.

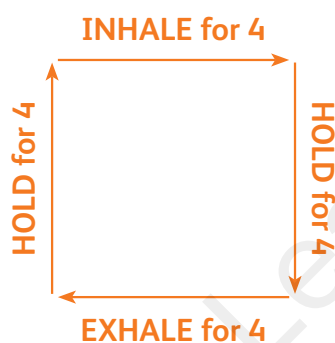
Step 1: Breathe in, counting to four slowly. Feel the air enter your lungs.

Step 2: Hold your breath for four seconds. Try to avoid inhaling or exhaling for four seconds.

Step 3: Slowly exhale through your mouth for four seconds.

Step 4: Wait four seconds before inhaling again.

Repeat the steps till you feel calm.



Tips for answering questions

Here are some general guidelines for answering questions in your performance task and other tests.

Before the task ...

Listen carefully to all instructions from your teacher.

Take note of how long you have and jot down what time you need to finish.

Double check that you have the equipment you need.

Ask questions if anything is unclear.

Getting started ...

Skim read all the questions before you start.

Decide on the order in which you will answer the questions.

Work carefully and systematically.

Write your answers in the spaces provided.

Making sense of the questions ...

Take time to understand the question.

Look for maths terms and remember what they mean.

Find details in the problem and circle or highlight them.

Plan how you will answer it (strategy).

Work out the answer, showing all steps.

Check your answer by reading the question again.

Why is it important to show your working out?

Read these students' answers for each part of the question.

Both students have the wrong answers, but Nadia gets a better grade than Annika because the teacher can see some evidence that Nadia understood the question and that she used the correct methods, even though she got the answers wrong.

A taxi travels 380 km in five hours.

a What is its speed in km/hr?

Nadia	Annika
$\text{Speed} = \text{distance} \div \text{time}$ $380 \div 5 = 75 \text{ km/hr}$	75

b How long would it take the taxi to travel 532 km at this speed?

$\text{Time} = \text{distance} \div \text{speed}$ $532 \text{ km} \div 75 = 7.09$ It will take 7 hours and 9 minutes	About 7 hours
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Different questions need different types of answers

When you read through the task, you will have to decide for yourself how to answer each question and each part of a question.

This section gives you some guidelines on answering different types of questions.



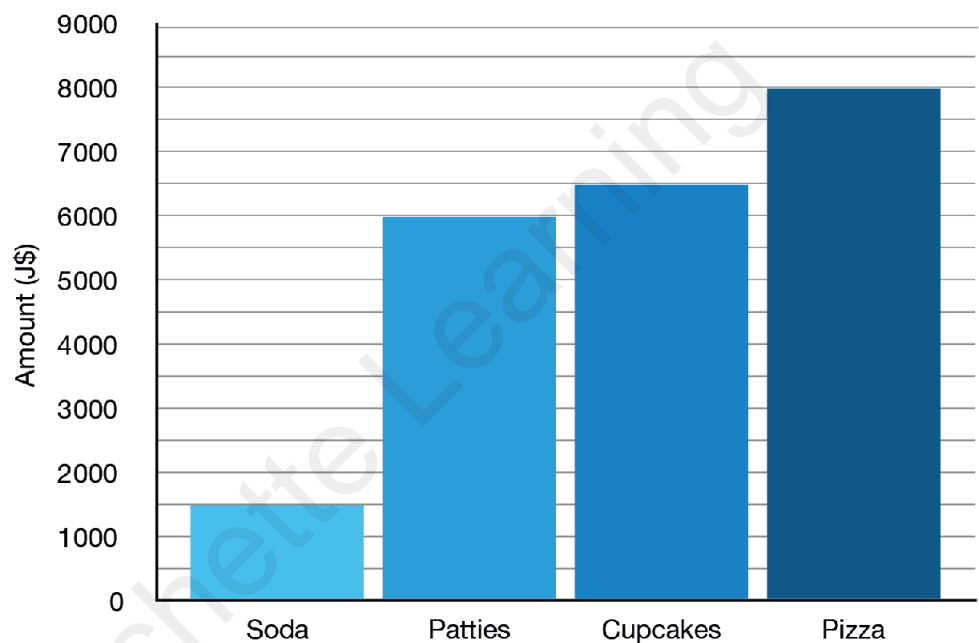
Remember to start by reading the task carefully.

You will see that some questions are quite simple, and you can answer by writing and showing a calculation. Others are more complex, and you need to show different steps in the process.

Performance task: Planning a class party

Class 6 is going to have a party. The bar graph shows the amount they have budgeted for different party items.

Budget for class party



This tells you that you will need to use the bar graph to find the answers.

Use information from the bar graph to complete the task.



These amounts come from the graph. You need to add them all up to find the total amount budgeted.

Always write the answer.

- 1 How much money did the class budget for the party? Show how you worked out the answer.

$$\$1\,500 + \$6\,000 + \$6\,500 + \$8\,000 = \$22\,000$$

The class budgeted \$22 000 for the party.

- 2 There are 24 students in the class. The teacher wants to buy one cupcake for each student.

- 4 The teacher thinks that three medium pizzas will be enough for the party. The class find out the prices of pizzas from four different pizza places.

Pizza prices (medium)			
Pizza Mania	\$2 550	Mama's Pizza	\$2 620
Pizza Palace	\$2 790	Little Dom's	\$2 690



You are being asked for a recommendation and there is more than one correct answer. Show clearly how you think about the problem.

- a Which pizza would you recommend they buy? Why?

They have \$8 000 for pizza.

$$\$8\,000 \div 3 = \$2\,666.67$$

The most they can spend is \$2 666.67 per pizza, so they should buy from Pizza Mania or Mama's Pizza because those are both within their budget. They should choose the one that is closest to them.



This is also an open-ended question, and you have to think creatively and use what you have already worked out to solve it.

- b Some students want to order from Pizza Palace because the pizzas there are very cheesy. How could they do this without going over the class budget?

Three pizzas from Pizza Palace would be

$$3 \times \$2\,790 = \$8\,370$$

This is \$370 more than they have in the pizza budget. They spent less than they budgeted on cupcakes and patties, so they have \$380 left over from those items. That is enough to cover the cost of the pizza.

The class could also buy fewer bottles of soda. They only need 24 cups of soda, which is 6 litres, so if they only buy 3 × 2-litre bottles of soda, they would spend \$900 and have \$600 over to add to the pizza budget.

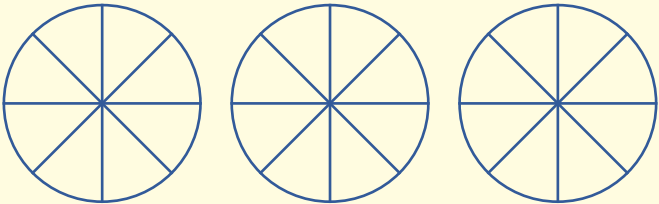


Give clear reasons, with numbers, where possible. Try to think of more than one way to do this.

- c Show how you could share the three pizzas so that each student gets an equal share. What is each student's share?

$$\frac{3 \text{ pizzas}}{24 \text{ students}}$$
$$3/24 = 1/8$$

Pizza 1 Pizza 2 Pizza 3



$24 \div 3 = 8$, we need 8 slices from each pizza.
Each student will get one slice which is $1/8$ of a pizza

This is a good place to show your answer as a drawing.

Remember to write the share as a fraction of a pizza.

There are more worked examples showing both good and poor answers at the end of **Practice paper 1**.

Practice paper 1

Always check that you have everything you need before you start.

This task has 3 parts:

- Part 1 has questions 1 and 2.
- Part 2 has questions 3 and 4.
- Part 3 has question 5.

You will need a calculator, a pencil and an eraser.

Answer all the questions in each part in the spaces provided.

Remember to always show your working out.

→ Before you start ...

These are some of the instruction words and phrases you will find in this task.

The instruction words have been underlined in this sample task. Think carefully about what each instruction means before you answer the question.

Calculate ...	How can you ...	Show ...
Choose ...	How does ... compare ...	
Compare ...	How many ...	Show how you ...
Decide ...	How much more ...	What fraction ...
Explain why ...	Justify ...	What is ...
Fill in ...	Round ...	Work out ...

Colour the words to match what you need to do for each.

● Recalling information	■ Skills and concepts	▲ Strategic thinking	★ Extended thinking
Remember a fact or way of calculating what you have learned and write it down. There is one correct answer.	Use your skills and what you know to make decisions about what to do and how to do it. There is one correct answer.	Explain your thinking and give reasons for your answers. There are different answers and different ways to find the answers.	Plan, think and put ideas together to solve a problem. There are many possible answers and ways of solving the problem.

Part 1

The smoothie store

Super Smoothies has this information on display in the store.

Read all the information on the poster. You will need to find information about sizes and prices so you can answer the questions.

SUPER SMOOTHIES

FAB FLAVOURS

- very Berry
- Mango Madness
- Green Goodness
- Papaya Power
- Pine + Ginger

Join us for \$50 off Fridays
max 4 per customer

Add a scoop of sorbet \$75



350 ml \$700



500 ml \$850

OPEN: Mon–Fri 9 a.m.–6 p.m. Sat + Sun 9 a.m.–9 p.m.

Question 1

Use the information on the poster. Write a number sentence to show how you work out each answer.

- a What is the difference in the size of the two smoothies?



What operation do you need to find the difference?



This is another way of asking you to find a difference.

- b** How much more expensive is the large smoothie compared with the medium?



How does a shop work out what you need to pay?

- c** If you buy two medium smoothies and add a scoop of sorbet to one of them, how much will you pay?



Why does this question refer to a Friday? Look back at the poster to check.

- d** If you buy five large smoothies on a Friday, how much will you pay?



Where will you find the numbers you need to do the calculation?

- e** The table shows the number of smoothies sold each day last week at Super Smoothies.

Day	Number sold
Mon	42
Tues	38
Wed	45
Thu	41
Fri	68
Sat	72
Sun	65

What is the mean (average) number of smoothies sold per day? _____



Choose any smoothie price (e.g. medium at \$7.00).
 Calculate the cost of 4 smoothies with the holiday deal.
 Calculate the cost of 4 smoothies on \$50 off Friday.
 Which total is lower?

- f During the school holidays, Super Smoothies offers a special deal. If you buy four smoothies, you get the cheapest one at $\frac{1}{2}$ price. Jerome says you can pay less for four smoothies if you buy them on \$50 off Friday.

Compare the two offers. Decide whether Jerome is correct or not. Explain your answer and show the calculations you used to make your decision.

Question 2

Super smoothies uses these ingredients to make a medium Mango Madness smoothie.



Mango Madness

- 100 g mango
- 50 g pineapple
- 100 g banana
- 250 ml fresh orange juice



The word "what" often means you have to do a simple calculation to find the answer.

- a What fraction of the ingredients is orange juice?



Do not just write the amounts. Remember to show how you work them out.

- b** What is the ratio of mango to pineapple to banana in the smoothie?

- c** To make a large Mango Madness, they use 50% more of each ingredient. Work out how much of each ingredient they will need to make the large smoothie.

_____ mango

_____ pineapple

_____ banana

_____ orange juice



Write the medium ratio (part b).
Write the large ratio (part c).
Can they simplify to the same?
What does that show?

- d** Is the ratio of mango to pineapple to banana the same for a large smoothie? Justify your answer.

Part 2

Comparing prices

Question 3

Marcia finds this box of ready-made smoothies for sale at the local supermarket for \$1 999.



Courtney finds this box of ready-made smoothies for sale at the supermarket for \$2,000.



Remember:
 $1 \text{ kg} = 1,000 \text{ g}$.

a What is the mass of one bag of smoothies in grams?



To find the price for 1 kg, divide the total price by the total kilograms.

b What is the price per kilogram?

c Another brand costs \$1,600 per kilogram. Which brand offers a better deal?



How do you normally answer the question, "What does it mean?"

d What does "5 pre-portioned 250 g bags" mean?



There are two instructions in this question.

e What is the price per bag if you buy this box? Round your answer to the nearest dollar.



Use your own answer, even if it is not correct, and the information on the poster, to compare the prices.

f How does the price of these bags of smoothies compare with the prices at Super Smoothies?

Question 4

A customer writes a review of Super Smoothies and complains that the smoothies are too expensive. The owner of Super Smoothies writes this response to the customer review.

Super Smoothies

Hi Jamaal,

Thanks for your review. I just want to point out that we use only fresh ingredients in our smoothies and that they are actually good value for money.

Concentrated orange juice is 40% cheaper than the 100% fresh juice that we make.

Concentrated lime juice is 30% cheaper than using fresh limes as we do.

I hope that clears things up for you.

We hope to see you in store soon.

- a** The customer decides to check this. He finds out that 1 litre of orange concentrate is \$1 272 at the store. He finds out that it takes eight oranges to make 1 litre of juice and that oranges cost about \$245 each.

Fill in the missing numbers in Jamaal's calculations.

$$\text{Price concentrate} = \$1\,272$$

$$\text{Price fresh} = \underline{\hspace{2cm}} \times \$245 = \$1\,960$$

Concentrate as percentage of fresh juice

$$\$1\,272 / \$1\,960 \times \underline{\hspace{2cm}} = 64.89\%$$

That means fresh juice is only 35.11% cheaper, so the owner is wrong.



Show how you work out your answers.



You have to show **two** things here. Think carefully about how to do this before you answer.

- b** Show how the owner of Super Smoothies could be both correct and incorrect using those figures.



What fraction of a litre is 750 ml? Could this help you find the answer?

- c** The price of 750 ml of store-bought concentrated lime juice is \$265. Work out the cost per litre.



How do you compare amounts in maths? Could you use symbols?

- d** Compare this to what it would cost Super Smoothies if they make a litre of juice using fresh limes.

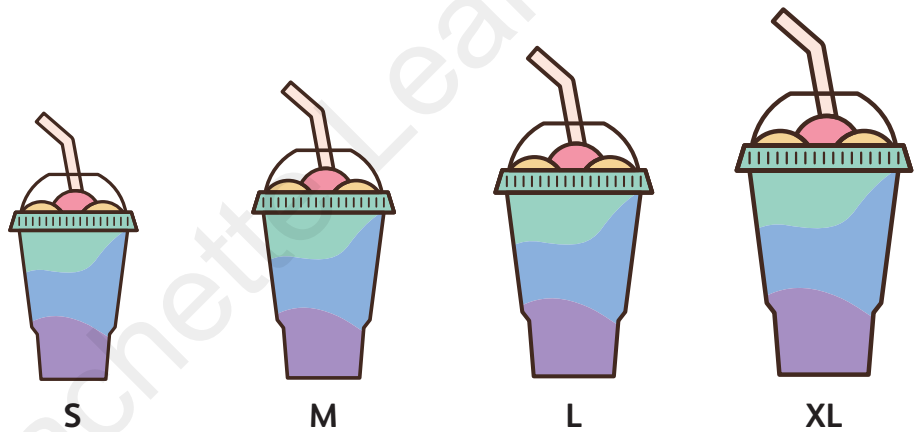
Part 3

Management decisions

Question 5

Super Smoothies get a lot of requests for small smoothies and extra-large smoothies, so they decide to add these sizes.

- a** Choose a suitable size for each new smoothie in millilitres. Explain why you chose each size.



- b** Use the sizes you have chosen and work out how much of each ingredient you will need to make a Mango Madness smoothie in each size.

Small Mango Madness	X-Large Mango Madness
_____ Mango	_____ Mango
_____ Pineapple	_____ Pineapple
_____ Banana	_____ Banana
_____ Orange juice	_____ Orange juice



You can choose any sizes as long as you explain why you have chosen them.



Remember the amount of each ingredient was already given for the medium smoothie in Part 1, question 2. Go back and find them to use them for this question.



Show your working out.



“Decide” means that you make the choice. Any answer you give will be correct as long as you explain how you made up your mind.

- c** Decide on a selling price for each new size. Explain how you worked this out.

- d** (Optional challenge question):
Super Smoothies surveys 120 customers about new sizes:
- 45 want small
 - 50 want medium
 - 25 want extra-large

They can only make 200 smoothies a day. Based on this information, how many should they make of each size daily?

Practice paper 1 Self-evaluation

How do you know how well you did?

Now that you have worked through the task, you are going to look at **some** answers that students gave to see how they were rated. Then you can rate your own answers using this scale.

1 Beginning	2 Developing	3 Proficient	4 Highly proficient
Answers show no evidence or very little evidence that the student understands the concepts.	Answers show some evidence that the student partly understands the concepts.	Answers show that the student is competent and understands most of the concepts.	Answers show that the student understands all the concepts very well and may have found the task quite easy.

We will look at answers to the four different levels of questions.

Recalling information	Skills and concepts	Strategic thinking	Extended thinking
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Recalling information

Question 1(a)

a What is the difference in the size of the two smoothies?

<i>One is bigger</i>	$500 \text{ ml} - 350 \text{ ml} = 150 \text{ ml}$ <i>The large smoothie contains 150 ml more.</i>
1 Beginning <i>The student does not show that they understand the term "difference" and hasn't done any maths to answer the question.</i>	4 Highly proficient <i>The student has done a calculation to find the difference and has also written a statement as an answer.</i>

Question 2(b)

b What is the ratio of mango to pineapple to banana in the smoothie?

$100 : 50 : 100$	$100 : 50 : 100 = 10 : 5 : 10$
<p>2 Developing</p> <p>The student understands the concept of ratio and has compared the amounts correctly but has not simplified the ratios nor indicated what they are comparing.</p>	<p>3 Proficient</p> <p>The student understands the concept of ratio and has simplified the ratios but not indicated what they are comparing, for example mango : pineapple : banana = 10 : 5 : 10.</p>

Skills and concepts

Question 3(b)

b What is the price per kilogram?

<p>You know it costs \$1999 for 1.25 kg, so you can divide to find the cost of 1 kg.</p>	<p>I would use a bar model like this:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>0.25 kg</td> <td>0.25 kg</td> <td>0.25 kg</td> <td>0.25 kg</td> <td>0.25 kg</td> </tr> <tr> <td>250 g</td> <td>250 g</td> <td>250 g</td> <td>250 g</td> <td>250 g</td> </tr> </tbody> </table> <p style="text-align: center;">\$1999</p> <p style="text-align: center;">$\\$1999 \div 1.25 = 1599.20$ per kg</p>	0.25 kg	0.25 kg	0.25 kg	0.25 kg	0.25 kg	250 g	250 g	250 g	250 g	250 g
0.25 kg	0.25 kg	0.25 kg	0.25 kg	0.25 kg							
250 g	250 g	250 g	250 g	250 g							
<p>3 Proficient</p> <p>The student has answered the question partially and shows they understand they need to divide to find the price per kilogram. However, they have not explained what they are dividing by or shown their working.</p>	<p>4 Highly proficient</p> <p>The student shows a good understanding of what is being asked and has used a mathematical model to show how they would solve the problem. The model indicates that they understand the relationship between cost and weight and can apply division to find a unit rate.</p>										

Question 2(d)

- d Is the ratio of mango to pineapple to banana the same for a large smoothie? Justify your answer.

<p>It is $150 : 75 : 150$.</p>	<p>The ratio of mango : pineapple : banana in a medium smoothie is $10 : 5 : 10$.</p> <p>The ratio of mango : pineapple : banana in a large smoothie is $150 : 75 : 150$.</p> <p>If you divide each by 15, you get $10 : 5 : 10$.</p> <p>So, the ratio is the same.</p>
<p>2 Developing</p> <p>The student has worked out the ratio for the large smoothies but not answered the question and has not justified their answer.</p>	<p>4 Highly proficient</p> <p>The student has compared the ratios and then shown by simplifying (efficiently) that they are equivalent.</p>

Strategic thinking

Question 1(f)

- f During the school holidays, Super Smoothies offers a special deal. If you buy four smoothies, you get the cheapest one at $\frac{1}{2}$ price. Jerome says you can pay less for four smoothies if you buy them on \$50 off Friday. Compare the two offers. Decide whether Jerome is correct or not. Show what maths you do to make your decision.

<p>If you buy four small smoothies, it costs \$2800 ($4 \times \\700).</p> <p>On a Friday, this costs $4 \times \\$650 = \\2600.</p> <p>If you get one half price, then you pay $3(\times \\$700) + 350 = \\2450.</p> <p>This is cheaper than a Friday, so Jerome is wrong.</p>	<p>Half of a small is $\\$700 \div 2 = \\350.</p> <p>Half of a large is $\\$800 \div 2 = \\400.</p> <p>You will either get \$350 or \$400 off the price if you take the special offer. The most you can get off on a Friday is $4 \times \\$50 = \\200.</p> <p>This is less than the half price of any smoothies, so Jerome is wrong.</p>
<p>3 Proficient</p> <p>The student has compared the offers using one set of prices and shown the maths that they used to make their decision. They have not fully shown that Jerome is wrong for all combinations of smoothies.</p>	<p>4 Highly proficient</p> <p>The student's answer shows that they can think in general terms and find a solution that works for any combination of smoothies. They have given a simple, concise answer to the problem.</p>

Question 4(d)

- d** Compare this to what it would cost Super Smoothies if they make a litre of juice using fresh limes.

<p>This is cheaper.</p>	<p>Cost of concentrate juice is \$353.33/litre.</p> <p>The owner says this is 30% cheaper than fresh.</p> <p>So, fresh would cost:</p> $\$353.33 \div 70 \times 100 = \504.76 $\$504.75 - \$353.33 = \$151.42$ <p>The concentrate juice is \$151.42 cheaper per litre.</p>
<p>1 Beginning</p> <p>The student has made a statement but shown no comparison to support it. This could just be a guess or an acceptance of the statement made by the owner.</p>	<p>4 Highly proficient</p> <p>The student has shown that they understand how to work with percentages and has shown both prices to compare them, and given a detailed answer.</p>

Extended thinking

Question 4(b)

- b Show how the owner of Super Smoothies could be both correct and incorrect using those figures.

<p>The owner is wrong because she said it costs 40% more and Jamaal showed that it was only 35.11% cheaper.</p>	<p>If you round to the nearest 10%, then 35.11% rounds up to 40%, so if the owner rounded like that, she would be correct to say 40%. If she rounded to the nearest per cent, then the difference is only 35% and she would be incorrect.</p>
<p>2 Developing</p> <p>The student has shown that they understand the comparison, but they have accepted the numbers at face value and not answered the question to show "how" the owner could be correct as well.</p>	<p>4 Highly proficient</p> <p>The student shows that they understand how numbers (percentages) can be used in different ways and how rounding to different places can affect the values you use. The answer shows that the owner can be both correct and incorrect.</p>

Question 5(c)

- c Decide on a selling price for each new size. Explain how you worked this out.

<p>Small \$600. X-Large \$1 000.</p>	<p>My small size holds 25% less than the medium, so I would charge $\\$700 - 25\% = \\525 for the small. My X-large holds 40% more than the large. That works out to \$1190, but that is an odd price and you'd have to keep giving \$10 change, so I would sell the X-large for \$1200.</p>
<p>2 Developing</p> <p>The student has given prices but no indication of how they worked these out.</p>	<p>4 Highly proficient</p> <p>The student has made decisions on pricing based on the sizes they chose earlier and has explained how they thought about the proportions to create them. They have also indicated awareness of rounded pricing to avoid change, making it easier to work with.</p>

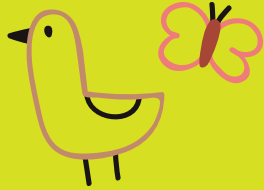
Reflection

Go back through your own answers to the questions in this task.

- Which ones did you do well?
- What made these ones easy for you?
- Which ones did you struggle with?
- What made them difficult for you?
- What two things can you do to make these types of questions easier to work through in the future?

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