Investigation 5
iFlakes

A primary school parent group is planning to set up a breakfast club. They are looking for three nutritious cereals to serve.

Survey your class to find the cereals that students your age like to eat.

Investigate the nutritional value of at least seven cereals (including iFlakes) by examining the percentages of protein, fat, carbohydrate, sugar and fibre they contain.

Based on your findings, recommend three cereals that should be served at the breakfast club. Should iFlakes be included?

✓ Topics

Before you start the Investigation you need to know...

- ☐ **NA16** Place value to thousandths p62
- ☐ **NA22** Percentages..... p74
- ☐ **NA23** Percentages using a calculator..... p76
- ☐ **SP2** Interpreting data p122
- ☐ **SP3** Dot plots..... p124
- ☐ **SP4** Discrete data p126
- ☐ **SP5** Column graphs p128

Understanding the Investigation

1 Read and plan.

Make sure you understand the meanings of: *breakfast club*, *nutritious*, *nutritional value*, *protein*, *fat*, *carbohydrate*, *sugar*, *fibre*, *recommendation*, *ingredient*, *interpret* and *analyse*.

Read and discuss the rubric.

Download your Investigation plan. This will help you with the organisation and understanding of the Investigation.

Teacher note

- Comprehensive lesson notes, suggestions and resources are available in *iMaths 5 Teacher Book*.
- The Data page and Investigation plan for this Investigation can be downloaded from www.imathsteachers.com.au.

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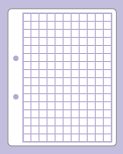
Materials


Internet access


Data page 1


Calculator


Graph paper

6 different cereal boxes per group

Using maths

2 Collect data and cereal boxes.

Survey the students in your class to collect data on their favourite breakfast cereals. Show the results of your survey on a dot plot.

In groups, select six different cereals to investigate and collect the boxes.

3 Study the nutritional information.

Look at the nutritional information on Data page 1 *iFlakes nutritional values* (p163).

Locate the same nutritional information on each of the cereal boxes you collected. Look at the amounts per 100 g of each ingredient. How does this relate to percentages?

4 Record your information.

Construct a table to record information for each of the seven cereals, including iFlakes. Record the percentage per 100 g of protein, fat, carbohydrate, sugar and fibre for each cereal.

5 Graph your data.

Use the data from your table to construct five different column graphs. One column graph will show the percentages of protein for each cereal. The other four column graphs will show percentages of fat, carbohydrate, sugar and fibre.

6 Interpret your data.

Analyse the data and decide which cereal has the highest nutritional value.

Choose the best three cereals to be served at the breakfast club.

Reasoning and reporting

7 Display your tables and graphs.

Show the class your tables and graphs.

Justify your choice of cereals. You must be able to explain the reasons for your recommendation.

imathskids.com.au

Go to **imathskids.com.au** – the Investigation 5 area contains the Investigation plan, websites and Data page that you need to complete this Investigation.

Nutritional information (amounts per 100 g)					
Cereal	Protein	Fat	Carbohydrate	Sugar	Fibre

Inquiry

Look more closely at the information on one of your cereal boxes.

What other types of nutritional information are included?

Some ingredients occur in very small amounts.

Find out what each of these different symbols mean: mg, µg and kJ.

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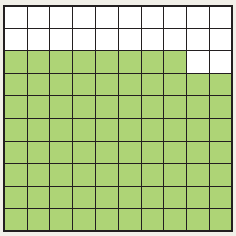
NA22 Percentages

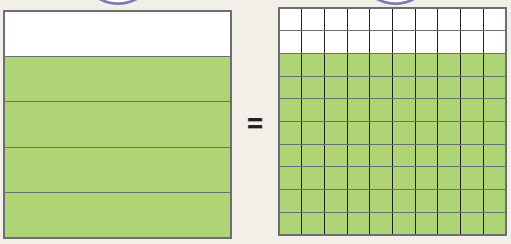
The word **percentage** means **of every hundred**. 78 percent (78%) means 78 of every hundred. The symbol for percent is %.

Here 78 percent (78%) of the 100 squares is shaded.

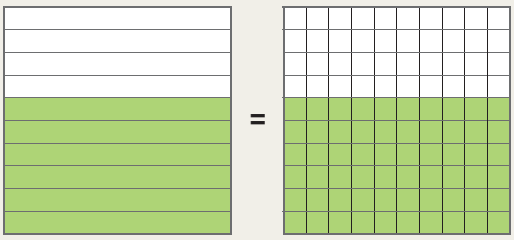


A **common fraction** can also be shown as a **percentage**.

$\frac{4}{5}$ = 80%



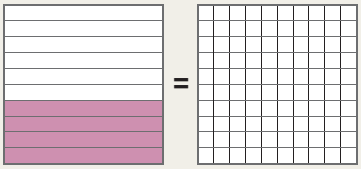
$\frac{6}{10}$ = 60%



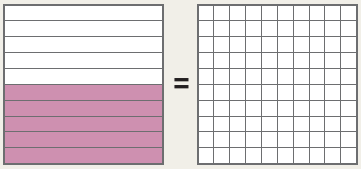
Try this

1 Shade the percentage grid equal to the common fraction beside it, and write what percentage is shaded.

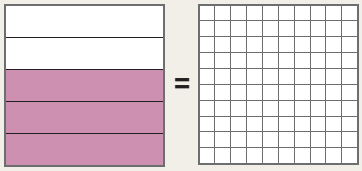
a $\frac{4}{10}$ = ____ %



b $\frac{1}{2}$ = ____ %



c $\frac{3}{5}$ = ____ %



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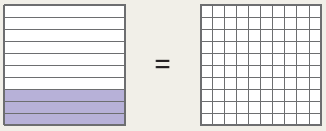
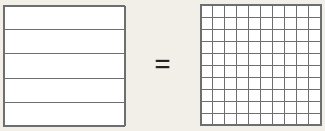
2 In the questions below there are four items – a fraction box, a fraction grid, a percent box and a percent grid. For each question, you are given one filled in box or grid. Use that to complete the other three items.

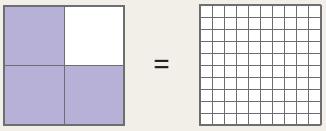
a ☐ = ☐ %



b ☐ = 20%



c ☐ = ☐ %



3 Arrange the fractions and percentages together in order from smallest to largest.

77%, $\frac{3}{10}$, 45%, 15%, $\frac{3}{5}$, $\frac{3}{4}$, 20%

4 One hundred students were asked which sport they played.

Sport played	Percentage playing sport
Basketball	16
Gymnastics	6
Netball	26
Soccer	40
Tennis	12

a How many students played soccer? ☐

b What percentage of students played netball *and* basketball? ☐

c Which of the following is closest to the fraction of students playing netball? $\frac{1}{2}$ $\frac{3}{4}$ $\frac{1}{4}$ $\frac{2}{4}$ ☐

d Half of the students who played soccer were boys.

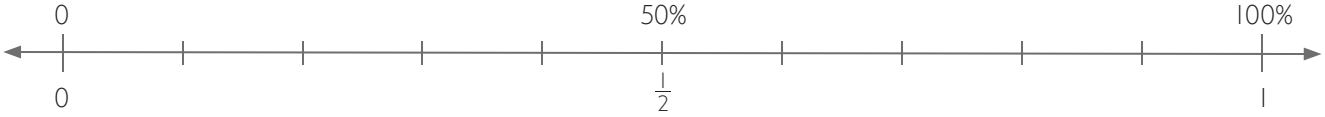
What percentage of the soccer players were girls? ☐

How many boys played soccer? ☐

Problem solving task

Fractions and percentage number line

Write the numbers on the number line below. 28%, $\frac{3}{5}$, 75%, 12%, $\frac{3}{4}$, $\frac{3}{10}$, 80%



Use the space provided in *iMaths 5 Tracker Book* to work out your answer.

Challenge

Bead percentages

1 Draw 10 beads on a string and colour 20% of them red, 40% blue, 10% green and 30% yellow.

2 Draw a pizza that has been cut into four equal pieces and colour 25% red, 50% orange and 25% yellow.

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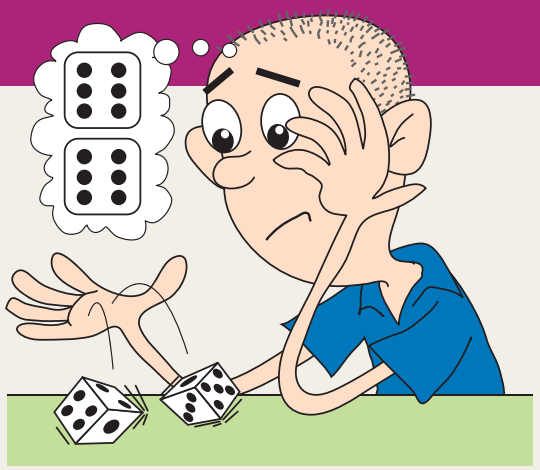
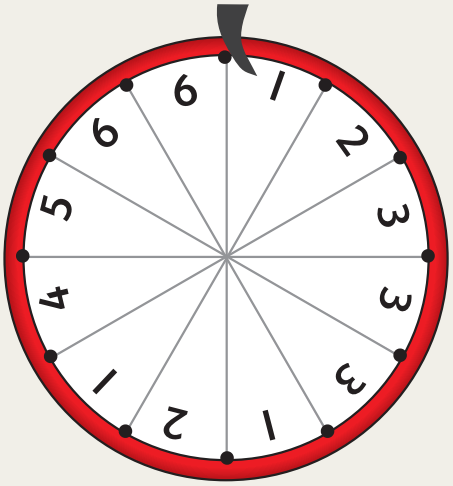
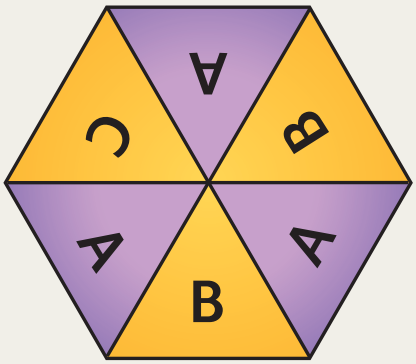
SP2 Interpreting data

In games of chance you need to be aware of times when the outcomes are **fair** or **unfair**.
A fair game will allow an even chance of success. An unfair game will not allow an even chance of success.







Fair

$(\frac{3}{12})$ 1 vs 3 $(\frac{3}{12})$
$(\frac{1}{12})$ 4 vs 5 $(\frac{1}{12})$

Unfair

$(\frac{3}{12})$ 3 vs 4 $(\frac{1}{12})$
$(\frac{3}{6})$ A vs B $(\frac{2}{6})$

Try this

1 Label these as **fair** or **unfair**.

a 1 vs 5 ____ **b** 5 vs 6 ____ **c** 2 vs 6 ____

d 3 vs 1 ____ **e** 2 vs 3 ____ **f** A vs C ____

g B vs C ____ **h** 1 vs 3 ____ **i** 5 vs 4 ____

j 1 vs 4 ____ **k** 1 vs 2 ____ **l** 5 vs 3 ____

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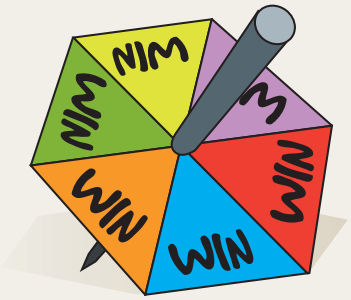


2 Design spinners to show how games of chance can be fair or unfair.

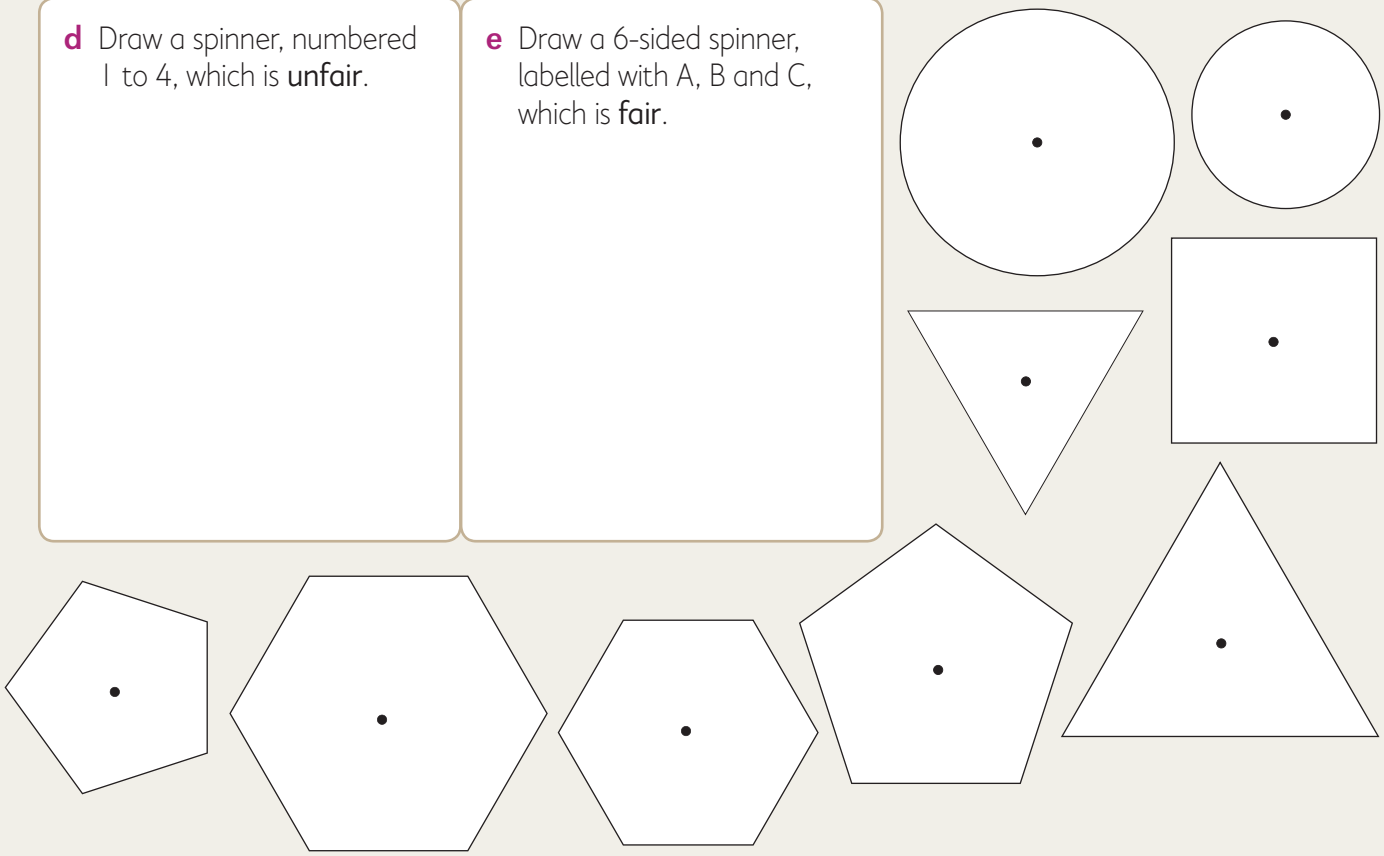
a Draw a spinner, numbered 1 to 5, on which **5** will score most often.

b Draw a spinner, coloured blue, green and red, on which **red** has an even chance of scoring as the other colours.

c Draw a spinner, labelled A, B, C and D, on which **A** will score least often.

d Draw a spinner, numbered 1 to 4, which is **unfair**.

e Draw a 6-sided spinner, labelled with A, B and C, which is **fair**.



Challenge

Who wants a great deal of fortune? Name some television game shows where 'chance' is involved. Describe the part of the game where chance is involved.

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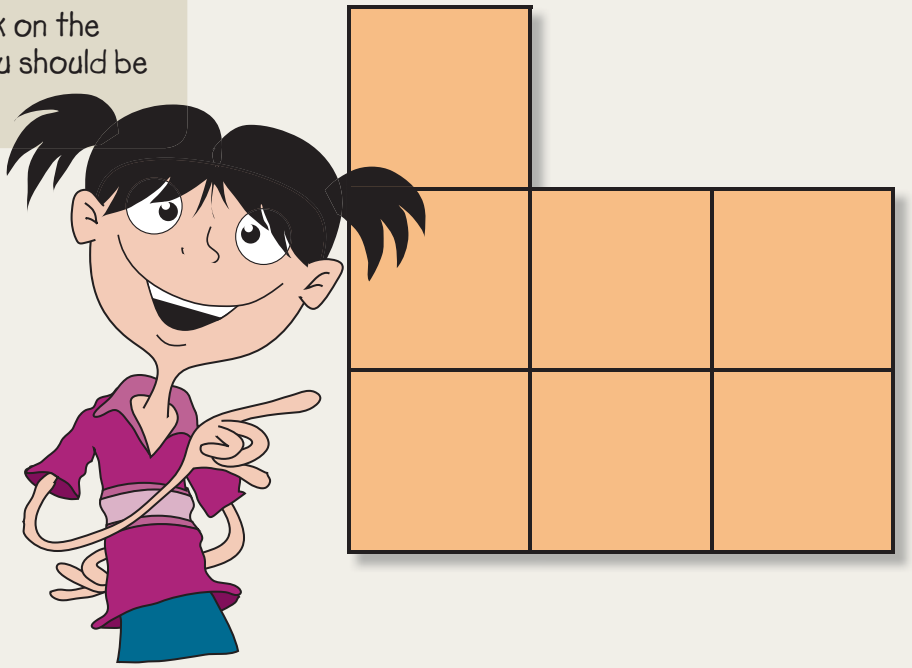
Problem solving strategies
7 Find smaller parts of a large problem

The **find smaller parts of a large problem** strategy involves breaking a problem down into easy-to-manage parts. Work on the parts one at a time, and soon you should be able to solve the entire problem.



Share this problem

How many rectangles are there altogether in this shape?
Remember that squares are rectangles too.

Discuss the solution

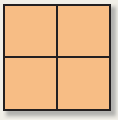
Finding smaller parts of a large problem will be a useful strategy here.

Count the '**one-piece**' rectangles. There are **7** of these rectangles.

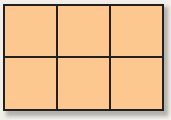
Count the '**two-piece**' rectangles. There are **8** of these rectangles.

Count the '**three-piece**' rectangles. There are **2** of these rectangles.

Count the '**four-piece**' rectangles. There are **2** of these rectangles.



Count the '**six-piece**' rectangles. There is **1** of these rectangles.



The total is 7 + 8 + 2 + 2 + 1 = 20. There are **20** rectangles in the shape together.

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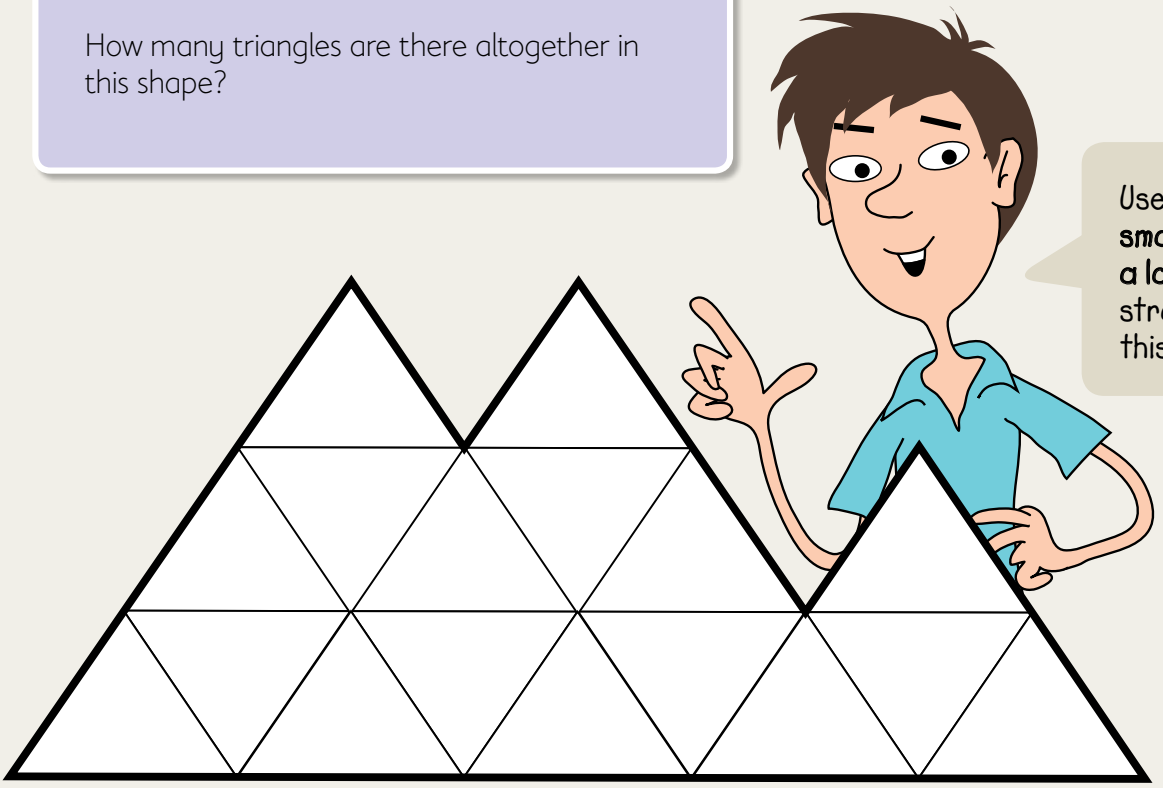
YOUR TURN

How many triangles are there altogether in this shape?



Use the **find smaller parts of a large problem** strategy to solve this problem.

Strategy 7

1	Guess and check	6	Check for relevant or irrelevant information
2	Make a table or chart	7	Find smaller parts of a large problem
3	Draw a picture or diagram	8	Make an organised list
4	Act out the problem	9	Solve a simpler problem
5	Find a pattern or use a rule	10	Work backwards

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