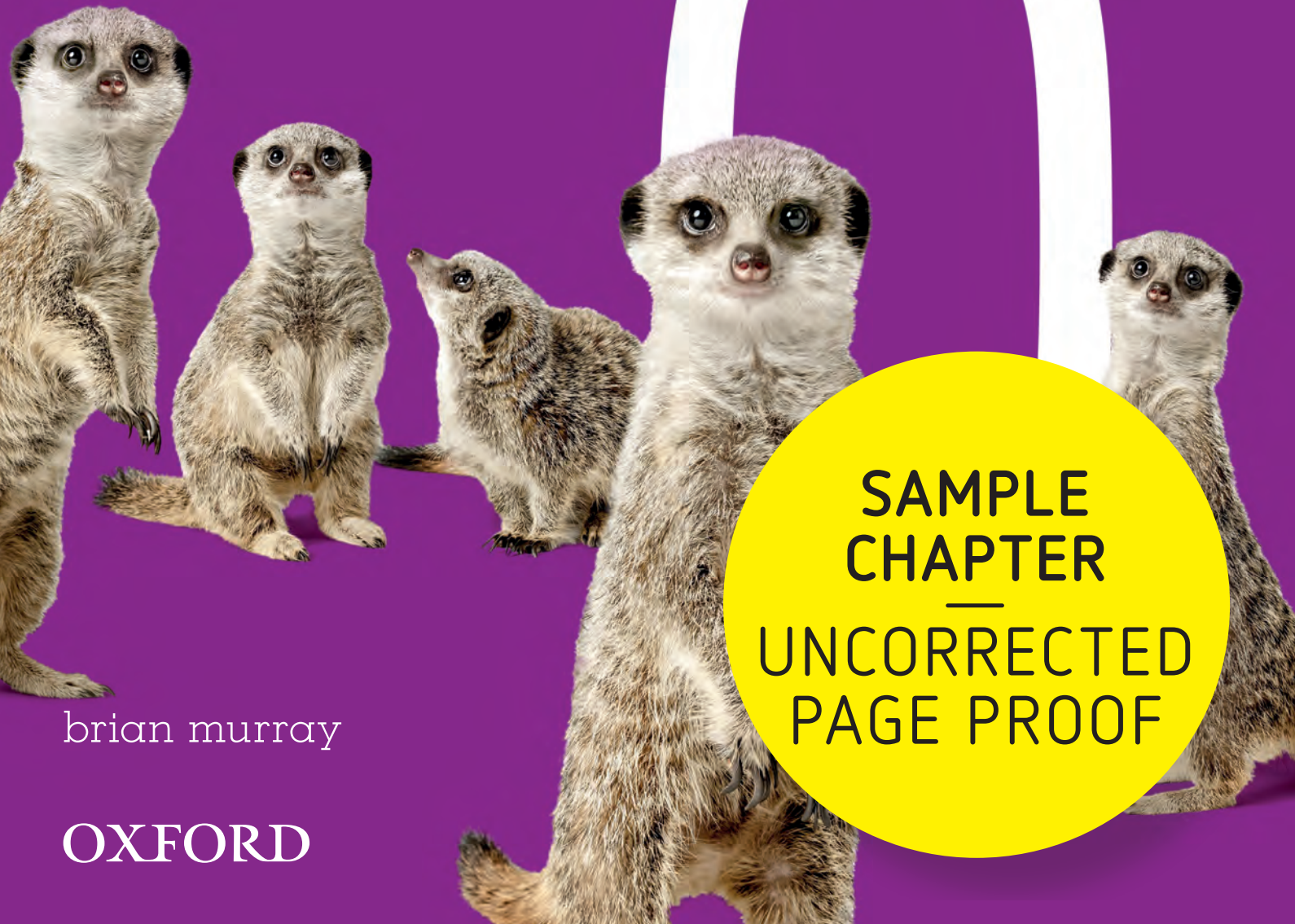


oxford **maths**  
for Australian schools



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brian murray

OXFORD

## To the teacher

The *Oxford Maths* Practice and Mastery Books are an integral part of the *Oxford Maths* series, which incorporates all the resources that a teacher needs to simply and comprehensively teach the Australian and Victorian Mathematics curricula and the New South Wales Syllabus.

### *Oxford Maths* Practice and Mastery Books

Each topic in the *Oxford Maths* Practice and Mastery Books features:

- **Practice** – activities that allow students to practise concepts and skills from the Independent practice section of the Student Book
- **Challenge** – activities that allow students to practise concepts and skills from the Extended practice section of the Student Book
- **Mastery** – the opportunity for students to apply their learning and problem-solving skills in open-ended, real-world contexts.

### Differentiation

Differentiation is key to ensuring that every child can access the curriculum at their point of need. In addition to the gradual release approach of the Student Books, the *Oxford Maths* Teacher Dashboard helps teachers to choose differentiation pathways for students, and provides activities for students who require extra support or extension. Potential difficulties videos assist teachers in the early identification of common misconceptions students have about underlying mathematical concepts.

### *Oxford Maths* Teacher Dashboard

The *Oxford Maths* Teacher Dashboard provides online access to a wealth of resources and support material, including curriculum and planning documents, assessment grading guides, answers to the tests, differentiation options, interactive topic introductions and lesson plans. Used in conjunction with the *Oxford Maths* Student Books, Assessment Books, and Practice and Mastery Books, the dashboard offers teachers access to clear teaching and learning pathways to meet the diverse needs of students in a single class and across the whole school.

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# UNIT 1: TOPIC 8

## Written strategies for multiplication

### Practice

1 Use short or extended multiplication to solve the following:

**a**

	4	2	6
x			2

**b**

	3	1	9
x			3

**c**

	1	3	6
x			5

**d**

	2	4	6
x			3

**e**

	1	7	3	9
x				4

**f**

	1	2	8	5
x				6

**g**

	2	3	4	5
x				4

**h**

	1	6	3	7
x				7

**i**

	2	3	2	8
x				6

**j**

	2	7	4	5
x				7

**k**

	4	0	0	5
x				8

**l**

	6	3	0	9
x				9

**m**

	2	0	8	0
x				7

2 Six people go overseas. The cost for each is \$3078. How much do they pay altogether?

\_\_\_\_\_

3 A builder sells seven new houses. The price for the first six is \$349845 each. The last one is \$12 000 cheaper. How much does the builder get for all seven houses?

\_\_\_\_\_

## Challenge

Remember: Putting in the zero moves everything over one place for you.

### 1 Multiplying by a multiple of 10

**a**

$$\begin{array}{r} 26 \\ \times 20 \\ \hline \end{array}$$

**b**

$$\begin{array}{r} 34 \\ \times 20 \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 27 \\ \times 30 \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 53 \\ \times 40 \\ \hline \end{array}$$

**e**

$$\begin{array}{r} 27 \\ \times 60 \\ \hline \end{array}$$

**f**

$$\begin{array}{r} 44 \\ \times 50 \\ \hline \end{array}$$

**g**

$$\begin{array}{r} 173 \\ \times 30 \\ \hline \end{array}$$

**h**

$$\begin{array}{r} 253 \\ \times 60 \\ \hline \end{array}$$

**i**

$$\begin{array}{r} 694 \\ \times 70 \\ \hline \end{array}$$

**j**

$$\begin{array}{r} 1628 \\ \times 50 \\ \hline \end{array}$$

**k**

$$\begin{array}{r} 2595 \\ \times 60 \\ \hline \end{array}$$

**l**

$$\begin{array}{r} 2583 \\ \times 90 \\ \hline \end{array}$$

### 2 Multiplying by two digits

**a**

$$\begin{array}{r} 24 \\ \times 25 \\ \hline \end{array}$$

←  $24 \times 5$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

←  $24 \times 20$

**b**

$$\begin{array}{r} 35 \\ \times 26 \\ \hline \end{array}$$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 48 \\ \times 18 \\ \hline \end{array}$$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 158 \\ \times 24 \\ \hline \end{array}$$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

**e**

$$\begin{array}{r} 308 \\ \times 65 \\ \hline \end{array}$$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

**f**

$$\begin{array}{r} 297 \\ \times 48 \\ \hline \end{array}$$

$$\begin{array}{r} + \phantom{0} \\ \hline \end{array}$$

Multiplying by two digits is like doing two multiplications in one.



## Mastery

- 1 Did you know that the five largest sea animals are all whales?

Use the lengths and weights of the various whales in the table to answer the questions below.

- a Which type of whale has a mass that is closest to twice that of another whale?

\_\_\_\_\_

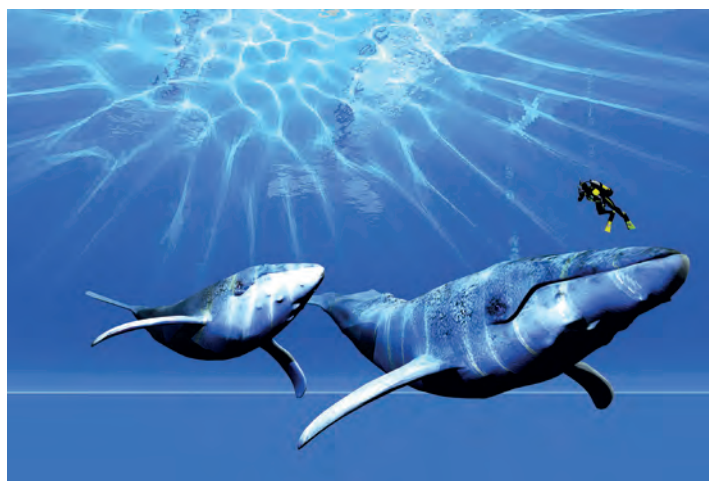
- b What would the total mass of 23 northern right whales be?

\_\_\_\_\_

- c If 15 blue whales were put nose to tail, what would the total length be? \_\_\_\_\_

- d Which would have a greater mass, 26 fin whales or 12 blue whales? \_\_\_\_\_

- e 15 northern right whales (nose to tail) would stretch the same distance as 15 sperm whales, but how much heavier would they be? \_\_\_\_\_



	Mammal	Length	Weight
1	Blue whale	33.5 m	137 000 kg
2	Bowhead whale	20.2 m	86 000 kg
3	Northern right whale	18.35 m	77 700 kg
4	Fin whale	25.5 m	63 400 kg
5	Sperm whale	18.35 m	43 700 kg

- 2 When some numbers are multiplied together they start to make an interesting pattern. Square numbers can make an interesting pattern, but you may need a calculator to find them. For example,  $111 \times 111$  makes a pattern that starts with 123 ... Try it for yourself, then continue the pattern. Your calculator might not be big enough, but if you get all the way to the square of 111 111 111, the answer is 12 345 678 987 654 321.

If you square 101 010 the answer is ten, twenty, thirty, twenty, ten, zero—or ten billion, two hundred and three million, twenty thousand, one hundred (10 203 020 100).

Use a calculator and spare paper to investigate patterns with multiplications. For example, you've seen that  $11 \times 11 = 121$ . Now try  $111 \times 11$ . And  $1111 \times 11$ . What other patterns can you find? Don't forget to write down the answers for others to see.

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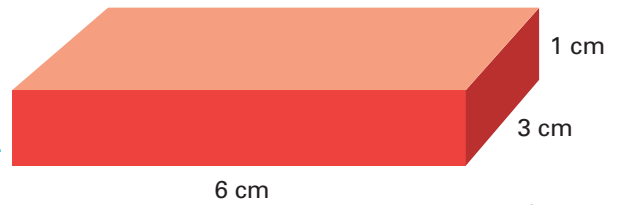


# UNIT 5: TOPIC 3

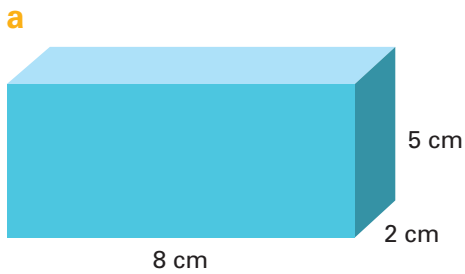
## Volume and capacity

### Practice

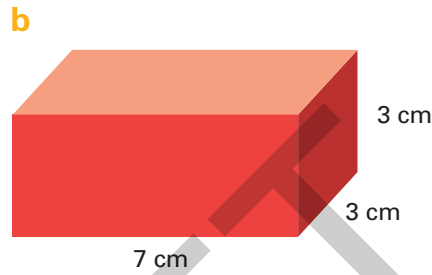
- 1 a How many centimetre cubes would be needed to make this model? \_\_\_\_\_
- b What is its volume? \_\_\_\_\_



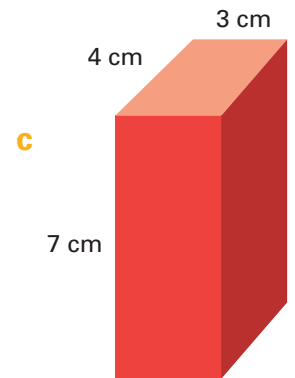
- 2 Find the volume of each of the following objects:



Volume: \_\_\_\_\_  $\text{cm}^3$



Volume: \_\_\_\_\_  $\text{cm}^3$



Volume: \_\_\_\_\_  $\text{cm}^3$

- 3 Complete the following tables to convert between the different units of volume and capacity.

a

Kilolitres	Litres
5 kL	
2.5 kL	
	4250 L
	3750 L

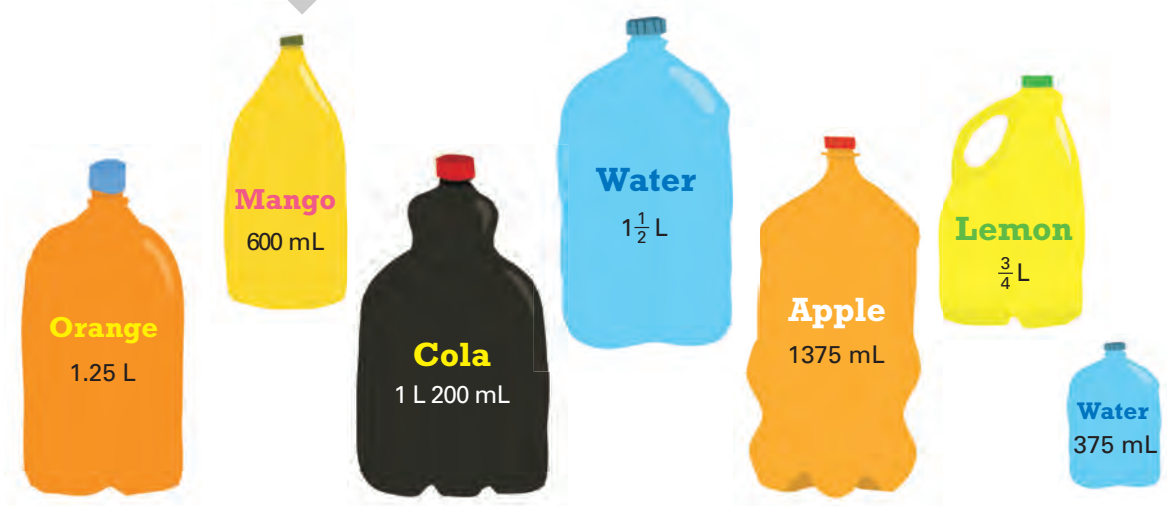
b

Litres	Millilitres
4 L	
	3500 mL
2.25 L	
	9750 mL

c

Volume	Capacity
100 $\text{cm}^3$	mL
	500 mL
175 $\text{cm}^3$	
	2 L

- 4 Put these capacities in order from smallest to largest:

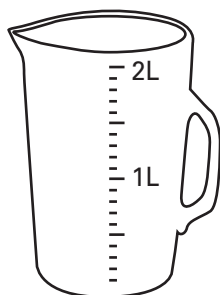




## Challenge

- 1 Using the capacities of the drinks on page 68, shade the jugs to show the level in the jug after the following drinks have been poured in:

**a** 2 mango drinks



Amount: \_\_\_\_\_

**b** 1 orange drink



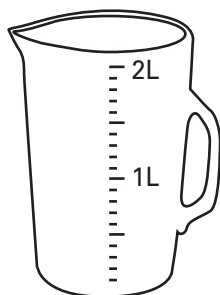
Amount: \_\_\_\_\_

**c** 1 orange and  
1 lemon drink



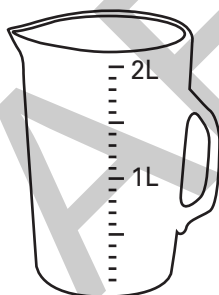
Amount: \_\_\_\_\_

**d** 1 large and 1 small  
water



Amount: \_\_\_\_\_

**e** 1 apple and  
1 mango drink



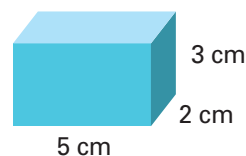
Amount: \_\_\_\_\_

**f** 1 apple drink and  
1 small water



Amount: \_\_\_\_\_

- 2 Using centimetre cubes, how could you prove that you would need 30 centimetre cubes to make this model?



\_\_\_\_\_

\_\_\_\_\_

- 3 Use centimetre cubes to make a different rectangular prism from the one in question 2 that also has a volume of  $30 \text{ cm}^3$ . Sketch the rectangular prism and write the length, width and height on your drawing.

## Mastery

- 1 Very large quantities of water are measured in megalitres (ML) and gegalitres (GL). Find out what you can about these units of capacity.

- 
- 2 Taking as much care as possible, sketch as many **different** rectangular prisms as you can that have a volume of  $24 \text{ cm}^3$ . Write the length, width and height on each model.

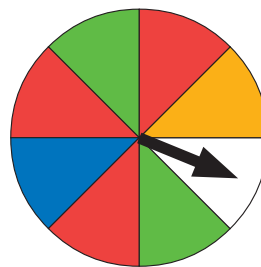
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## UNIT 10: TOPIC 1

### Describing probabilities

#### Practice

- 1
- a The spinner has a 1-in-how-many chance of landing on white? \_\_\_\_\_
  - b What chance does the spinner have of landing on green? Answer using a percentage. \_\_\_\_\_
  - c What chance does the spinner have of **not** landing on green? Answer using a decimal. \_\_\_\_\_
  - d There is half as much chance of the spinner landing on yellow as on green. Describe the percentage chance for yellow. \_\_\_\_\_
  - e For which colour is there a 0.375 chance? \_\_\_\_\_



- 2 Describe something in your school that has the following chance of happening:

- a 2% chance \_\_\_\_\_
- b 50–50 chance \_\_\_\_\_
- c 0% chance \_\_\_\_\_
- d 0.99 of a chance \_\_\_\_\_
- e  $\frac{1}{4}$  of a chance \_\_\_\_\_

- 3 Which of these describes the chance of this spinner landing on red? Circle any that are appropriate.

$\frac{1}{4}$     $\frac{1}{5}$    20%   25%   0.25   0.2   0.5   1 in 5    $\frac{2}{10}$



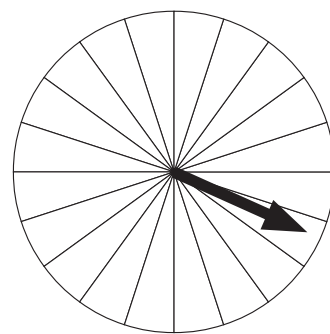
- 4 A coach says the team has a very good chance of winning a game. Give a percentage value for the chance.

\_\_\_\_\_

## Challenge

1 a Colour this spinner so that the following probabilities are true:

- There is a 20% chance for green.
- There is 0.3 of a chance for red.
- There is a 5% chance for purple.
- There is  $\frac{1}{5}$  of a chance for yellow.
- There is 0.15 of a chance for blue.



b Describe the probability of the spinner landing on the remaining white part of the spinner as a fraction, as a decimal and as a percentage. \_\_\_\_\_

2 Each jar below contains 60 jelly beans, of all colours. The number of black jelly beans in each jar is shown on the label. Write a value to show the probability of picking out a black jelly bean first time if you chose one without looking. Choose from the list.

$\frac{1}{5}$    0.25    $\frac{2}{3}$    75%   0.33    $\frac{7}{12}$

A



B



C



D



E



F

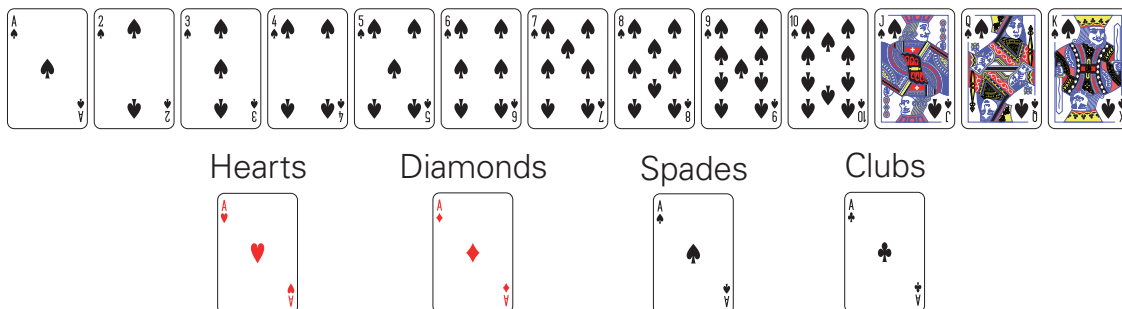


3 There is a mix of red and green beads in each bag of 50. Evie takes 20 from each bag without looking and records the results. Predict the number of red and green beads in each bag of 50.

Bag	After 20 have been taken out:		My prediction after 50 have been taken out:	
A	Red: 16	Green: 4	Red:	Green:
B	Red: 2	Green: 18	Red:	Green:
C	Red: 6	Green: 14	Red:	Green:
D	Red: 12	Green: 8	Red:	Green:



In a normal pack of playing cards there are 4 types, called *suits*. There are 13 cards in each suit, making a total of 52. Each suit has the same cards.



1 For the following tasks, decide whether the values are more appropriately expressed as fractions, decimals or percentages. Imagine that the cards are turned over and shuffled around, and that somebody has to choose one without looking. What is the chance of the person guessing correctly if they predict that the card will be:

- |   |  |
|---|--|
| a a red card? _____                                     | b a number 2? _____                                    |
| c an odd numbered card (counting the ace as one)? _____ | d a red 4? _____                                       |
| e a diamond? _____                                      | f a picture card? _____                                |
| g a picture card with a jack or a king? _____           | h a card lower than 5 (counting the ace as one)? _____ |

2 There is a game called *Twenty-one* in which people try to get a total of 21 with their cards. In this game, the ace can be worth one or eleven. The quickest way to get to 21 is to choose an ace and then a ten. The picture cards are worth 10 each, so an ace plus a ten or a picture card makes 21.



- What is the chance of choosing an ace on the first try? \_\_\_\_\_
- If you choose an ace on the first try, what is the chance of choosing a card worth 10 with your next pick? Remember that there won't be 52 cards left to choose from! \_\_\_\_\_
- Express the chance of the second card being worth 10 as a percentage (to the nearest whole number). \_\_\_\_\_

3 Carry out some investigations by looking at the 52 cards. You could write some questions to give to others in the class, but make sure you know the answer yourself! For example, if you picked up two picture cards, what would be the probability of getting an ace to make 21 on the next try?

## Card game 4: Jumps and slides

### 1 You need:

Two or more players, a full pack of 52 cards, a pencil and paper for each player.

### The game:

The aim of the game is to get to 100.

### Rules:

The cards are shuffled and placed upside-down in the middle. Players take turns to pick up a card and jump forward by the number on the card.

An ace counts as 1 or 11. Queens and kings count as 15.

However, there are **jumps** and **slides**:

- Any card that is a multiple of 5: jump forward an extra 5 steps.
- Any card that is a multiple of 3: slide back 3 steps.
- If you land on a prime number: slide back to the previous prime number.
- Any ace: jump forward an extra 10 steps.
- Jack of Hearts, Clubs or Spades: slide back 10 steps (or to zero).
- Jack of Diamonds is the **Star Card**: jump straight to 100—you win!

If you decide to change the rules, make sure all players agree. For example, if you are up to 96, do you have to get exactly 4 to get to 100, or will any number higher than 3 allow you to win?

You could use a hundred grid for each person to keep track.



- 
- 2 Make up your own game using playing cards. In the game above, there was only a 1-in-52 chance of getting the Star Card. How could you increase the chances of getting a Star Card? When you have invented your game, write out the rules and then try it out to see if the rules work.



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*Oxford Maths* is a comprehensive maths program for Foundation to Year 6. It has been designed by experienced classroom teachers to support sequential acquisition of mathematical skills, concepts and knowledge, and is fully aligned with the Australian and Victorian curricula and the New South Wales Syllabus.

The program includes:

- Student Books with guided, independent and extended practice opportunities
- Practice and Mastery Books with reinforcement activities and real-world problems that allow students to explore and apply their knowledge
- Assessment Books featuring pre- and post-tests
- Online Teacher Dashboard with supportive teaching materials.

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### Differentiation

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