Australian

Signpost MATHS NSW

Sample pages

4

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Short Contents

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What is Australian Signpost Maths NSW?

Australian Signpost Maths NSW is a mathematics activity book series for students from Kindergarten to Year 6. The series has been written to meet the requirements of the Australian Curriculum: Mathematics in NSW.

The components of the series include Student Books, Teacher's Books, Mentals Books and an interactive Website. Teachers can select an appropriate program for every student from the rich and varied material provided.

The content has been carefully sequenced within each year level and across the series to take into account students' likely mathematical development.

Student Books

Teacher's Books

Mentals Books

Website

Structure of Australian Signpost Maths NSW

Australian Signpost Maths NSW emphasises the curriculum's syllabus content as well as problem-solving strategies, language development and the use of technology.

The syllabus is organised into three content strands and the Working Mathematically proficiency strand.

Content Strands

- Number and Algebra
- Measurement and Geometry
- Statistics and Probability

Working Mathematically

- Communicating
- Problem Solving
- Reasoning
- Understanding
- Fluency

Australian Signpost Maths NSW also provides opportunities to develop other general capabilities, such as personal and social competence and intercultural understanding.

To maximise the benefits of the program, the Student Book, Teacher's Book, Mentals Book and Website should be used together.

The structure of the **Student Book** allows teachers to determine both the order and the extent of content covered. Strands are organised separately so that the teacher, not the Student Book, decides the content of the next lesson. However, a suggested term program (see page x of this book) and a detailed program (see the Teacher's Book and website) are also provided.

The **Teacher's Book** also provides lesson plans for each page of the Student Book and blackline masters to assist teachers in implementing the program.

The **Mentals Book** mixes examples from all strands. It revises the content covered in the Student Book. Each content strand is thoroughly covered, with the proficiency strands incorporated within each section. A special feature woven throughout the Mentals Book is the tables program in the four operations.

The innovative **Website** helps teachers to bring mathematics alive with technology. The website provides interactive maths tools, games and practice opportunities as well as relevant resource masters and worksheets for all year levels. These can be used for whole-class, small-group and individual learning. The website also includes **Concept Check-In** a new diagnostic screener.

Student Book pages are colour-coded by section.

Number and Algebra A | **Measurement and Geometry A** | **Statistics and Probability**

Number and Algebra B | **Measurement and Geometry B** | **Answers**

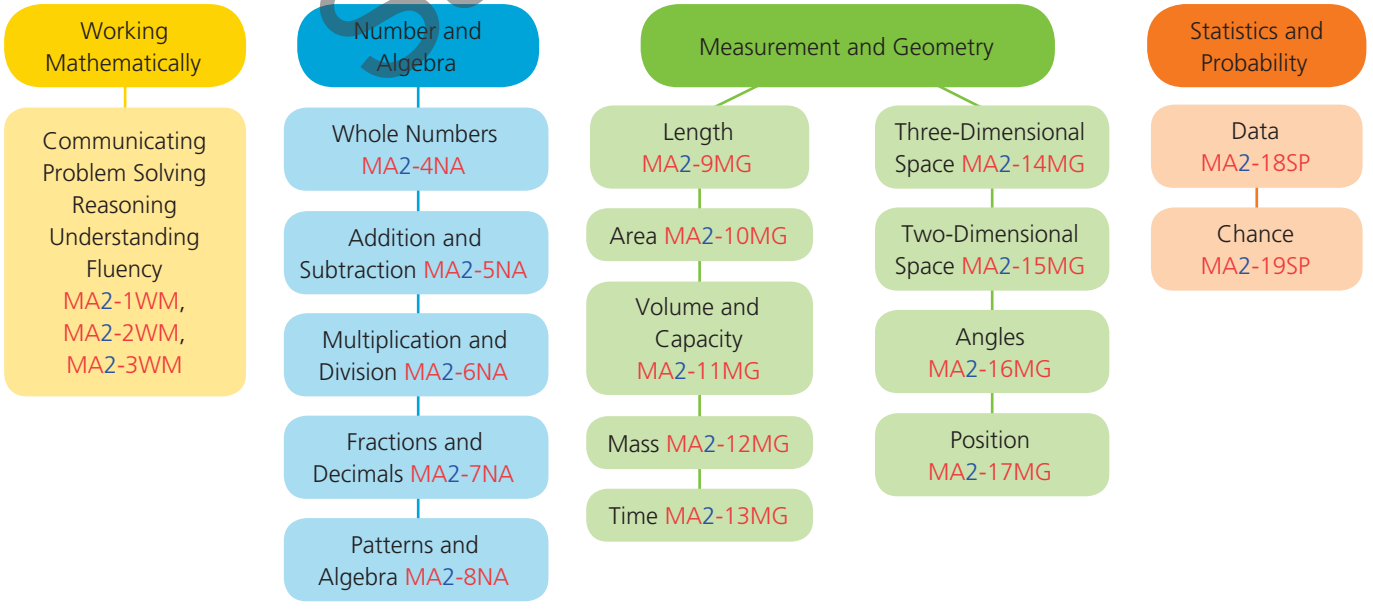
Structure of NSW Mathematics K–6, Australian Curriculum

The K–6 Mathematics Syllabus content is described in Early Stage 1, Stage 1, Stage 2 and Stage 3. Students develop at different rates, but Stage 2 describes the content expected to be covered in Years 3 and 4.

The outcome reference MA2-4NA refers to Mathematics Stage 2, Substrand 4 in the Number and Algebra strand. Relevant syllabus outcomes are shown in the Contents and Syllabus Overview on page vi, in the Teacher's Book and in the planning documents on the website.

The Working Mathematically strand pervades each of the other strands.

The syllabus strands and substrands covered in Stage 2 are shown below.



Special Features of Australian Signpost Maths NSW

- **Traffic Light** system allows students to reflect on their work and highlight any units that they are having trouble understanding. They tick the red for units they feel they still don't understand, and green for those they feel they understand fully.
- Exercises are **well graded**. New work is reinforced in the Mentals Book.
- **Answers** are supplied in the back of this book as well as in the Teacher's Book.
- **Concept Check-In** diagnostic screener (on the Website) provides a snapshot of the class' conceptual understandings to aid in classroom management. It also allows teachers to measure progress over time.
- The eight **Diagnostic Tests** (now also in the back of this book) allow the teacher to discover each student's strengths and weaknesses, and the cross-references direct students to the pages where that work is treated.
- The **Dictionary** at the beginning of this Student Book will help students to learn the language of mathematics.
- **ID Cards** (in the Mentals Book, Teacher's Book and Website) review the language of mathematics by asking students to identify common terms, shapes and symbols.
- Important **rules and concepts** are clearly highlighted.
- **Worked examples** and explanations are given throughout the Student Book where new concepts are introduced.
- The use of **colour** makes emphasis clear and is highly motivating.
- **Cartoons** give instruction and friendly advice.
- **Interactive Activities** are provided on the website for whole-class, small-group and individual learning.

Australian Signpost Maths NSW Icons

Signpost icons are used throughout the book as cues to the essential nature of exercises and activities, and as a guide to ways of engaging with them. These icons often indicate alternative or more concrete approaches to dealing with concepts.

This icon highlights **important rules and concepts** occurring throughout the book. It often appears with worked examples.

Activities provide **applications and enrichment**. These activities usually involve the use of concrete materials and partner or group work.

These enjoyable activities are used to **motivate and involve** students in mathematical pursuits. They usually involve games and puzzles.

Investigations allow students to **explore and discover** maths concepts.

This icon indicates the use of computers, calculators or other **information and communications technology**.

4 Contents and Syllabus Overview

KEY

- Number and Algebra
- Measurement and Geometry
- Statistics and Probability

Working Mathematically pervades all of the strands as indicated by the 'WM' outcomes.

Number and Algebra A			Content	Counting and numeration	Place value	Fractions	Decimals	Number patterns	Syllabus Outcomes	Suggested Progress
Page	Unit	Title								
1	1:01	Fractions				●			MA2-1WM, -7NA	Term 1
2	1:02	Hundredths				●			MA2-1WM, -7NA	
3	1:03	Decimals				●	●		MA2-1WM, -7NA	
4	1:04	Numbers to 9 999		●	●				MA2-1WM, -4NA	
5	1:05	Numbers to 9 999		●				●	MA2-1WM, -4NA	
6	1:06	Place Value to 10 000		●	●				MA2-1WM, -4NA	
7	1:07	Numbers to 99 999		●	●				MA2-1WM, -4NA	T1, T2*
8	1:08	Rounding		●	●				MA2-1WM, -4NA	
9	1:09	Comparing Fractions				●			MA2-1WM, -7NA	Term 2
10	1:10	Equivalent Fractions				●			MA2-1WM, -3WM, -7NA	
11	1:11	Improper Fractions and Mixed Numerals				●		●	MA2-1WM, -3WM, -7NA	
12	1:12	Equivalent Fractions				●			MA2-1WM, -7NA	
13	1:13	Equivalent Fractions				●		●	MA2-1WM, -7NA	
14	1:14	Fractions				●			MA2-1WM, -7NA	T3, T4*
15	1:15	Numbers to 99 999		●	●				MA2-1WM, -4NA	
16	1:16	Numbers to 99 999		●	●				MA2-1WM, -2WM, -4NA	
17	1:17	Ordering Numbers to 99 999		●	●				MA2-1WM, -4NA	
18	1:18	Equivalent Fractions							MA2-1WM, -3WM, -7NA	
19	1:19	Fractions and the Number Line				●		●	MA2-1WM, -7NA	
20	1:20	Place Value in Decimals			●	●	●		MA2-1WM, -7NA	Term 3
21	1:21	Tenths				●	●	●	MA2-1WM, -7NA	
22	1:22	Comparing Decimals					●		MA2-1WM, -7NA	
23	1:23	Tenths and Hundredths			●		●		MA2-1WM, -7NA	
24	1:24	Using Hundreths			●	●	●		MA2-1WM, -7NA	T5, T6*
25	1:25	Reading and Writing Decimals					●		MA2-1WM, -7NA	
26	1:26	Tenths and Hundredths				●	●		MA2-1WM, -7NA	Term 4
27	1:27	Numbers to 99 999		●	●				MA2-1WM, -2WM, -3WM, -4NA	
28	1:28	Numbers to 999 999		●	●				MA2-1WM, -4NA	T7, T8*
29	1:29	One Million		●	●				MA3-1WM, -4NA	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Contents Cross-reference

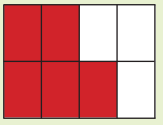
Number and Algebra

1:01 Fractions

CONCEPT

Numerator → 5
Denominator → 8
is 5 of 8 equal parts.

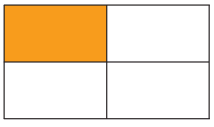
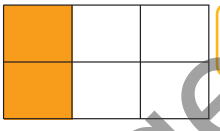
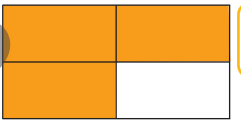
3 parts have not been coloured.

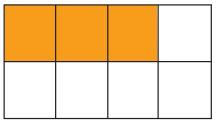
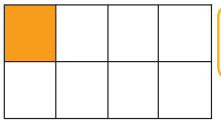
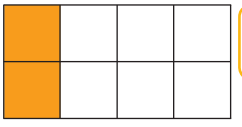


$\frac{5}{8}$

5 parts have been coloured.

1 What part of each shape has been coloured?

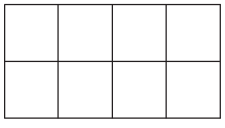
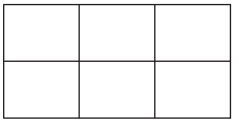
a  b  c  d 

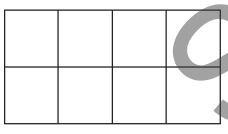
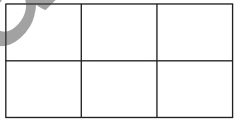
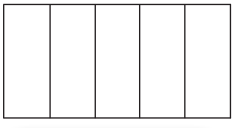
e  f  g  h 

2 What part of each shape above has not been coloured?

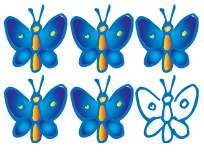
a ☐ b ☐ c ☐ d ☐ e ☐ f ☐ g ☐ h ☐

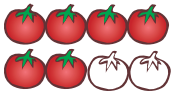
3 Colour part of each shape to match the given fraction.

a  $\frac{4}{8}$ b  $\frac{1}{6}$ c  $\frac{1}{3}$ d  $\frac{4}{6}$

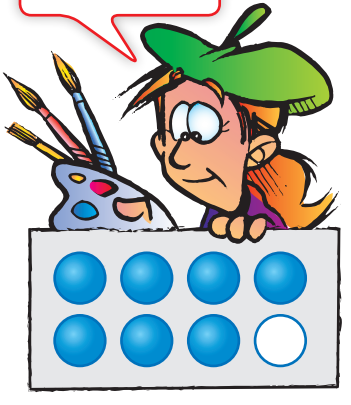
e  $\frac{3}{8}$ f  $\frac{5}{6}$ g  $\frac{7}{8}$ h  $\frac{2}{5}$

4 What part of each group has been coloured?

a  b  c 

d  e  f 

The part coloured is $\frac{7}{8}$.

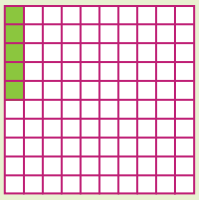


5 What part of each group above has not been coloured?

a ☐ b ☐ c ☐ d ☐ e ☐ f ☐

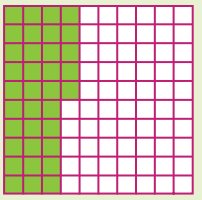
1:02 Hundredths

CONCEPT



5 out of 100.
That's $\frac{5}{100}$.

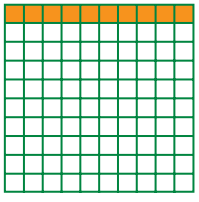
35 out of 100.
That's $\frac{35}{100}$.

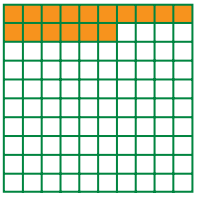


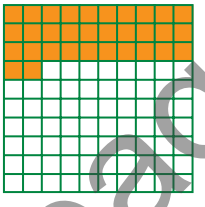
One hundred hundredths = 1 whole

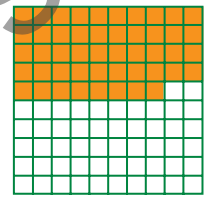
$\frac{100}{100}$ = 1 whole

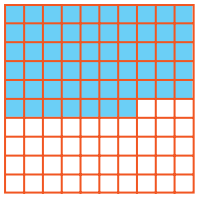
1 What part of each hundred square has been coloured?

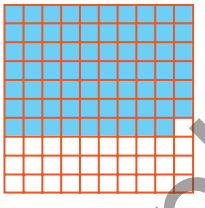
a  ☐

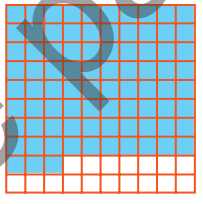
b  ☐

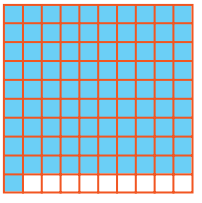
c  ☐

d  ☐

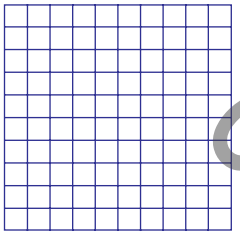
e  ☐

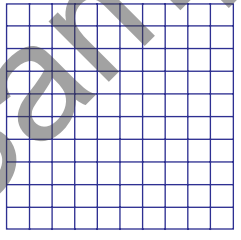
f  ☐

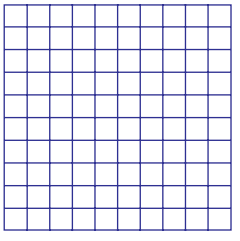
g  ☐

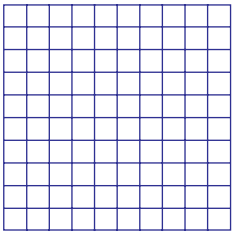
h  ☐

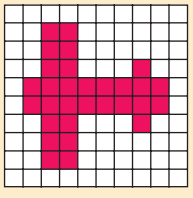
2 Colour part of each hundred square to match the given fraction.

a 
$\frac{25}{100}$

b 
$\frac{43}{100}$

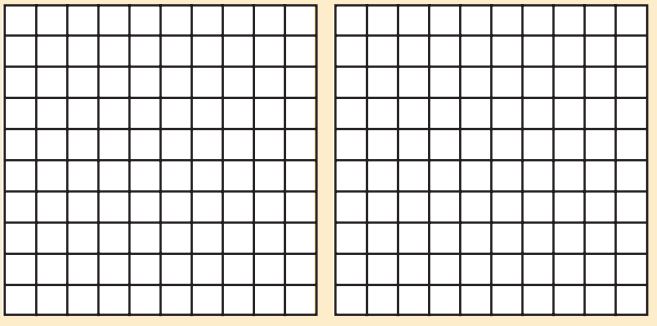
c 
$\frac{19}{100}$

d 
$\frac{36}{100}$



3 Estimate what part of this hundred square has been covered. Check by counting.

- Do this for pictures of your own, drawn on hundred squares.

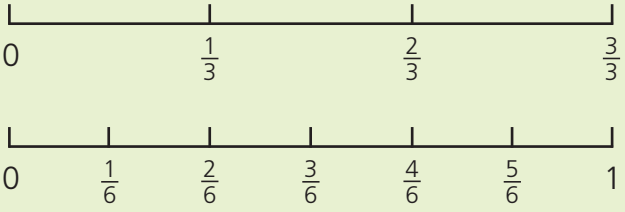


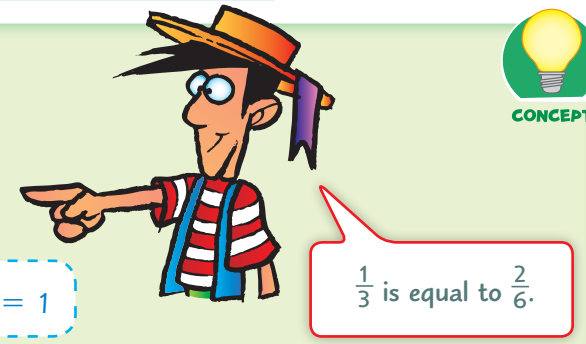
ACTIVITY

1:18 Equivalent Fractions

CONCEPT

Fractions can be positioned on number lines.

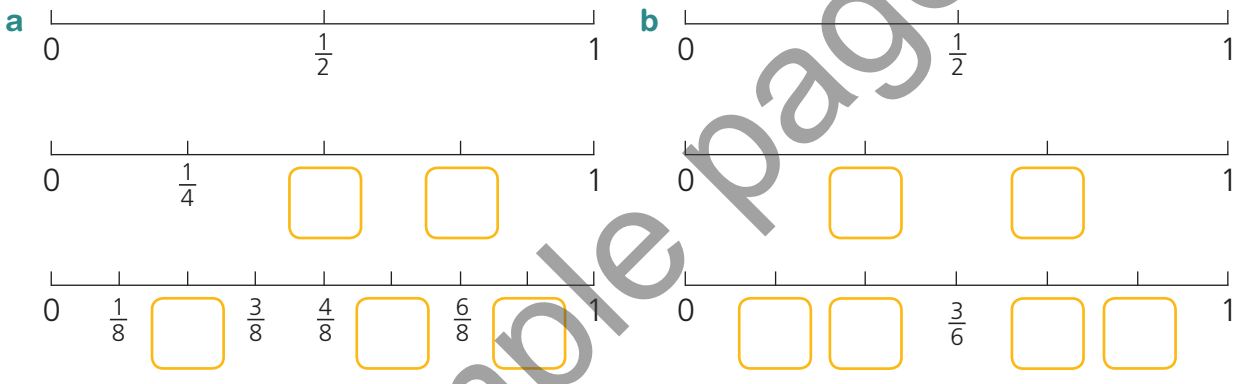




1 Use the number lines above to write a fraction equal to:

a $\frac{2}{6}$ ☐ **b** $\frac{4}{6}$ ☐ **c** $\frac{6}{6}$ ☐ **d** $\frac{2}{3}$ ☐

2 Complete the number lines.



3 Use the number lines above to answer **true** (**T**) or **false** (**F**).

a $\frac{4}{8} = \frac{1}{2}$ ☐ **b** $\frac{3}{4} = \frac{6}{8}$ ☐ **c** $\frac{1}{2} = \frac{3}{6}$ ☐ **d** $\frac{2}{6} = \frac{1}{2}$ ☐

e $\frac{7}{8} = \frac{3}{4}$ ☐ **f** $\frac{2}{8} = \frac{1}{4}$ ☐ **g** $\frac{4}{6} = \frac{2}{3}$ ☐ **h** $\frac{2}{6} = \frac{1}{3}$ ☐

i $\frac{3}{4} = \frac{5}{8}$ ☐ **j** $\frac{4}{4} = \frac{2}{8}$ ☐ **k** $\frac{5}{6} = \frac{1}{3}$ ☐ **l** $\frac{2}{2} = \frac{3}{3}$ ☐

ACTIVITY

4 Share 24 cards into these fractions.

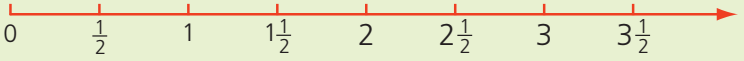
a Quarters = ☐ in each share. **b** Eighths = ☐ in each share.

c Thirds = ☐ in each share. **d** Sixths = ☐ in each share.

- Use other concrete materials to demonstrate halves, quarters and eighths of an object or a collection of objects.
- Explain your answers to a partner.

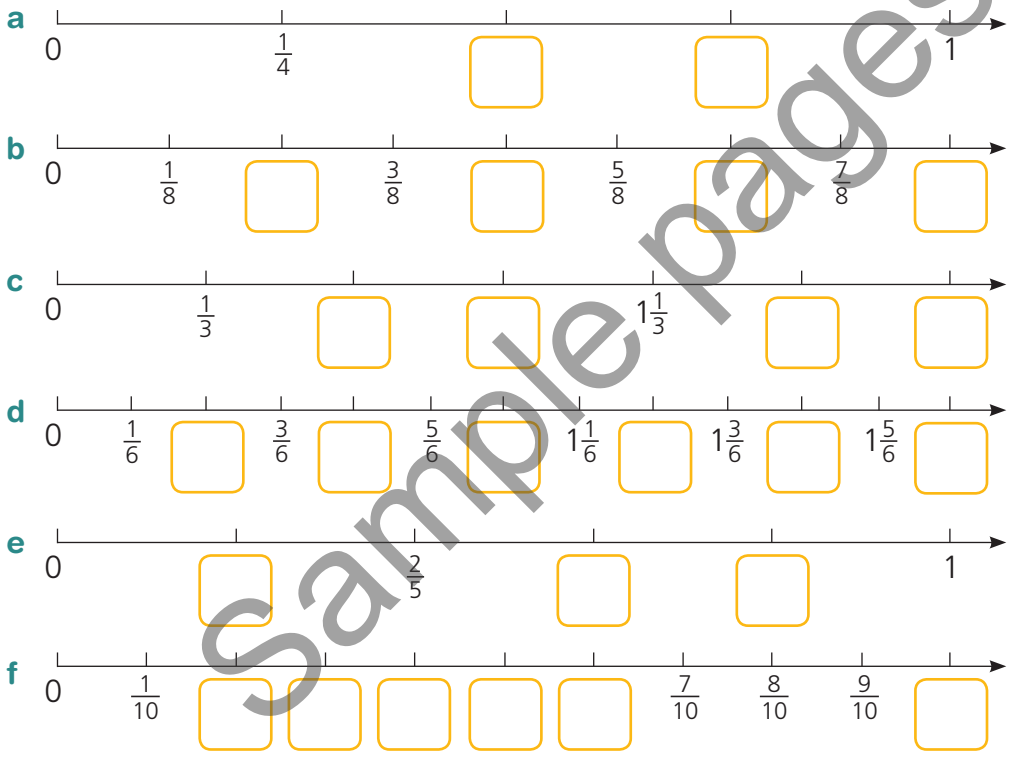
1:19 Fractions and the Number Line

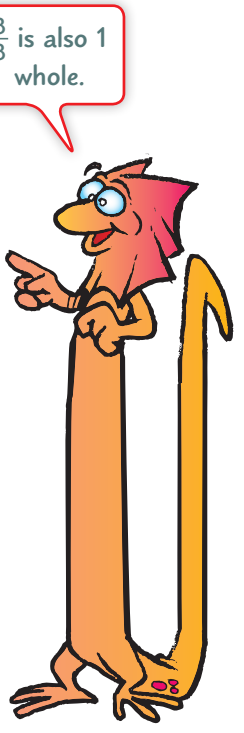
CONCEPT



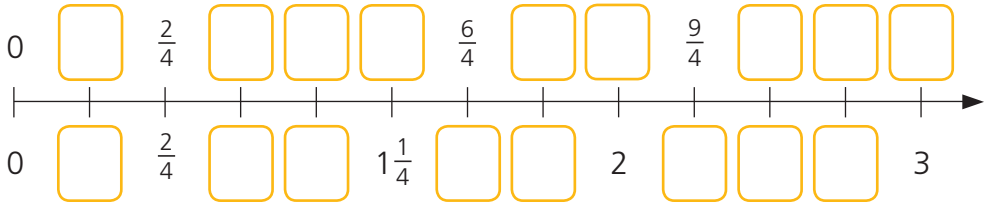
Numerator → $\frac{5}{2}$ ← Denominator

1 Complete the number lines.





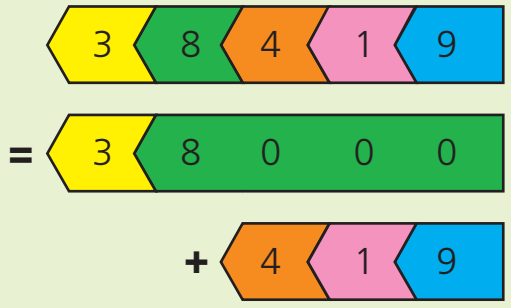
2 Complete the number lines.



3 Write a fraction that is the same as:

a $\frac{6}{4} = \square$ **b** $\frac{7}{4} = \square$ **c** $\frac{12}{4} = \square$

1:27 Numbers to 99 999

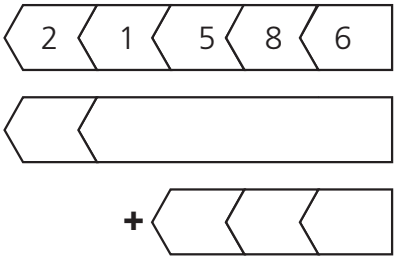


38 419
= 38 000 + 419

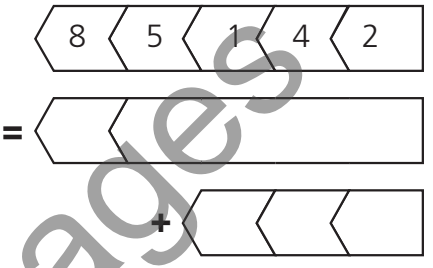
CONCEPT

1 Complete these arrow cards.

a

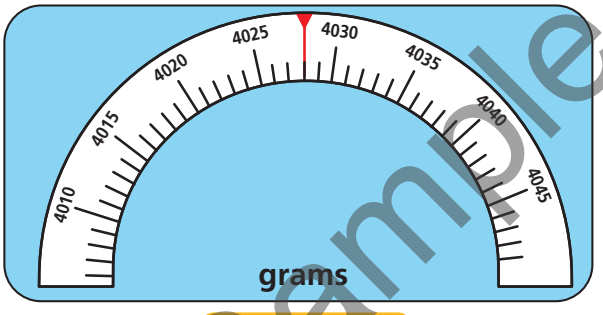


b

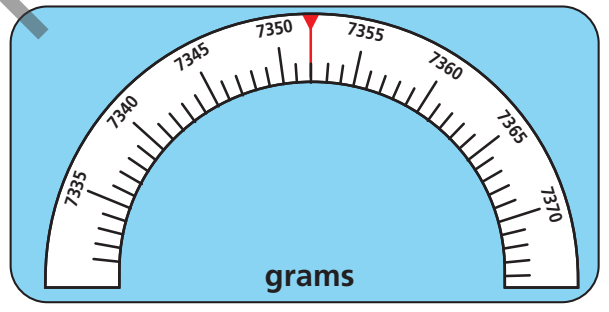


2 Write the mass shown on each scale.

a



b



3 Each gold bar is worth $1 000. What would be the value of:

a 5 bars of gold?

b 10 bars of gold?

c 20 bars of gold?

d 50 bars of gold?

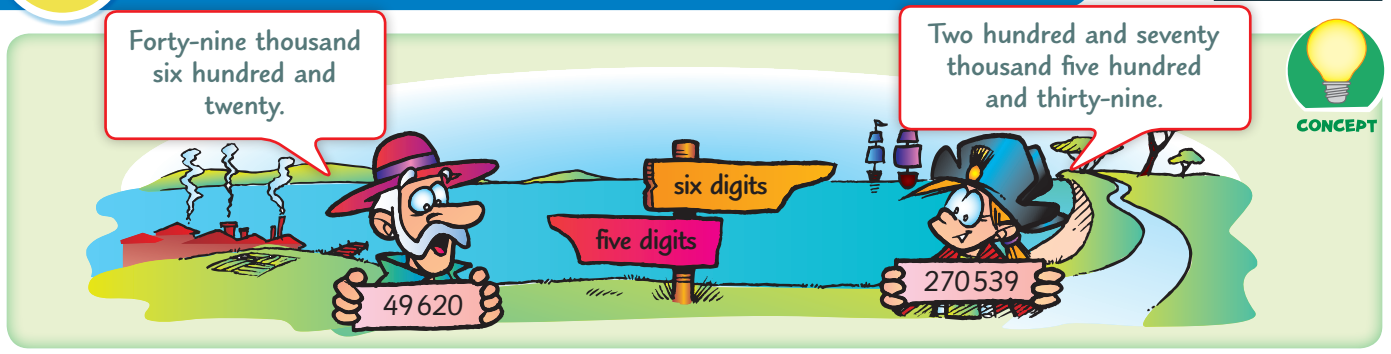
e 70 bars of gold?

f 100 bars of gold?

INVESTIGATION

Invent a system (like the one in Question 3) to represent large numbers.
Be prepared to explain your system to others.

1:28 Numbers to 999 999



CONCEPT

1 Read these numbers aloud and then write them in figures on the place-value chart.

a thirty-six thousand nine hundred and seventy-four

b five hundred and seventy-five thousand three hundred and eighty

c nine hundred and fifteen thousand four hundred and twenty-nine

	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
a		3	6	9	7	4
b						
c						

The place value of the 6 is 'thousands'. The value of the 6 is 6 000.

2 Write the numeral for:

a $(6 \times 10000) + (4 \times 1000) + (9 \times 100) + (7 \times 10) + 2$

b $100000 + 70000 + 6000 + 300 + 50 + 6$

c $300000 + 80000 + 3000 + 700 + 40 + 9$

d $(7 \times 10000) + (5 \times 1000) + (9 \times 100) + (2 \times 10) + 3$

3 Write the place value of each coloured digit.

a 37**6**19 **b** 91**3**683 **c** 46**8**19 **d** 19**3**754

4 Write in words:

a 503 277

b 230 426

5 Use a calculator to find:

ICT

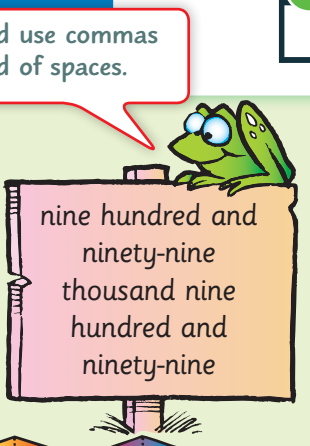
a half of 524 288 **b** half of 964 708

c half of 729 376 **d** double 319 743

e double 437 519 **f** double 297 589

g half of 621 214 **h** double 763 213

1:29 One Million



CONCEPT

999 999 + 1 = 1 000 000
= 1,000,000

Millions	Hund Thous	Ten Thous	Thous	Hund	Tens	Ones
	9	9	9	9	9	9

- One million is written with 6 zeros.

- 1 000 000 = 10 hundred thousands.

1 Read these numbers aloud and write them on the place-value chart below.

a six hundred and twenty-eight thousand four hundred and seventy-two

b nine hundred and sixty-five thousand seven hundred and twenty-three

c four hundred and eighty thousand nine hundred and thirty-five

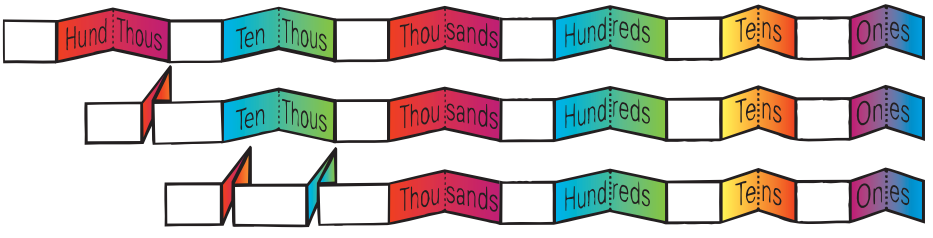
d eight hundred and forty-nine thousand six hundred and seventy

e three hundred and sixteen thousand nine hundred and two

f one million

	Millions	Hund-Thous	Ten-Thous	Thous	Hund	Tens	Ones
a							
b							
c							
d							
e							
f							

2 Complete the numeral expanders for the number 935 000.



3 Order this group of numbers in ascending order (A) and descending order (D).
3 186, 3 861, 3 681, 6 381, 1 386

A: _____

D: _____