Australian

Signpost NSW MATHS

5

Mentals

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Introduction

Using the Mentals Books

Each unit of the Mentals Book is programmed to review Student Book content for the previous two weeks (based on the Suggested Program in the Teacher's Book). For example, Unit 15 of the Mentals Book can be set as homework to review weeks 13 and 14 of the Student Book while week 15 is being taught.

Presentation

- The content of the strands Number and Algebra, Measurement and Geometry, and Statistics and Probability is covered thoroughly.
- Essential skills are explained.
- Language, problem solving, graphs and tables are given a high profile.
- Mathematics is applied to real-life situations wherever possible.
- The **Arithmetic Card** (page 5) is an exciting teaching tool for practising basic number skills.
- **ID Cards** (pages 6 to 9) review the terms essential to success in the course.
- **Measurement examples** and **tables** (page 84 and inside back cover) are provided so that students can estimate effectively.

Mixed-topic Questions

The units present questions in a mixed-topic format.

- This is essential for thorough understanding and continuous review.
- In real life, similar questions don't often occur together.
- It allows the teacher to discover weaknesses that could otherwise pass unnoticed.
- It provides a real test of understanding.

Graded Questions

- Column 1: easier
- Columns 2 and 3: harder
- Column 4: Extension and Challenge

Motivation

- Cartoons make mathematics more appealing.
- There are two lizards hidden on each page for students to find.

Extra Activities

- Problem solving **strategies** are introduced in a carefully planned sequence throughout the series.

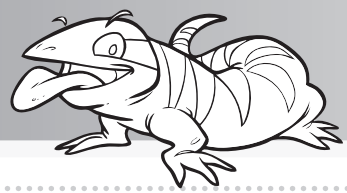
- Important concepts from **Number and Algebra** and **Measurement and Geometry** are explored.

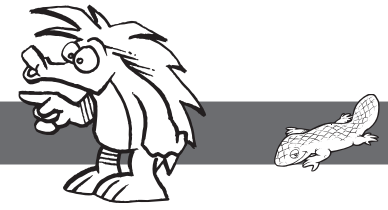
- **Measurement** concepts and activities are introduced and investigated.

- **Statistics and Probability** concepts (Data and Chance) are presented for revision and extension.

- A **tables** program for each of the four operations is included.
- It is important for students to try to learn addition and multiplication tables by heart.

5 Contents





Unit Activities

Unit	Content	Extra Activity
1:1/2 **1:3/4**	× 2, × 4 Personal measures	× tables Measure
2:1/2 **2:3/4**	× 10, × 5 − 3, − 7	× tables − tables
3:1/2 **3:3/4**	× 3, × 4 Problem solving	× tables Strategy Time
4:1/2 **4:3/4**	× 3, × 6 Problem solving	× tables Strategy Time
5:1/2 **5:3/4**	× 7 Division	× tables ÷ tables
6:1/2 **6:3/4**	× 8 Division	× tables ÷ tables
7:1/2 **7:3/4**	× 9 Language	× tables ID Card A
8:1/2 **8:3/4**	− 6, − 8 Problem solving	− tables Strategy Time
9:1/2 **9:3/4**	Problem solving Rounding off	Strategy Time Concept
10:1/2 **10:3/4**	Factors × 2, × 5, × 4, × 10, × 0, × 1	Concept × tables
11:1/2 **11:3/4**	Problem solving × 10, × 5	Strategy Time × tables
12:1/2 **12:3/4**	Dot plots Language	Data ID Card D
13:1/2 **13:3/4**	Dot plots Area	Data Measure
14:1/2 **14:3/4**	Division with remainders × 3, × 6	Concept × tables
15:1/2 **15:3/4**	Division with remainders − 9, − 5	Concept − tables
16:1/2 **16:3/4**	Chance as a fraction 15 −, 16 −	Chance − tables
17:1/2 **17:3/4**	Using a graph Language	Concept ID Card B
18:1/2 **18:3/4**	The jump strategy × 7, × 8	Strategy Time × tables
19:1/2 **19:3/4**	Compass points × 8, × 6	Concept × tables

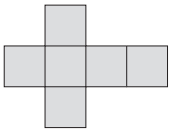
Unit	Content	Extra Activity
20:1/2 **20:3/4**	÷ 3, ÷ 6 Compass directions	÷ tables Concept
21:1/2 **21:3/4**	2D Space Problem solving	Concept Strategy Time
22:1/2 **22:3/4**	Language Area and perimeter	ID Card C Strategy Time
23:1/2 **23:3/4**	÷ 7, ÷ 8 Roman numerals	÷ tables Concept
24:1/2 **24:3/4**	− 3, − 5, − 9 Division	− tables ÷ tables
25:1/2 **25:3/4**	× 3, × 6 Language	× tables ID Card B
26:1/2 **26:3/4**	× 9, × 7 Problem solving	× tables Strategy Time
27:1/2 **27:3/4**	Perimeter Language	Measure ID Card A
28:1/2 **28:3/4**	Perimeter Number patterns	Measure Concept
29:1/2 **29:3/4**	Perimeter × 6, × 7, × 8	Measure × tables
30:1/2 **30:3/4**	Is this game fair? Language	Chance ID Card D
31:1/2 **31:3/4**	× 3, × 5, × 9 Codes	× tables Concept
32:1/2 **32:3/4**	÷ 2, ÷ 4 Magic squares	÷ tables Concept
33:1/2 **33:3/4**	Problem solving Roman numerals	Strategy Time Concept
34:1/2 **34:3/4**	Comparing chance × 9, ÷ 9	Chance ×, ÷ tables
35:1/2 **35:3/4**	Rounding money Mass	Concept Strategy Time
36:1/2 **36:3/4**	× 4, × 9 Problem solving	× tables Strategy Time
37:1/2 **37:3/4**	Language Personal measures	ID Card C Measure
Answers	These can be found in the middle of this book on pages A1 to A12.	

4:1

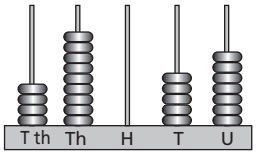
_____ out of 16

1. 2×10 _____
2. $15 + 6$ _____
3. $6 \div 2$ _____
4. $20 - 10$ _____
5. $46 + 23$ _____
6. $8 - 6$ _____
7. 4×7 _____
8. 3 lots of 4. _____
9. 13 plus 6. _____
10. $74 - 52$ _____

11. This is the net of a _____.

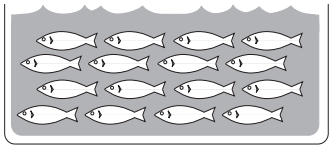


12. Write the numeral shown.



_____

13. **a** The value of the 7 in 7412. _____
    b The value of the 6 in 5763. _____

14. 


    Find a fair share if the fish were shared among 4 cats. _____ each

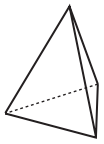
15. Weeks in a fortnight. _____

16. Write the value of 5 in:
    a 5302 _____
    b 6051 _____

4:2

_____ out of 17

1. $7 + 3$ _____
2. $40 \div 10$ _____
3. 3×8 _____
4. $9 - 6$ _____
5. 20×4 _____
6. 5×6 _____
7. $20 \div 5$ _____
8. 5×7 _____
9. 13 minus 7. _____
10. $49 - 20$ _____

11. 


    Draw the top and side view of the pyramid above.

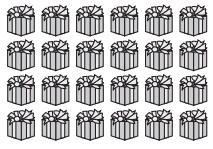
12. Write 4093 in words.

    _____

13. What is the value of the 6 in 697243?

    _____

14. Share 24 gifts between 6 people.



    _____ each.

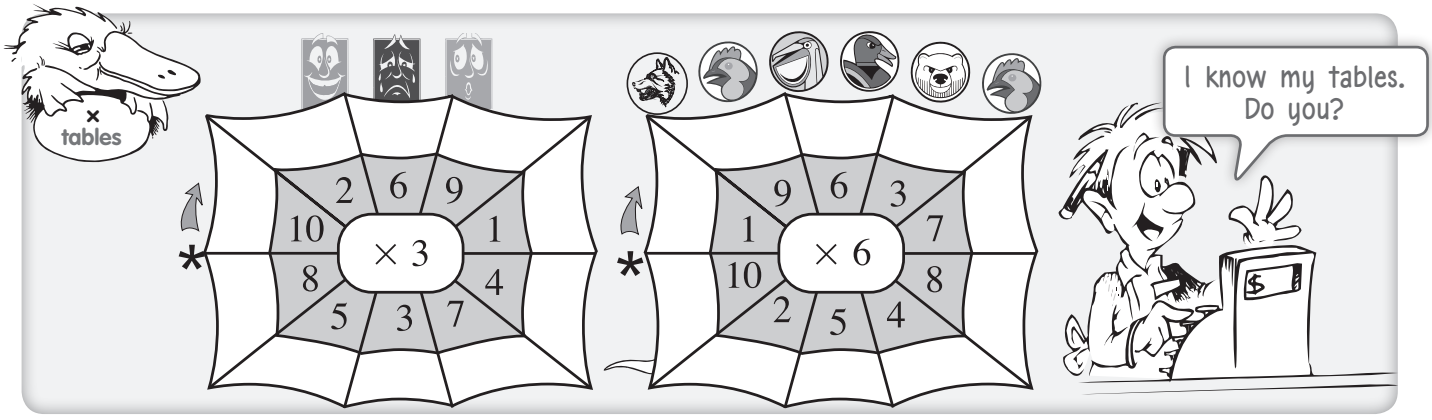
15. Write the numeral for:

    90000 + 700 + 40 + 5 _____

16. What months are in spring?

    _____

17. Write the number two hundred and thirty-one thousand five hundred and eight. _____

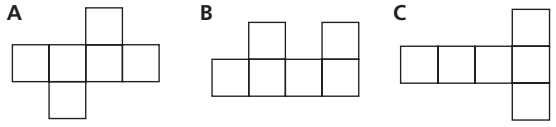


4:3 ____ out of 12

1. 425 + 284

2. 597 + 352

3. 778 + 456

4. 

Which of these nets will not make a cube? _____

5. Write the numeral for 700 000 + 20 000 + 1 000 + 500 + 20 + 3.

_____

6. Today is Friday. What day will it be in 12 days time? _____

7. Minutes in:

   a three quarters of an hour _____

   b one and a half hours _____

8. Circle the largest number.

   2 197 642 4 698 557 4 313 126

9. **a** 72 more than 105. _____

   b 57 more than 28. _____

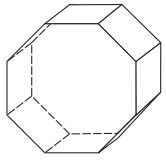
10. 1 200, 1 300, _____, _____, _____

11. Use < or > in:

    a 5 972 _____ 4 891

    b 9 013 _____ 6 721

12. Name this solid.

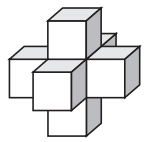


_____

_____

4:4 Extension ____ out of 6

1. Seven cubes of side length 1 cm are glued as shown. How many faces has the shape?



_____

2. 8 pens fill a packet. How many packets can be filled with 94 pens? _____

3. **a** $10\frac{1}{2} - 7$ _____

   b $8\frac{1}{2} - 2$ _____

4. **a** 12 minutes after 9:25.

   _____

   b 30 minutes before 9:25.

   _____

5. **a** 938 + 402 _____

   b 919 + 121 _____

6. How long would it take Mrs Foster to pay for a washing machine that costs $450 if she pays $50 each week?

_____

Challenge

Write as much as you can about the number 6 534 108.

_____

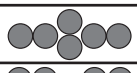
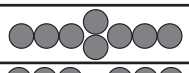
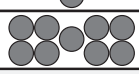
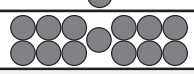
_____

_____

_____

_____

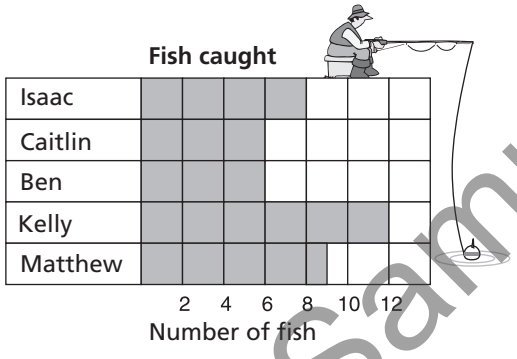
For each pattern, give the number of circles that would be used in the 4th and 10th pictures.

	1st picture	2nd picture	3rd picture	4th	10th
a					
b					

5:1 ____ out of 16

1. 5×2 ____
2. $11 - 6$ ____
3. 7×4 ____
4. $18 \div 9$ ____
5. $9 + 10$ ____
6. 2×5 ____
7. 3×4 ____
8. Add 5 and 8. ____
9. Take 4 from 9. ____
10. 41×2 ____

11. Write the numeral for:
    - **a** 50 000 + 3 000 + 200 + 5 ____
    - **b** 20 000 + 300 + 80 + 1 ____
12. One hour later than 6:35 am. ____
13. **a** Is 173 closer to 100 or 200? ____
    - **b** Is $1.49 closer to $1 or $2? ____
14. Metres in one kilometre. ____
15. 400 000 + 300 + 50 + 2 ____
16.



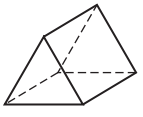
    - **a** What is the difference between the number of fish caught by Kelly and the number caught by Caitlin? ____
    - **b** Who caught 9 fish? ____

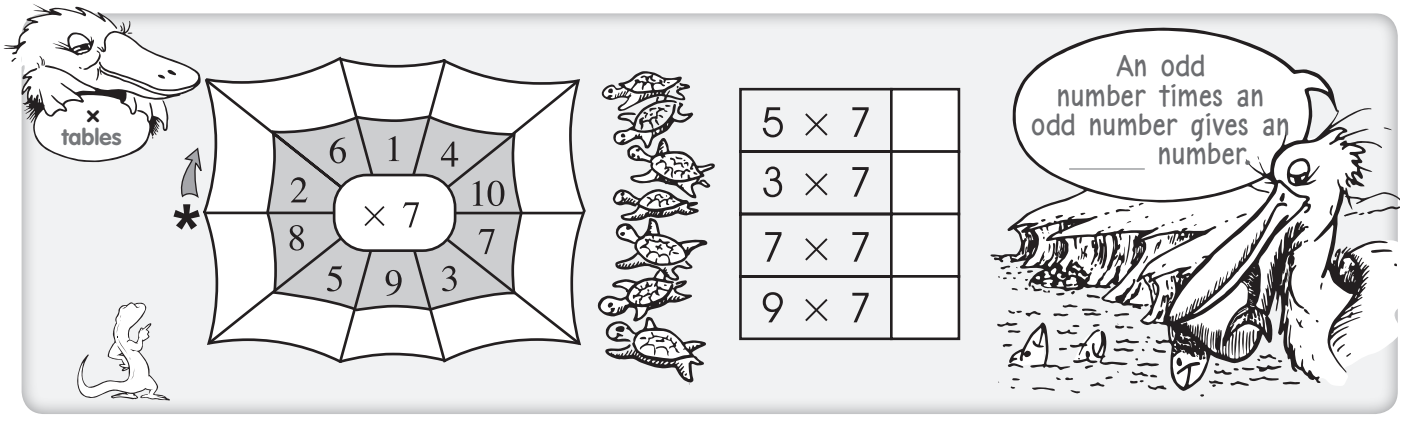
5:2 ____ out of 20

1. $7 + 9$ ____
2. $24 \div 6$ ____
3. $20 - 14$ ____
4. 4×8 ____
5. $43 + 15$ ____
6. 6×9 ____
7. $18 + 6$ ____
8. $49 \div 7$ ____
9. 8×5 ____
10. $96 - 50$ ____

11. What is the value of the 9 in 197 273? ____
12. Write the numeral for 300 000 + 90 000 + 5 000 + 300 + 90 + 2. ____
13. Share 20 between 4. ____ each
14. Kilometres in 7 000 m. ____
15. Write the numeral one million, nine hundred thousand two hundred and forty-seven. ____
16. Circle the larger number:

    2 951 623 2 951 633
17. 4 297 m = ____ km ____ m
18. Is 3 289 closer to 3 200 or 3 300? ____
19. **a** Hours from 2 pm to 6 pm. ____
    - **b** Hours from 9 am to 3 pm. ____
20. This is a: ____





5:3 ☐ out of 12

1. 312 + 231 + 15

2. 27 + 150 + 212

3. 341 + 25 + 112

4. Write in order from largest to smallest.
3 359 574 3 395 637 3 392 035

_____

5. Share 28 books among 4 girls.
One share = _____

6. Days in one leap year. _____

7. a Round 437 correct to the nearest hundred. _____
   b If a number is rounded off to 500, what could it have been? _____

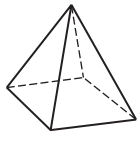
8. a Metres in one kilometre. _____
   b Metres in 1·4 km. _____

9. What is the time 29 minutes after 4:12? _____

10. In which season is February? _____

11. Round 2 457 372 to the nearest million. _____

12. On a square pyramid, how many:
   a faces? _____
   b edges? _____



Extension

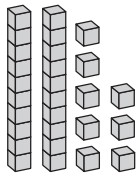
5:4 ☐ out of 6

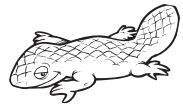
1. Months in $7\frac{1}{4}$ years? _____

2. "am" means: _____

3. How many days in summer? _____

4. a 3×28 _____
   b 4×28 _____





5. If this pattern continued, what would the 35th shape look like?
▲, ●, ■, △, ○, □, ▲, ●, _____

6. 
Every 4 minutes a dove flies away. How long would it take the doves to leave? _____

Challenge

Represent and label at least two mixed numerals.

	÷ 2	÷ 4	÷ 1
8			

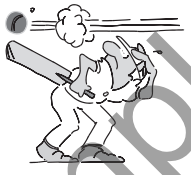
	÷ 2	÷ 12	÷ 6	÷ 3
12				

	÷ 6	÷ 9	÷ 3
18			

	÷ 2	÷ 6	÷ 4	÷ 8
24				

6:1 ____ out of 20

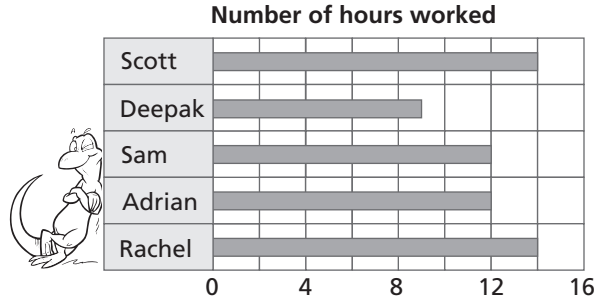
1. 9 + 6 ____
2. 4 × 3 ____
3. 6 + 8 ____
4. 7 − 2 ____
5. 51 + 8 ____
6. 12 minus 8. ____
7. Double 4. ____
8. Half of 16. ____
9. 8 ÷ 2 ____
10. 7 + 32 ____
11. Make the smallest number you can using all of the digits:
    5 2 8 7 ____
12. 10 000 + 2 000 + 50 + 9 ____
13. Days in 1 year. ____
14. Share 8 cakes among 4 people.
    One share = ____
15. Days in 1 fortnight. ____
16. Is the length of a cricket bat closer to 30 cm, 1 m or 1 km? ____



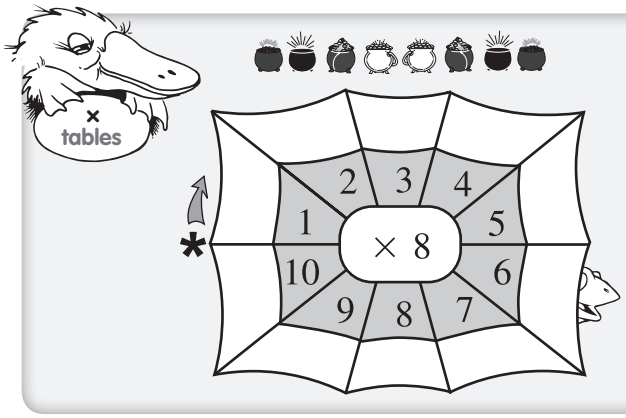
17. Use < or > in:
    a 19 704 ____ 19 695
    b 38 431 ____ 38 507
18. 4 bags of 20 balls. ____ balls
19. Write the numeral six million twenty-three thousand four hundred and three. ____
20. Does 1 hectare = 10 000 m²? ____

6:2 ____ out of 16

1. 11 − 3 ____
2. 4 × 6 ____
3. 2 + 13 ____
4. 2 × 3 ____
5. 4 × 2 ____
6. Half of 20. ____
7. 48 + 3 ____
8. 9 + 4 + 2 ____
9. Add 7 and 6. ____
10. 96c − 13c ____
11. Write in order from largest to smallest.
    8 781 344 8 768 367 8 780 033
    ____
12. Share 15 books among 3 people.
    One share = ____
13. The winter months. ____
    ____
14. Hectares in 20 000 m². ____
15. 500 metres is ____ of a kilometre.
16.



    a For how long did Adrian work? ____
    b How many hours were worked all together? ____



a Greg had 7 sheets of stickers. 8 were on each sheet. How many stickers were there? ____

b Each of the 6 pictures on our ties come in 8 colours. How many different ties do we have? ____

6:3 ☐ out of 12

1 H T U

5 6 9
+ 1 3 3

2 H T U

1 6 7
+ 2 4 3

3 Share 21 toys among 3 children. One share = _____

4 9 072 m = _____ km _____ m

5 Write 2 km 87 m as metres. _____ m

6 a 5 minutes before 1:05? _____

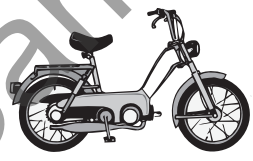
b 10 minutes before 1:05? _____

7 The short way of writing hectares. _____

8 2 m, 10 cm, 20 cm, 45 cm
Which of these would be about the width of your head? _____

9 Estimate your height. _____

10 My trip took 34 minutes. When did I arrive if I left home at 8:30 am? _____



11 Round 5 687 940 to the nearest million. _____

12 Square metres in 8 ha. _____

6:4 Extension ☐ out of 7

1 I bought 6 pens for $24. How much would it cost for:

a one? _____ b two? _____

2 Mum swam 1 kilometre. Evan swam a quarter of this distance. How far did Evan swim?

_____

3 ☐ + 32 = 81 ☐ = _____

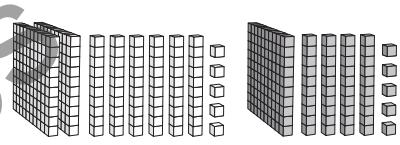
4 Four lots of $1\frac{1}{2}$. _____

5 a 265 + 145

_____

b 265 − 145

_____



6 In every space made by a row of 6 trees, we planted 8 flowers. How many flowers did we plant? _____

7 a Centuries in 2 000 years. _____

b Decades in 700 years. _____

Challenge

Draw a 2D shape and describe it.

_____

_____

_____

_____

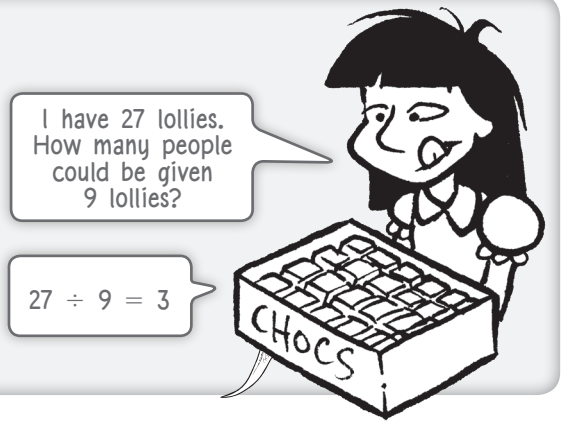
_____

	÷ 5	÷ 10	÷ 2
10			

	÷ 3	÷ 1	÷ 9
27			

	÷ 6	÷ 5	÷ 2
30			

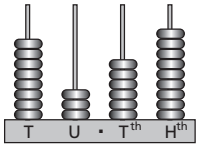
	÷ 2	÷ 6	÷ 7
42			



16:1 ☐ out of 17

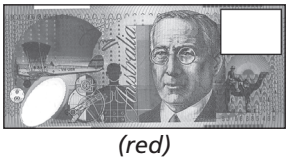
1. 16 − 2 _____
2. 4 ÷ 4 _____
3. 9 × 5 _____
4. 27 − 3 _____
5. 360 + 230 = _____
6. 7 × 4 _____
7. 4 + 38 _____
8. 3 rows of 5. _____
9. 103 take away 10. _____
10. 300 − 128 = _____

11. 4, 8, 12, _____, _____, _____, _____, _____
12. How many digits in 6 709? _____
13. Write the numeral for the number shown.



_____

14. **a** This is a _____ note.

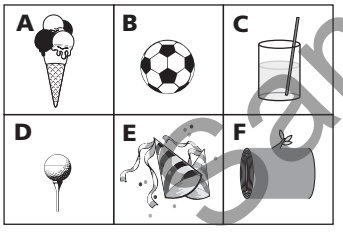


(red)

b The value of 3 of these notes.

_____

15. Half of $18. _____
16. How much more than 13 is 21? _____
17.



Which pictures show:

a cones? _____

b cylinders? _____

16:2 ☐ out of 16

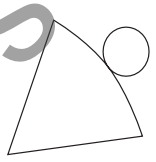
1. 20 + 10 _____
2. 38 + 12 _____
3. 4 × 3 _____
4. 101 − 5 _____
5. 23 + 17 = _____
6. Add 12 and 58. _____
7. 16 take away 9. _____
8. 5 + _____ = 11
9. Half of 70. _____
10. 64 mL − 12 mL = _____

11. Give the type of angle if its size is:

a 62° _____

b 177° _____

12. Of which solid is this a net?



_____

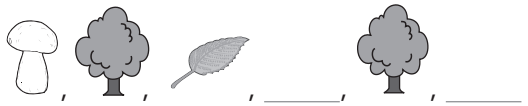
13. Find the area of a square with 5 m sides. _____
14.

a Put these angles in order, with the smallest first. _____

What type of angle (above) is:

b A? _____ **c** B? _____

15. Answer as a mixed numeral and then as a decimal. 55 ÷ 10 = ☐ — or _____
16. Complete this pattern.



_____, _____, _____

Tossing 3 coins

A 10c, a 20c and a $1 coin are tossed.

Complete this list to show the number of different outcomes.

10c	H	H	H					
20c	H	H	T					
$1	H	T	H					

Toss the 3 coins, 16 times, to find how often 3 heads occurs.

Fraction of tosses that gave 3 heads = _____ out of _____.

Fraction of outcomes that have 3 heads = _____ out of _____.

16:3 ☐ out of 11

1. 5971 + 1435

2. 6984 + 1132

3. 7823 + 1697

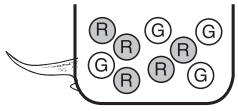
4. $3\overline{)21}$

5. $5\overline{)30}$

6. $6\overline{)54}$

7. 5 red and 4 green marbles are in a bowl.

   What is the chance, as a fraction that a marble chosen would be:

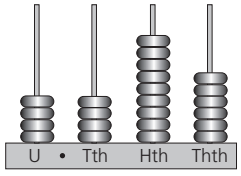
   

   a red? _____

   b green? _____

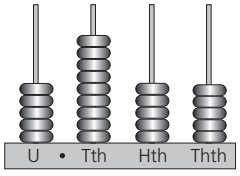
8. Write the numerals shown.

   a

   _____

   b

   _____

9. a Draw an acute angle.

   b Draw an obtuse angle.

10. Write $2\frac{31}{100}$ as a decimal. _____

11. a 16, 24, 32, _____, _____, _____

    b 80, 70, 60, _____, _____, _____

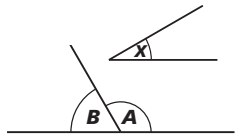
16:4 Extension ☐ out of 5

1. 3, 12, 21, 30, _____

   a What is the rule in the pattern above? _____

   b What would the 9th number be? _____

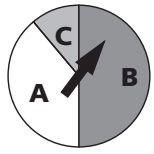
2. Estimate how many times angle ***X*** would fit into:

   a angle ***A*** _____

   b angle ***B*** _____

3. What is the chance, as a fraction, that the spinner will land on:

   a **A** _____ b **B** _____

   c **C** _____

4. If # means "add 15" and ^ means "divide by 3", then the value of 9^^### is: _____

5. ☐ × 7 = 42 ☐ = _____

Challenge

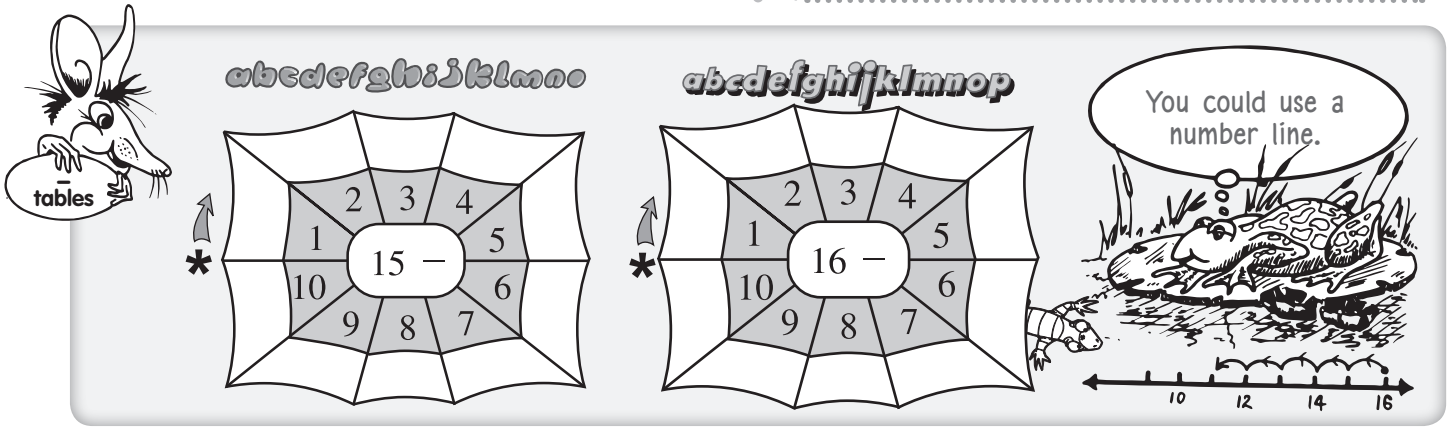
Write everything you know about the number 0·52.

_____

_____

_____

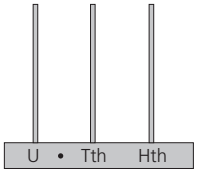
_____



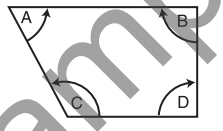
17:1 ☐ out of 17

1. 13 + 5 _____
2. 7 × 7 _____
3. 14 − 6 _____
4. 18 ÷ 3 _____
5. 11 × 4 _____
6. 2 × 5 _____
7. 15 − 15 _____
8. 6 plus 73. _____
9. 2 groups of 12. _____
10. 38 m − 21 m _____

11. Show 8·07 on this abacus.



12. Convert 600 ha to km^2. _____
13. Which ordinal number comes:
    - **a** before 73rd? _____
    - **b** two after 73rd? _____
14. Find the number of pencils in one share if 3 people share 18 pencils. _____
15. Which angle is:
    - **a** an acute angle? _____
    - **b** an obtuse angle? _____



16. Is 30° acute, obtuse or reflex? _____
17. Write the numeral:
    - **a** thirty-three point seven _____
    - **b** eighty point five two _____

17:2 ☐ out of 16

1. 45 + 25 _____
2. 6 × 4 _____
3. 28 − 9 _____
4. 4 × 3 _____
5. 1270 + 650 _____
6. 90 − 82 _____
7. 80 take away 11. _____
8. 2 times 8. _____
9. 74 plus 6. _____
10. 1754 + 689 _____

11. Complete the following:

216·93 = _____ hundreds
_____ tens
_____ units
_____ tenths
_____ hundredths

12. Convert 5 km^2 to hectares. _____
13. The total value of these notes.

_____

14. I tossed 2 coins 40 times. This tally shows the results.

2 heads	𝍸 𝍸
2 tails	𝍸 𝍸
head and tail	𝍸 𝍸 𝍸 𝍸

What fraction of the time did I get:
- **a** head and tail? _____
- **b** 2 heads? _____

15. How many 20 cent coins placed end to end, would reach 30 cm? _____
16. Square metres in 5 ha. _____

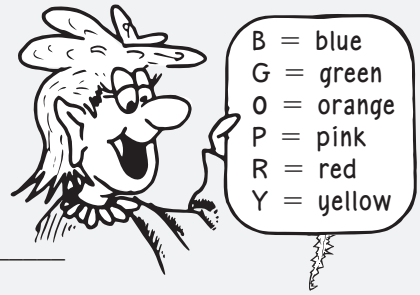
Using a graph

Crosses or dots can be used on a graph.

Draw a graph of these colour choices made by students.

B, R, R, G, P, B, O, R, B, R,G, P, O, R

G, B, P, O, Y, Y, R, B, O, G, G, B, B, P



- **a** Which is the favourite colour? _____
- **b** How many students chose green? _____
- **c** How many more chose red than pink? _____