## Maths: Year (6

## number and algebra

 measurement and geometry statistics and probability
## Teachers' Notes

The activities in this book have been designed to develop mathematical skills and reasoning in a creative way that is connected to solving problems in real-life contexts. Students will be asked to reflect upon the strategies used to problemsolve effectively in familiar situations and expand their ideas to realise that mathematical understanding has an important role in other subject areas. Answers and additional teaching information are included at the back of the book. This book is divided into three sections as detailed below.

## Section One: Number and Algebra

In this section, students will engage in a variety of activities that require them to demonstrate ever-increasing capability in using mental and written strategies to explore number relationships and patterns. Tasks include: identifying and explaining the odd one out in a number series, exploring integers above and below sea level, playing equivalent fraction dominoes and writing number sentences with the powers of 10 to burst

## Section Two: Measurement and Geometry

This section draws students' attention to the applications of calculating and comparing measurements of mass, length and capacity in our daily lives. Students will engage in activities such as: converting metric units of everyday objects, finding the correct dose of water conditionerfor fishtanks and planning a ferry trip to the zoo by reading a timetable Tasks investigating the Cartesian Plane include a pizza delivery race and designing a logo for the community.

## Section Three: Statistics and Probability

Students will develop skills in interpreting and comparing data displays based on an extreme bike race and changes in height for women and men over the last century. They will consider how data can be skewed in displays to give a biased viewpoint and identify what to be on the lookout for. Tasks to describe probability focus on real-life examples and carrying out chance experiments with a small and large sample.

## Mathematically Minded 1

## Solve these mixed operation ( $+-x \div$ ) problems. Do your written work in the spaces provided.

1. There are 68 students in Year 6 . Your job is to set up enough chairs for an assembly in rows of 15 . How many rows will there be? How many seats will be empty?
2. Cabbage Tree Primary School orders 2,232 exercise books to kick off the school year. If each child receives 9 books, how many students are enrolled at the school?
$\square$
3. The local post officer delivered 928 letters on her route today. Yesterday she delivered 147 more letters. How many letters did she deliver yesterday?

4. Rosie feeds her two dogs 250 g of dry kibble each a day. If she buys a 3 kg bag of kibble, will this be enough food for a week?

5. It is Grand Final Day and 6,735 fans turn up for the match. At half-time the score is 44 2 so 2,849 disappointed fans leave the stadium. How many people stay until full-time?
$\square$
6. It takes Lawrence 14 minutes to walk home from school each day. If he leaves school at 3.56 pm , what time does he arrive home?
$\square$
7. Axel makes 28 hand-shaped surfboards a month. He takes January, February and March off each year to go surfing. How many boards does Axel produce in a year?
$\square$

## Multiplying And Dividing Decimals

Solve the supermarket problems below by multiplying and dividing decimals using whole numbers. Do your working out in the spaces provided.

1. Each pallet weighs 18.15 kg . How much do 4 pallets weigh?

2. A medium tomato has 9.25 mg of sodium (salt). How much sodium would 6 tomatoes contain?
$\qquad$
3. A watermelon weighs 3.58 kg . If it were cut into 8 slices, how many grams would each slice weigh?

4. A uni student works part-time as a shelf stacker ina supermarket. She earns $\$ 18.86$ an hour. How much does she earn after working $\$$ hours?

5. A chocolate cake weighing 750 g has 2,805 calories. If the cake is cut into 12 equal slices, how many calories would each slice have?

6. An employee has been wrapping gifts. She cuts 15 pieces of ribbon with a length of 20.68 cm each. How much ribbon has she cut altogether?

7. Someone mops the floor in the seafood section and uses 6 buckets of soapy water. If each bucket holds 9.605L, how much water has been used?


## Cubby House Conversions

Study the builder's drawing below. He has jotted down the materials needed (including dimensions) to build a cubby house. Convert the units of measurement to the units indicated in the boxes. An example has been done for you.


## Questions

1. What would be the total length of support poles needed? $\qquad$
2. What is the total length of six pickets? $\qquad$ cm
3. How many baton screws would fit end to end on a metre rule? $\qquad$
4. Calculate the area of:
i. one slate tile $\qquad$ (cm ${ }^{2}$ )
ii. five slate tiles $\qquad$ (cm ${ }^{2}$ )

## Don't Miss The Boat!

You have planned a day out with friends on a public holiday to visit the Paroo Park Zoo. To get there, you have to catch a ferry. Study the timetable below.

| Saturday, Sunday \& Public Holidays |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Main Quay | 8.05 | 9.45 | 10.30 | 11.15 | 12.30 | 14.05 | 15.45 | 16.20 | 17.15 |
| Picnic Point | 8.10 | 9.50 | ....... | ....... | 12.35 | 14.10 | 15.50 | 16.25 | ....... |
| Wattle Bay | 8.17 | 9.57 | ...... | ...... | 12.42 | 14.17 | 15.57 | 16.32 | ....... |
| Pitt's Pier | 8.25 | 10.05 | ....... | ....... | 12.50 | 14.25 | 16.05 | 16.40 | ....... |
| Longbank | 8.32 | 10.12 | 10.50 | 11.35 | 12.57 | 14.32 | 16.12 | 16.47 | 17.35 |
| Paroo Zoo arr |  | ...... | ...... | ....... | ....... | ....... | ....... | ...... | ...... |
| Paroo Zoo dep | ...... | $\ldots$ | ...... | $\ldots$ | $\ldots$ | .... | ...... | ...... | ...... |
| Longbank | 8.40 | 10.20 | 10.58 | 11.43 | 13.05 | 14.40 | 16.20 | 16.55 | 17.43 |
| Pitt's Pier | 8.47 | 10.27 | ....... | ....... | 13.12 | , | 16.27 | 17.02 | ....... |
| Wattle Bay | 8.55 | 10.35 | ....... | ....... | 13.20 |  | 16.35 | 17.10 |  |
| Picnic Point | 9.02 | 10.42 | ..... | $\ldots$ | 3.2 | 15.02 | 16.42 | 17.17 | ... |
| Main Quay | 9.07 | 10.47 | 11.18 | 12.0 |  | 15.07 | 16.47 | 17.22 | 18.03 |

1. What time does the first ferry to the Zoo leave from Main Quay? $\qquad$
2. How long is the ferry ride between Picnic Point and Pitt's Pier? $\qquad$
3. You plan to catch the 9.45 ferry from Main Quay. If you want to stop off at Wattle Bay for a quick dip at the beach, at what time would you be able catch the next ferry to the Zoo?
$\qquad$
4. How long is the return ferry ride to Main Quay on the all stops ferry? $\qquad$
5. How long is the return ferry ride to Main Quay on the express ferry? $\qquad$
6. Your Dad is meeting you at 17.15 at Pitt's Pier to drive you home. What is the latest ferry you should catch from the Zoo to be there in time?
7. It's a 20 minute brisk walk from the Zoo's exit to the ferry terminal. What time would you recommend that a person leaves the Zoo to catch the last ferry of the day to Main Quay? Explain your answer.

## Know Your Cartesian Plane

## Complete the questions below based on this Cartesian plane.



1. Label the $x$ - and $y$-axis.
2. Label the plane's quadrants in the boxes.
3. What does the arrow $(\Omega)$ indicate at the intersection of the $x$ - and $y$-axis?
4. How do you order and write the coordinates of a point on the plane?
5. Write the coordinates for the positions of the icons on the plane.
$\theta$ $\qquad$
$\qquad$
凸 $\qquad$
6. Plot a point on the plane in Quadrant 1 and write its coordinates. $\qquad$
7. What will this point's mirror coordinates be in Quadrant 4? $\qquad$
8. What do the arrows mean on the $x$ - and $y$-axis?

## Games Of Chance

1. Match the games of chance with their rules for playing. If you know, write the name of the game of chance under each image.

a. Players have 26 cards each placed face down. Both top cards are turned over. Whoever has the higher card, wins both cards and adds them (face down) to the bottom of his/ her pile. The goal is to win all the cards.
b. Players have a card with numbers on it. A caller announces a number and if the player has that number, he/she marks it off the card. When someone's numbers are all called, he/she is declared the winner.
c. A player decides the winner is going to be "odds". On the count of three, players show a number of fingers on one hand. If the sum of fingers is an odd number, then the player who called "odds" has won.
d. On the count of three, players make a gesture with their fists. Rock breaks scissors, scissors cut paper, and paper covers rock. Players then decide who has won.
2. Do all the players in the games above have an equal chance of winning? Explain your answer.
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