**E-book Code: REAU0024**

## Ages 9 - 12

# Mental Maths

Mental maths problems and speed practice in number.

Written by David Stephenson. Illustrated by Rod Jefferson.



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Email: info@readyed.com.au Website: www.readyed.com.au



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# Contents

# Book Overview

This book has been designed to provide structured mathematical problems as practice and consolidation across a range of concepts for students of all abilities. It provides ideal opportunities for teachers to meet number related requirements of the appropriate curriculum document. The Contents page matches the concepts covered in the book with various aspects of the national curriculum document.

**Part A Mental Maths Problems**

The sets of exercises provided graduate progressively from easy to more complex. Such grading is arbitrary as a student's background and conceptual development will result in a personal definition of what is difficult (i.e. ·6×3 harder than (2×3)+(3÷3)? ). Each set also contains simpler problems to enable all students to maintain a reasonable score and thereby prevent discouragement.

In order to indicate gradual progress and improvement by students we have provided a colour coded record chart. The aim of this chart is to indicate an achievement or maintenance of a 'green standard' of attainment, despite the increasing level of difficulty. Alternatively a 'red result' can be used to indicate problem areas. Another approach to the exercise sets is to decrease the time taken for each ensuing set of exercises. This time component may be chosen to be overlooked if it creates accuracy errors. After all the prime objective is raising the level of accuracy.

**Part B Speed Practice**

These have been designed as speed accuracy assessment lists. Each operation is presented in four sets, and each set progressively increases in difficulty.

**Part C Problems To Ponder**

These are included as extension activities for fast finishers. They can also be used as separate activities presented to students via a card or blackboard system.

# Teaching Approaches

As all students, schools and teachers operate under different conditions or circumstances, the teaching methods used with the 'Mental Maths' book will vary. We have found these basic approaches to implementation to be the most successful and have presented them as a guide.

**Approach 1 Speed and Accuracy**

1. Provide all students with a copy of the student record chart. (Pasting this onto card will enable its retention for the whole course.)
2. Overview the 'set of the day'. Note any new concepts that may need explanation or revision (e.g. Roman Numerals, use of brackets ...).
3. Provide all students with a copy of the set.
4. Provide a starting time and access to a clock for recording individual finishing times.
5. Commence work, allowing a maximum time to suit the level of difficulty of the set and the ability of the students. (e.g. 15 minutes - "Time's up".)
6. Early finishers should be provided with blackboarded additional problems or the 'Problems to Ponder' section.
7. Marking alternatives:
   1) Provide self marking keys.
   2) Orally provide the solutions.
   3) Collect and mark individually.
8. Students then score and colour their progress on the colour-coded record chart.
9. If the time component is also being used, this information can also be colour coded onto the record chart.
10. These sets can be done as regularly as required. Often it is of great benefit to redo an earlier set. Comparison of the results (hopefully better) provides a great self esteem boost to those students who feel they haven't progressed.

# Arithmerobics I

Name : .....

| Set 1 |
|---|
| 1. 3 × 2 = ..... |
| 2. ½ of 8 = ..... |
| 3. 4 × 3 = ..... |
| 4. 1 more than 21 = ..... |
| 5. 5 × 4 = ..... |
| 6. 3 less than 12 = ..... |
| 7. 6 × 3 = ..... |
| 8. 2 + 3 + 4 + 6 = ..... |
| 9. 3 × 4 = ..... |
| 10. 50 - 7 = ..... |
| 11. 4 × 6 = ..... |
| 12. 11 + 10 = ..... |
| 13. 7 × 3 = ..... |
| 14. 12 - 9 = ..... |
| 15. 3 more than 22 = ..... |
| 16. 4 + 5 - 2 = ..... |
| 17. 3 × 8 = ..... |
| 18. 16 ÷ 4 = ..... |
| 19. 29 + 2 = ..... |
| 20. 13 - 7 = ..... |
| 21. 6 + 3 + ❑ = 20 |
| 22. 8 × 3 = ..... |
| 23. ½ of 16 = ..... |
| 24. 9 × 2 = ..... |
| 25. 4 less than 8 = ..... |
| Start time .....:..... |
| Finish time .....:..... |
| Time taken .....:..... |
| Score ..... |

| Set 2 |
|---|
| 1. 3 × 3 = ..... |
| 2. ½ of 16 = ..... |
| 3. 5 × 5 = ..... |
| 4. 6 more than 7 = ..... |
| 5. 3 × 9 = ..... |
| 6. 6 + 3 + 2 = ..... |
| 7. 5 less than 12 = ..... |
| 8. 2 × 4 = ..... |
| 9. 3 + 3 + 7 = ..... |
| 10. 4 × 4 = ..... |
| 11. 21 - 6 = ..... |
| 12. 15 + 6 = ..... |
| 13. 9 ÷ 3 = ..... |
| 14. 12 ÷ 4 = ..... |
| 15. 5 more than 27 = ..... |
| 16. 6 + 3 + 7 = ..... |
| 17. 4 × 5 = ..... |
| 18. 3 ❑ 3 = 9 |
| 19. 31 + 6 = ..... |
| 20. 12 - 11 = ..... |
| 21. 6 × 4 = ..... |
| 22. 3 ❑ 3 = 1 |
| 23. ½ of 20 = ..... |
| 24. 16 ÷ 2 = ..... |
| 25. 5 less than 19 = ..... |
| Start time .....:..... |
| Finish time .....:..... |
| Time taken .....:..... |
| Score ..... |

| Set 3 |
|---|
| 1. 3 × 5 = ..... |
| 2. ½ of 22 = ..... |
| 3. 6 × 5 = ..... |
| 4. 7 less than 21 = ..... |
| 5. 4 × 9 = ..... |
| 6. 7 + 4 + 3 = ..... |
| 7. 9 more than 9 = ..... |
| 8. 2 × 9 = ..... |
| 9. 4 + 4 - 3 = ..... |
| 10. 16 - 9 = ..... |
| 11. 16 + 9 = ..... |
| 12. 12 ÷ 2 = ..... |
| 13. 9 + 3 + 5 = ..... |
| 14. 29 - 10 = ..... |
| 15. 7 more than 29 = ..... |
| 16. 7 + 3 + 9 = ..... |
| 17. 3 ❑ 4 = 12 |
| 18. 3 × 8 = ..... |
| 19. 3 ❑ 3 = 6 |
| 20. 4 is half of ..... |
| 21. 27 - 9 = ..... |
| 22. 20 - 10 + 10 = ..... |
| 23. 9 ÷ 3 = ..... |
| 24. ⅓ of 12 = ..... |
| 25. 7 less than 14 = ..... |
| Start time .....:..... |
| Finish time .....:..... |
| Time taken .....:..... |
| Score ..... |



**Working out space**

## Problems to ponder

Use a calculator to complete these.

250 + 251 × 76 = .....

(40 + 27) × 5 = .....

(70 × 2) × 25 + 1 = .....

Turn the calculator upside down and read what each says.

# Arithmerobics IV

Name : .....

## Set 10

1. 16 + 6 = .....
2. 98 - 7 = .....
3. 6 less than 47= .....
4. 7 × 11 = .....
5. 23 + 12 = .....
6. 30 ÷ 6 = .....
7. 6 + 9 + 12 = .....
8. 18 + 4 - 7 = .....
9. 35 - 12 = .....
10. 6 × 9 = .....
11. ⅓ of 6 = .....
12. 49 + 11 = .....
13. 64 ÷ 8 = .....
14. Treble 4 = .....
15. 16 less than 19 = .....
16. 200 + 400 = .....
17. 22 × 2 = .....
18. 27 - 9 = .....
19. 300 ❑ 2 = 150
20. 60 + 30 = .....
21. 12 × 7 = .....
22. 16 ❑ 6 = 22
23. ½ of 96= .....
24. 66 ÷ 6 = .....
25. 17 is half of .....

Start time .....:.....
Finish time .....:.....
Time taken .....:.....
Score .....

## Set 11

1. 32 × 2 = .....
2. 28 ÷ 7 = .....
3. 73 - 4 = .....
4. 12 is a third of .....
5. 12 × 0 = .....
6. 16 + 7 = .....
7. 54 ÷ 6 = .....
8. Subtract 26 from 39 .....
9. 39 - 39 = .....
10. ⅓ of 33 = .....
11. 21 more than 12 = .....
12. 54 ÷ 9 = .....
13. 300 + 67 = .....
14. 27 ÷ 9 = .....
15. 24 + 7 - 6 = .....
16. 11 × 9 = .....
17. 39 - 12 = .....
18. 110 ÷ 10 = .....
19. 30 ❑ 3 = 33
20. 17 more than 4 = .....
21. 27 + 27 = .....
22. 14 + 12 + 10 = .....
23. 102 - 3 = .....
24. 300 × 3 = .....
25. ¼ of 24 = .....

Start time .....:.....
Finish time .....:.....
Time taken .....:.....
Score .....

## Set 12

1. 88 ÷ 8 = .....
2. 27 ÷ 3 = .....
3. 72 - 33 = .....
4. 201 + 101 = .....
5. 12 + 11 + 9 = .....
6. 20 × 40 = .....
7. Double 13 = .....
8. 20 - 5 = .....
9. 609 - 69 = .....
10. 60 ❑ 10 = 6
11. 1/3 of 30 = .....
12. 15 + 4 = .....
13. 103 + 6 = .....
14. Subtract 60 from 99 .....
15. 660 - 40 = .....
16. 108 ÷ 9 = .....
17. 66 × 3 = .....
18. 40 ÷ 4 = .....
19. Double 27 = .....
20. 229 + 12 = .....
21. add 29 to 13 .....
22. 36 ÷ 4 = .....
23. 3 less than 500 = .....
24. 42 divided by 6 = .....
25. 980 - 69 = .....

Start time .....:.....
Finish time .....:.....
Time taken .....:.....
Score .....

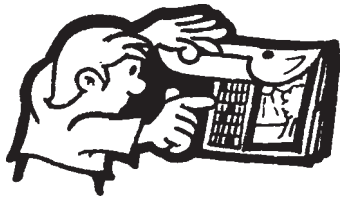


## Working out space

## Problems to ponder

If the 5th of April is a Monday, the last day of April will be a .....

If the third day of November is a Saturday then the last day will be a .....



# $$ Money $$

Name : .....

## Set 19

1. 20 × 3 = .....
2. 30 ÷ 3 = .....
3. Treble 9 = .....
4. $1·00 - 27c = .....
5. 6 + 3 + 5 = .....
6. 28 - 8 = .....
7. 9 × 11 = .....
8. ¼ of $2·00 = .....
9. 33 ÷ 11 = .....
10. 3 × $4·10 = .....
11. 12 + 13 = .....
12. 12 × 30c = .....
13. 18 ÷ 6 = .....
14. $6·00 shared three ways = .....
15. 12 × 7 = .....
16. 60 - 17 = .....
17. 45 ÷ 9 = .....
18. 235c = $.....
19. 48 ❑ 12 = 4
20. Double $3·50= .....
21. $1·00 = ..... p
22. 11 × 12 = .....
23. 303 - 7 = .....
24. 32 ÷ 4 = .....
25. 2 × 16 = .....

Start time .....: .....
Finish time .....: .....
Time taken .....: .....
Score .....

## Set 20

1. $2·50 - 65c = .....
2. 22 ÷ 2 = .....
3. 3 lots of $2·10 = .....
4. 4 × 9 = .....
5. 12 ÷ 1 = .....
6. $3·68 = ..... p
7. How many 10c in $3·60? .....
8. 15 + 12 = .....
9. $2·00 - $1·19 = .....
10. $2·50 + $3·60 = .....
11. 30 - 13 = .....
12. 120 + 120 = .....
13. 48 ÷ 8 = .....
14. 97 + 7 = .....
15. 402 - 12 = .....
16. 99 ÷ 9 = .....
17. 24 more than 7 = .....
18. 34 - 14 = .....
19. $5·50 + $2·75 = .....
20. 99 ÷ 9 = .....
21. 609c = $.....
22. 70 + 32 = .....
23. $10·00 - 99c = .....
24. 1 more than 1009 = .....
25. ½ of $8·40 = .....

Start time .....: .....
Finish time .....: .....
Time taken .....: .....
Score .....



## Working out space

## Problems to ponder

Which of these is the smallest?

1%  0.89  $^4/_3$  1.06

Which is largest?

$^{11}/_{12}$  2.03  1.98  $1\ ^1/_5$