

**Australian**



# **Signpost** **NSW**

**MATHS**

Sample pages



## **Mentals**

# Introduction

## Using the Mentals Books

Each unit of a Mentals Book is programed to review Student Book content from 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 6–9) 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.

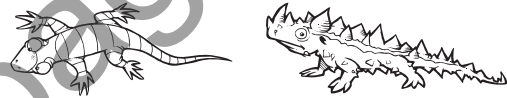
- This is essential for thorough understanding and continuous review.
- In real life, similar questions don't often occur together.
- It allows the teacher to discover weaknesses that could otherwise pass unnoticed.
- It provides a real test of understanding.

## 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.

Arithmetic Card	5
ID Cards	6–9
Units	10–83
Examples of Measurements	84

Tables of Number and Measurement	Inside Back Cover
Answers	A1–A12 (middle pages)



## Unit Activities

Unit	Content	Extra Activity
<b>1:1/2</b> <b>1:3/4</b>	+ 3, + 5 Personal measures	+ Tables Measure
<b>2:1/2</b> <b>2:3/4</b>	– 2, – 4 Language	– Tables ID Card D
<b>3:1/2</b> <b>3:3/4</b>	× 10, × 5 Rounding (nearest 5c)	× Tables Concept
<b>4:1/2</b> <b>4:3/4</b>	× 2, × 4 Square numbers	× Tables Concept
<b>5:1/2</b> <b>5:3/4</b>	+ 4, + 6 Travel graph	+ Tables Concept
<b>6:1/2</b> <b>6:3/4</b>	– 3, – 7 Order of operations	– Tables Concept
<b>7:1/2</b> <b>7:3/4</b>	Order of operations Language	Concept ID Card B
<b>8:1/2</b> <b>8:3/4</b>	Percentages Equivalent fractions	Concept Concept
<b>9:1/2</b> <b>9:3/4</b>	Multiplication Distance	× Tables Measure
<b>10:1/2</b> <b>10:3/4</b>	× 3, × 6 Problem solving	× Tables Strategy Time
<b>11:1/2</b> <b>11:3/4</b>	÷ 5, ÷ 10 Problem solving	÷ Tables Strategy Time
<b>12:1/2</b> <b>12:3/4</b>	Language Averages	ID Card A Concept
<b>13:1/2</b> <b>13:3/4</b>	Averages Probability	Concept Chance
<b>14:1/2</b> <b>14:3/4</b>	÷ 2, ÷ 4 24-hour time	÷ Tables Measure
<b>15:1/2</b> <b>15:3/4</b>	÷ 3, ÷ 6 Problem solving	÷ Tables Strategy Time
<b>16:1/2</b> <b>16:3/4</b>	– 9, – 5 Problem solving	– Tables Strategy Time
<b>17:1/2</b> <b>17:3/4</b>	+ 7, + 9 Language	+ Tables ID Card B
<b>18:1/2</b> <b>18:3/4</b>	× 6, × 9 Survey	Concept × Tables
<b>19:1/2</b> <b>19:3/4</b>	× 7, × 8 Length	× Tables Measure

Unit	Content	Extra Activity
<b>20:1/2</b> <b>20:3/4</b>	÷ 9, ÷ 9 Profit and loss	÷ Tables Concept
<b>21:1/2</b> <b>21:3/4</b>	Problem solving Height	Strategy Time Concept
<b>22:1/2</b> <b>22:3/4</b>	Language Problem solving	ID Card C Strategy Time
<b>23:1/2</b> <b>23:3/4</b>	÷ 7, ÷ 8 Crossnumber puzzle	÷ Tables Concept
<b>24:1/2</b> <b>24:3/4</b>	÷ 4 Problem solving	÷ Tables Strategy Time
<b>25:1/2</b> <b>25:3/4</b>	÷ 6 Fractions	÷ Tables Concept
<b>26:1/2</b> <b>26:3/4</b>	Mass Tally	Measure Chance
<b>27:1/2</b> <b>27:3/4</b>	Language Fractions	ID Card A Concept
<b>28:1/2</b> <b>28:3/4</b>	÷ 8 Fractions to decimals	÷ Tables Concept
<b>29:1/2</b> <b>29:3/4</b>	÷ 7 Problem solving	÷ Tables Strategy Time
<b>30:1/2</b> <b>30:3/4</b>	× 8, × 6 Codes	× Tables Concept
<b>31:1/2</b> <b>31:3/4</b>	+ 8 Estimate the product	+ Tables Concept
<b>32:1/2</b> <b>32:3/4</b>	Language Estimating chance	ID Card D Chance
<b>33:1/2</b> <b>33:3/4</b>	Divisibility Square numbers	Concept Concept
<b>34:1/2</b> <b>34:3/4</b>	Factors Problem solving	Concept Strategy Time
<b>35:1/2</b> <b>35:3/4</b>	Crossnumber puzzle Reflections	Concept Concept
<b>36:1/2</b> <b>36:3/4</b>	– 6, – 8 Average speed	– Tables Measure
<b>37: 1/2</b> <b>37: 3/4</b>	Language Personal measures	ID Card C Measure
<b>Answers</b>	These can be found in the middle of this book on pages A1 to A12.	

5:1

out of 14

- 1  $9 \times 4$  \_\_\_\_\_
- 2  $18 \div 3$  \_\_\_\_\_
- 3  $23 + 9$  \_\_\_\_\_
- 4  $12 - 6$  \_\_\_\_\_
- 5  $\begin{array}{r} 30 \\ \times 10 \\ \hline \end{array}$
- 6 Multiply 7 by 9. \_\_\_\_\_
- 7 Half of 18. \_\_\_\_\_
- 8 Sum of 12 and 7. \_\_\_\_\_
- 9 2 less than 90. \_\_\_\_\_
- 10  $\begin{array}{r} 45 \\ - 40 \\ \hline \end{array}$

11 Metres in one kilometre. \_\_\_\_\_

12 Tally of Chores Done

Setting table	
Clearing table	
Sweeping floor	
Wiping benches	

Isabella kept a tally of the jobs she did during the week.

- a Which job did she do 14 times? \_\_\_\_\_
- b How many jobs were recorded all together? \_\_\_\_\_

13 The length of this black line. \_\_\_\_\_ mm



14 Arrange in ascending order.  
7 157 743, 1 795 178, 1 204 155, 7 050 705

\_\_\_\_\_

\_\_\_\_\_

5:2

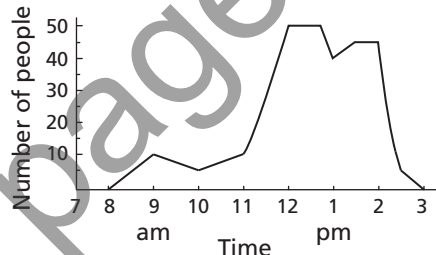
out of 16

- 1  $44 + 3$  \_\_\_\_\_
- 2 6 squared. \_\_\_\_\_
- 3  $13 - 6$  \_\_\_\_\_
- 4  $4 \times 7$  \_\_\_\_\_
- 5  $\begin{array}{r} 52 \\ - 4 \\ \hline \end{array}$
- 6  $24 \div 4$  \_\_\_\_\_
- 7  $40 \times 2$  \_\_\_\_\_
- 8  $756 - 200$  \_\_\_\_\_
- 9  $8756 - 2000$  \_\_\_\_\_
- 10  $\begin{array}{r} \$1.70 \\ + \$0.34 \\ \hline \end{array}$

11 Round 7 814 200 correct to the nearest million. \_\_\_\_\_

12 What is the value of the 4 in 3 425 601? \_\_\_\_\_

13 People at the Pool



- a How many people at 9 am? \_\_\_\_\_
- b What was the maximum number of people at the pool? \_\_\_\_\_

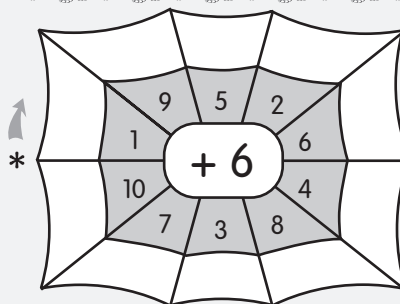
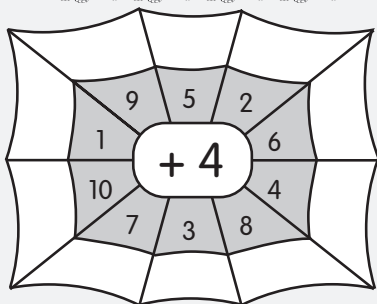
During which hour did the number:

- c increase the most? \_\_\_\_\_
- d decrease the most? \_\_\_\_\_

14 James travelled 32 kilometres in two hours. What was his speed? \_\_\_\_\_

15  $63 \text{ mm} = \text{_____ cm } \text{_____ mm}$  or \_\_\_\_\_ cm

16 5 squared. \_\_\_\_\_



even + even = \_\_\_\_\_  
odd + even = \_\_\_\_\_



5:3

out of 10

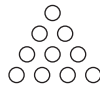
- 1  $\begin{array}{r} 531 \\ 243 \\ 604 \\ + 17 \\ \hline \end{array}$       2  $\begin{array}{r} 430 \\ 281 \\ 123 \\ + 347 \\ \hline \end{array}$       3  $\begin{array}{r} 165 \\ 256 \\ 323 \\ + 157 \\ \hline \end{array}$

- 4 The length of this pencil.

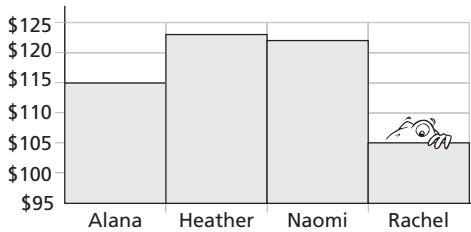


Estimate = \_\_\_\_\_ mm  
Measure = \_\_\_\_\_ mm or \_\_\_\_\_ cm

- 5 How many different lines of 3 circles can be found on this picture?



- 6 Money Raised for Charity



- a How much did Rachel raise? \_\_\_\_\_  
b How much did these girls raise together? \_\_\_\_\_
- 7 How far will I travel, if I travel for:  
a 4 hours at 20 km/h? \_\_\_\_\_  
b 3 hours at 9 km/h? \_\_\_\_\_
- 8 What is the perimeter of this rectangle? \_\_\_\_\_
- 
- 9 Five squared. \_\_\_\_\_
- 10 Is a population of 2 706 000 closer to 2 000 000 or 3 000 000? \_\_\_\_\_

5:4

out of 5

- 1 a The sum of the first four square numbers. \_\_\_\_\_  
b The product of the first three square numbers. \_\_\_\_\_
- 2  $\begin{array}{|c|c|c|} \hline 3\text{ cm} & 6\text{ cm} & 9\text{ cm} \\ \hline \end{array}$   
Pins were stuck onto a board using the pattern shown above. What was the distance between:  
a the 7th and 8th pins? \_\_\_\_\_  
b the 1st and 8th pins? \_\_\_\_\_
- 3 Halve the number that is 53 bigger than 177. \_\_\_\_\_
- 4 If 4 small squares make a quado and 2 quados make an octo, could 68 small squares make:  
a 7 quados and 5 octos? \_\_\_\_\_  
b 4 quados and 7 octos? \_\_\_\_\_
- 5 The smallest square number that is also a multiple of 8. \_\_\_\_\_



Challenge

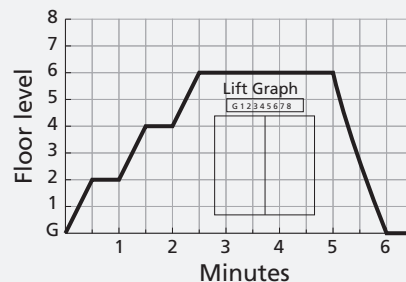
Complete this algorithm, then create a number story for the problem.

$$\begin{array}{r} \underline{\hspace{2cm}} \quad 56839 \\ - \quad 32963 \\ \hline \end{array}$$



Travel Graph

- a At how many floors did the lift stop?  
b How long does the lift stop for at the 2nd floor?  
c How many floors are in the building?  
d How long did it take for the lift to return to the ground floor?







1

Tens	Ones
4	0
- 3	7

2

Tens	Ones
5	6
- 1	9

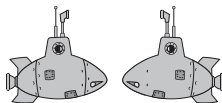
3 Write the value of 8 in:

a 7380213 \_\_\_\_\_

b 9041805 \_\_\_\_\_

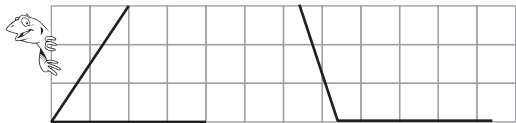
4 Write 7th in words. \_\_\_\_\_

5 Is this a reflection, translation or rotation? \_\_\_\_\_



6 18 shoes are in the shop window. How many pairs are there? \_\_\_\_\_

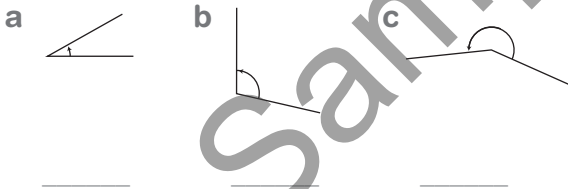
7 a Complete the parallelograms.



b Are opposite sides of a parallelogram equal? \_\_\_\_\_

8 Find the difference between 14 and 76. \_\_\_\_\_

9 Estimate the size of these angles.



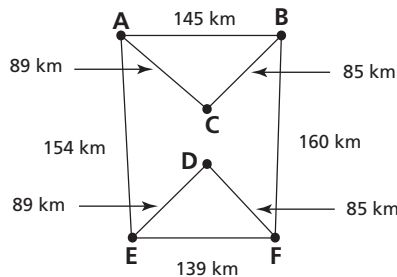
10 How long will it take to travel 500 km at 100 km/h? \_\_\_\_\_

11 The next two square numbers after 30. \_\_\_\_\_



1 The shortest distance by road from:

a A to F \_\_\_\_\_ b C to D \_\_\_\_\_

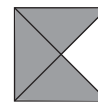


2 I am paid between \$12 and \$14 an hour. Which could be my pay for 6 hours work: \$70.50, \$72.00, \$83.10 or \$84.00? \_\_\_\_\_

3 Minutes in 9 hours. \_\_\_\_\_

4  $\square \div 2 = 55$ ,  $\square =$  \_\_\_\_\_

5 The shaded part has value 30. What is the value of the whole? \_\_\_\_\_



6 If 3 small squares make a *trio* and 3 *trios* make a *nino*, could 57 small square make:



a one *trio* and 6 *ninos*? \_\_\_\_\_

b 7 *trios* and 4 *ninos*? \_\_\_\_\_

Challenge

Write number sentences with the answer 14, e.g.  $4 + 5 \times 2 - (4 \times 0) = 14$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Order of Operations

Example

$28 - (7 - 3) \div 2$   
 Remove the ( ).  
 $= 28 - 4 \div 2$   
 Do  $\times$  and  $\div$ .  
 $= 28 - 2$   
 $= 26$

Order

- 1 ( )
- 2  $\times$  and  $\div$
- 3  $+$  and  $-$  (going from left to right)



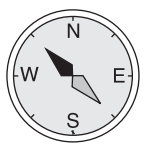
- |  |       |                          |       |
|--|-------|--------------------------|-------|
| a $6 + 3 \times 5$                       | _____ | b $10 - 2 \times 4$      | _____ |
| c $7 - (10 - 3)$                         | _____ | d $28 - (20 - 10)$       | _____ |
| e $10 - 3 + 4$                           | _____ | f $10 - (3 + 4)$         | _____ |
| g $20 - 4 + 9$                           | _____ | h $25 - 19 + 1$          | _____ |
| i $20 \div 5 \times 12$                  | _____ | j $20 \div (5 \times 2)$ | _____ |
| k $10 + (6 \div 2) \times 3 + 15 \div 3$ | _____ |                          |       |

# 16:1

out of 15

- 1  $5 \times 7$  \_\_\_\_\_
- 2  $16 - 7$  \_\_\_\_\_
- 3  $2 \div 2$  \_\_\_\_\_
- 4  $24 \div 6$  \_\_\_\_\_
- 5 
$$\begin{array}{r} 25 \\ + 4 \\ \hline \end{array}$$
- 6 Take 10 from 17. \_\_\_\_\_
- 7 Multiply 3 by 9. \_\_\_\_\_
- 8 Double 80. \_\_\_\_\_
- 9 Total 16 and 8. \_\_\_\_\_
- 10 
$$\begin{array}{r} \$5.00 \\ - \$0.87 \\ \hline \end{array}$$

- 11 a In which direction does a compass needle always point? \_\_\_\_\_
- b The angle between the compass directions, South and East? \_\_\_\_\_



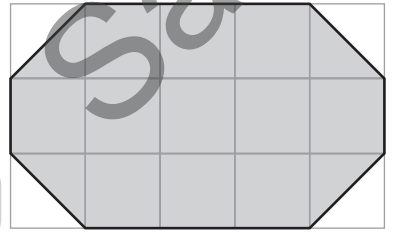
- 12 One million twelve thousand and twelve as a numeral. \_\_\_\_\_
- 13 Write 13 hectares in short form. \_\_\_\_\_

14

Answer	boys	girls
Yes	3	2
No	4	5

- a How many girls answered "yes"? \_\_\_\_\_
- b How many boys answered "no"? \_\_\_\_\_
- c How many boys gave an answer? \_\_\_\_\_
- d How many people answered "no"? \_\_\_\_\_

- 15 What is the area of the shaded shape? \_\_\_\_\_
- Two halves make one whole.



# 16:2

out of 16

- 1  $41 - 8$  \_\_\_\_\_
- 2  $6 \times 7$  \_\_\_\_\_
- 3  $25 + 2$  \_\_\_\_\_
- 4  $3 + 4 \times 8$  \_\_\_\_\_
- 5 
$$\begin{array}{r} 400 \\ \times 5 \\ \hline \end{array}$$
- 6  $36 \div 4$  \_\_\_\_\_
- 7  $760 \div 10$  \_\_\_\_\_
- 8  $\square + 81 = 99$ ,  $\square =$  \_\_\_\_\_
- 9  $90 - \square = 35$ ,  $\square =$  \_\_\_\_\_
- 10 
$$\begin{array}{r} \$1.17 \\ \times 4 \\ \hline \end{array}$$

- 11  $62 - 6 - 6 - (6 - 5)$  \_\_\_\_\_
- 12 Write this as 24-hour time. \_\_\_\_\_



- 13 Find the area of each rectangle.
- a \_\_\_\_\_
- b \_\_\_\_\_

- 14 If a car travelled at 60 km per hour for  $3\frac{1}{2}$  hours, how far would it travel? \_\_\_\_\_

- 15 Write the digital time for: a 15:36 \_\_\_\_\_ b 07:05 \_\_\_\_\_

- 16 Gillian began with this amount. She bought these items.

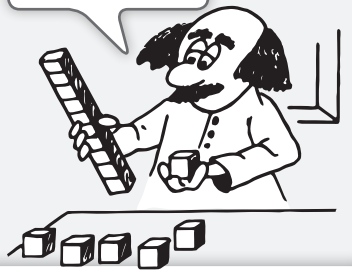


Total amount spent: \_\_\_\_\_ Amount left: \_\_\_\_\_



\* \*      \* \*

To subtract 9, take away 10 and add 1.





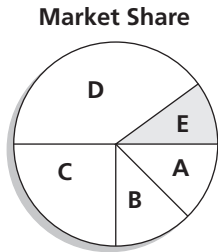
16:3

out of 7


- 1  $\begin{array}{r} \$35.25 \\ \$16.35 \\ \$4.20 \\ + \$6.30 \\ \hline \end{array}$       2  $\begin{array}{r} 33 \\ 421 \\ 173 \\ + 256 \\ \hline \end{array}$

- 3  $3 \times (4 + 6)$  \_\_\_\_\_  
 4 a Hectares in  $90\,000\text{m}^2$ . \_\_\_\_\_  
 b Square metres in 7 ha. \_\_\_\_\_

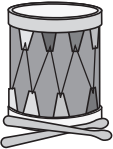
- 5 If E has 10% of market share, what percentage has:  
 a D? \_\_\_\_\_  
 b C? \_\_\_\_\_  
 (You could use a protractor.)



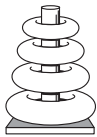
6



\$4.20



\$7.60



\$1.90

- a Circle the best estimate for the cost of 3 ring toys.  
 $\$3$   $\$6$   $\$8$   $\$11$
- b If each item were reduced by fifty cents, what is the total cost of a drum and a toy horse?  
 \_\_\_\_\_
- c Circle the best estimate for the cost of 2 drums.  
 $\$10$   $\$13$   $\$15$   $\$18$



- 7 11, 22, 33, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_



Consecutive numbers follow one another.  
**4, 5 and 6** are three **consecutive** numbers.  
 Their sum is 15.

- a On the list to the right, cross out those numbers that are the sum of 2 consecutive numbers, 3 consecutive numbers etc, up to the sum of 7 consecutive numbers.  
 b Which numbers are left? \_\_\_\_\_  
 What kind are they? \_\_\_\_\_

Consecutive numbers.

1				
2	3	4	5	
6	7	8	9	
10	11	12	13	
14	15	16	17	
18	19	20	21	
22	23	24	25	
26	27	28	29	
30	31	32	33	

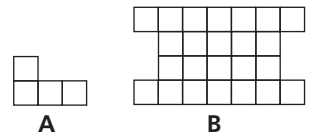
16:4

out of 5


- 1 Insert grouping symbols to make this number sentence true.  
 $18 - 5 \times 3 = 39$

- 2 How many days from 2nd August to 14th September?  
 \_\_\_\_\_

- 3 What is the greatest number of shape **A** that could be cut out from shape **B**?



- 4  $\frac{30}{100}$  of the townspeople were men,  $\frac{27}{100}$  women and  $\frac{51}{100}$  male.  
 What percentage of the people are:

	men
	women
	boys
	girls

- a female? \_\_\_\_\_      b boys? \_\_\_\_\_  
 c girls? \_\_\_\_\_      d not men? \_\_\_\_\_

- 5 Use the digits 2, 3, 4, 5, 6 and 7 to make the number closest to 270 000.  
 \_\_\_\_\_

Challenge

Describe the position of items on this grid, e.g. the pentagon is north-east of the triangle.

A	⬡	◯
◯	+	B
C	☆	⬠
◻	△	↗

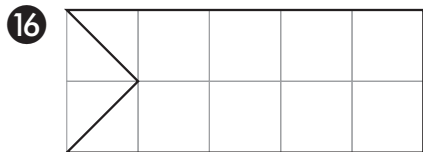
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- 1  $5 \times 6$  \_\_\_\_\_
- 2  $10 - 4$  \_\_\_\_\_
- 3  $9 \times 6$  \_\_\_\_\_
- 4  $70 + 18$  \_\_\_\_\_
- 5  $\begin{array}{r} \phantom{0} \\ 3 \overline{)12} \end{array}$  \_\_\_\_\_
- 6 2 squared. \_\_\_\_\_
- 7 Add 6 and 17. \_\_\_\_\_
- 8 4 rows of 9. \_\_\_\_\_
- 9 Take 40 from 95. \_\_\_\_\_
- 10  $\begin{array}{r} \phantom{0} \\ 10 \overline{)70} \end{array}$  \_\_\_\_\_
- 11  $0.5 + 0.5$  \_\_\_\_\_
- 12 Name a shape with 6 sides. \_\_\_\_\_
- 13 Write 7.3 hectares in short form. \_\_\_\_\_

14

Sport chosen	boys	girls
cricket	8	3
netball	2	7

- a How many boys chose cricket? \_\_\_\_\_
- b How many girls chose netball? \_\_\_\_\_
- c Which sport was most popular? \_\_\_\_\_
- d How many more girls chose netball than cricket? \_\_\_\_\_
- 15 A shape with five straight sides is called a \_\_\_\_\_.



Two halves can be added to make 1 whole.

What is the area of this shape in square centimetres? \_\_\_\_\_ cm<sup>2</sup>

- 17 The difference between 14:30 and:
  - a 08:30 on the same day. \_\_\_\_\_
  - b 08:30 on the next day. \_\_\_\_\_

- 1  $9 \times 3$  \_\_\_\_\_
- 2  $32 - 3$  \_\_\_\_\_
- 3  $6 \times 7$  \_\_\_\_\_
- 4  $8 + 41$  \_\_\_\_\_
- 5  $\begin{array}{r} \phantom{0} \\ 4 \overline{)36} \end{array}$  \_\_\_\_\_
- 6  $0.7 + 0.3$  \_\_\_\_\_
- 7  $\square \times 10 = 100$ ,  $\square =$  \_\_\_\_\_
- 8  $0.1 + 0.9$  \_\_\_\_\_
- 9  $180 - 2 \times 70$  \_\_\_\_\_
- 10  $\begin{array}{r} \phantom{0} \\ 5 \overline{)36} \end{array}$  \_\_\_\_\_
- 11 a  $4 \times 8 + 10$  \_\_\_\_\_  
 b  $16 \div 4 + 20 \div 5$  \_\_\_\_\_
- 12 At a speed of 60 km/h, how far would I travel in 2 hours? \_\_\_\_\_



- 13 What is the area of a rectangular dance floor that has a length of 12 m and a width of 6 m? \_\_\_\_\_
- 14 a Square metres in 8 ha. \_\_\_\_\_  
 b Hectares in 180 000 m<sup>2</sup>. \_\_\_\_\_
- 15 0.8, 1.0, 1.2, \_\_\_\_\_, \_\_\_\_\_
- 16 Minutes in  $4\frac{1}{2}$  hours. \_\_\_\_\_
- 17 Heidi began with \$30 and bought these items.



\$2.80      \$1.70      \$1.40

Total spent = \_\_\_\_\_

Amount left = \_\_\_\_\_



\* \* \* \* \*

\* \* \* \* \*

even + odd = \_\_\_\_\_  
 odd + even = \_\_\_\_\_

