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Your tasks

The following table provides additional information regarding the tasks you will need to complete at Jerry’s Garden Services.

	<p>Mix fertiliser</p> <p>Dilute the fertiliser liquid with a specified amount of water to make sure it is the right strength to use on the plants.</p>
	<p>Estimate costs</p> <p>Make educated guesses on how much the materials costs, and then use your knowledge and experience to estimate more precise figures.</p>
	<p>Prepare quotes for customers</p> <p>Create a document or document that outlines how much a gardening job will cost. You will need to breakdown how much each service costs and then add it to the total price so customers are informed of how much a service will cost.</p>



Day 1

On your first day working at Jerry's Garden Services, your supervisor, Jerry, informs you about the tasks you are required to do in order to complete your job successfully.

The first thing Jerry explains is fertiliser and how to use it. Fertiliser is a material that is added to soil to help plants grow. It comes in many forms, however, Jerry's Garden Services uses liquid fertiliser.

To use fertiliser safely, it must be diluted. This means that water needs to be added to the liquid fertiliser to reduce the concentration, or strength, of the chemicals. It is important that the right amount of water is added to the fertiliser to make it the right strength.

If it is not diluted enough, the fertiliser will be too strong, and it will burn the roots of the plants. If it is diluted too much, the fertiliser will be too weak, and the nutrients in the liquid will not help the plants grow.

Therefore, Jerry needs the fertiliser to be diluted to the right strength. To determine this, you will need to make calculations and measurements.

Mathematical language in the workplace

Here is an example of how mathematical language is used in the workplace. The table below shows part of a quote that you would make for a customer outlining the gardening tasks that need to be completed.

Item	Cost	Explanation
Materials		
5 trailer loads of garden mulch @ \$110/trailer	\$550	5 trailer loads of garden mulch at \$110 per trailer load.
Labour		
Gardener: 10 hours @ \$40/hour	\$400	10 hours of gardening at \$40 per hour.
Supervisor: 3 hours @ \$60/hour	\$180	3 hours of supervision of gardening at \$60 per hour.
Subtotal	\$1,130	Add together the above costs.
GST (goods and services tax) 10%	\$113	Calculate 10% of the subtotal.
Total	\$1,243	Add the GST amount to the subtotal.

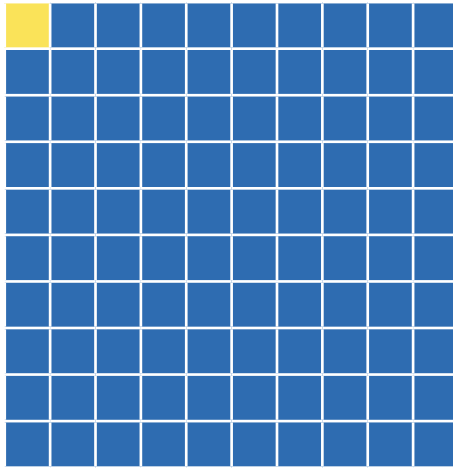
Percentages

Percentages or percent are a way of showing a rate or amount out of 100. Percent means **per hundred** or out of a hundred. If the % symbol is after a number, it means that number is a part of 100.

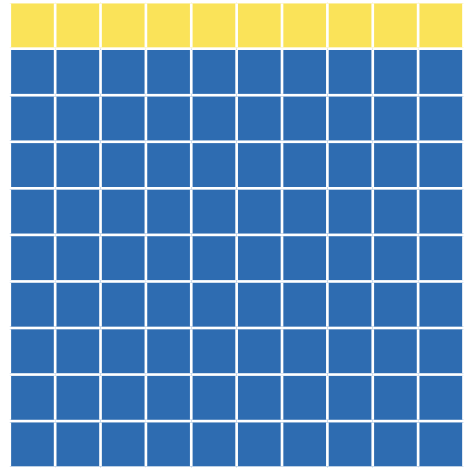
For example:

- 1% is 1 part of 100
- 10% is 10 parts of 100
- 25% is 25 parts of 100
- 50% is 50 parts of 100
- 75% is 75 parts of 100
- 100% is all the parts of 100.

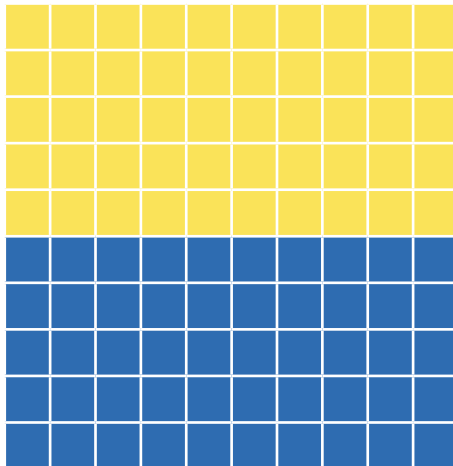
This is what 1% looks like.



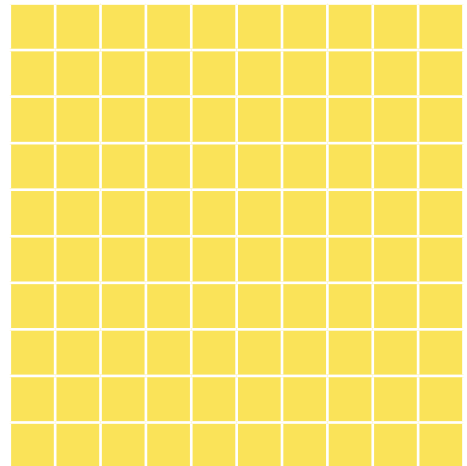
This is what 10% looks like.



This is what 50% looks like.



This is what 100% looks like.






What has happened on Day 1

On your first day of work at Jerry's Garden Services you have learned about:

- using calculations in workplace texts
- using calculations in workplace tasks
- interpreting mathematical information
- interpreting decimals, fractions and percentages
- using strategies to solve problems.

Addition

Addition is the mathematical operation used to join two or more numbers or quantities together. Here is an example of addition:

9	+	30	= 39
			

$$9 + 30 = 39$$

Addition joins 9 and 30 together to make 39.

You can also say 'the sum of 9 and 30 is 39'.

Rounding off money

Rounding to the nearest dollar

When you round off to the nearest dollar, you follow the same rounding rules.

For example,

\$125.2976 would **round down** to \$125, because the next digit after the decimal point is a 2.

\$34.7001 would **round up** to \$35, because the next digit after the decimal point is a 7.

Rounding off to the nearest cent

When rounding off to the nearest cent, you follow the same rules again. The original number on our calculator was:

26.4375

If we round it to the nearest cent, we need to decide whether it rounds down to \$26.43 or rounds up to \$26.44.

Therefore, we need to look at the next digit after the cents column, which is a 7.

Because 7 is past the halfway point, the answer will be rounded up to \$26.44.

Rounding off measurements

Sometimes you may need to round a measurement to the nearest number. This might be to the nearest metre or kilometre.

1. Round off 342.75 metres (m) to the nearest 10 m.

You need to decide if 342.75 is closer to 340 or 350 metres. Is 42.75 m closer to the nearest ten up (50) or down (40)? Because 42.75 is less than halfway between 340 and 350, you would **round down** to 340.

2. Round off 23,654 km to the nearest 1000 kms.

You need to decide if 23,654 is closer to 23,000 or 24,000. Is 654 closer to the next 1,000 up or not? Because 654 is more than halfway to the next 1000, you would **round up** to 24,000.



Now break the invoice down into parts so you can complete several simple calculations. An example is included below:

Step	Explanation	Calculation & answer
1	<ul style="list-style-type: none"> Work out the cost of 3 palm trees Multiply the number of palms (3) by the cost of a palm tree (\$150) 	$3 \text{ (palm trees)} \times \150 (cost of a palm tree) $= \$450$
2	<ul style="list-style-type: none"> Work out the cost of planting the palm trees Multiply the number of hours worked ($2\frac{1}{2}$) by the amount charged per hour (\$75) 	$2\frac{1}{2} \text{ (hours)} \times \75 (per hour) $= 2.5 \times \$75$ $= \$187.50$
3	<ul style="list-style-type: none"> Work out the cost of a 1.5 m^3 load of mulch Multiply the cost of 1 m^3 (\$72) by the amount in a load 1 load (1.5 m^3) 	$1.5 \text{ (m}^3\text{)} \times \$72 \text{ (per m}^3\text{)}$ $= \$108$
4	<ul style="list-style-type: none"> Work out the cost of the items Add the cost of the palms (\$450), the cost of planting the palms (\$187.50) and the cost of the load of mulch (\$108) 	$\$450 + \$187.50 + \$108$ $= \$745.50$
5	<ul style="list-style-type: none"> Work out the 10% GST Divide the cost of the items (\$745.50) by 10 (10% is the same as $\frac{1}{10}$) 	$\$745.50 \div 10 = \74.55
6	<ul style="list-style-type: none"> Work out the cost of the items and GST Add the cost of the items (\$745.50) and the cost of the GST (\$74.55) 	$\$745.50 + \74.55 $= \$820.05$
7	<ul style="list-style-type: none"> Work out $\frac{1}{4}$ of the total amount, the deposit Divide the total cost (\$820.05) by 4 to get $\frac{1}{4}$ 	$\$820.05 \div 4 = \205.01 (rounded to the nearest cent)
8	<ul style="list-style-type: none"> Work out the balance to be paid after the job is completed Take the deposit (\$205.01) from the total (\$820.05) 	$\$820.05 - \205.00 $= \$615.04$

What has happened on Day 3

On your third day of work at Jerry's Garden Services, you have learned about:

- estimating before completing a calculation
- breaking a mathematical problem into steps to solve it
- checking the answer to a calculation
- communicating mathematical information using formal and informal language.

