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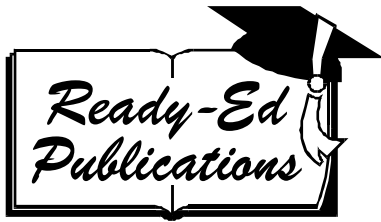
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Math Facts

(Ages 9 - 12)

Sets of practice and consolidation activities to increase math Number and Operations skills.

SAMPLE

Written by David Stephenson. Illustrated by Rod Jefferson.

Originally published as Mental Maths (1995)

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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 Standards for Number and Operations related requirements of the Math curricular area. The Contents page matches the concepts covered in the book with various Standards as set down on a national basis. The Standards provided here are a compilation of those from various organizations and states, and you may need to paraphrase to match them exactly to your requirements.

Part A **Math Facts 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 $(2 \times 3) + (3 \div 3)$?). 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 color coded record chart (Page 5). 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 chalkboard system.

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Teaching Approaches

As all students, schools, and teachers operate under different conditions or circumstances, the teaching methods used with the 'Math Facts' 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 chalkboarded 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 color their progress on the color-coded record chart.
9. If the time component is also being used, this information can also be color 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.

Approach 3 **Overhead Transparencies**

This approach can most effectively be used to present problems, either singularly or as a set. It can also be used to create a forced time element.

Approach 4 **Self Instructional**

Appropriate when a class is completely trustworthy, motivated, and able to set their own work levels. The sets and answers can be provided via a workstation approach.

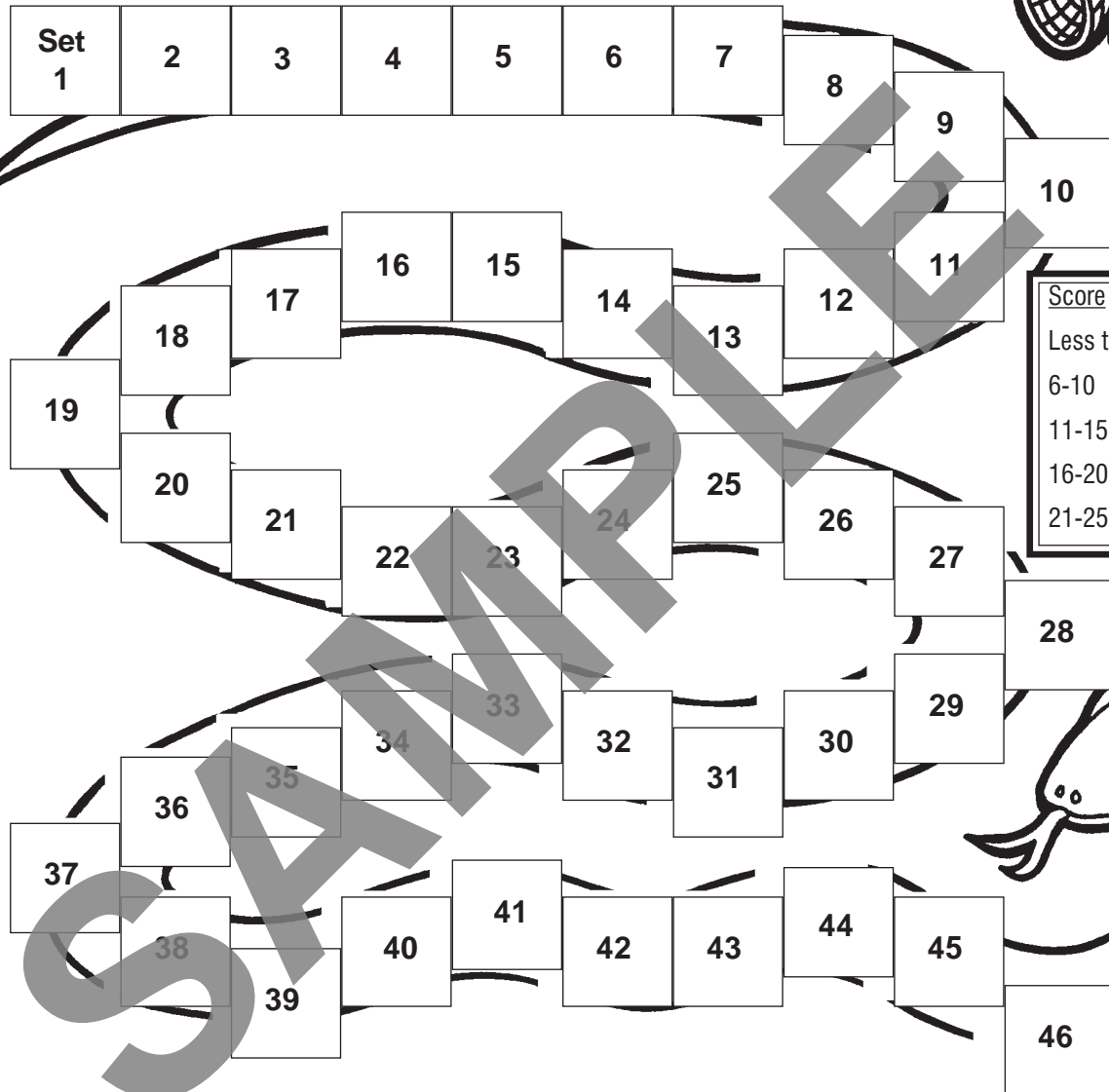
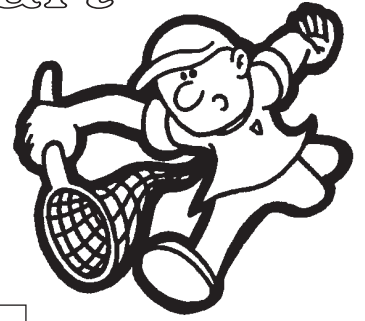
Obviously there are many other forms of presentation. Each teacher should adapt the activities of this book to suit their own purposes.

Name :

Student Record Chart

How to score and chart your progress.

Complete each set and, using the key, color in your result.



| Score | Color |
|-------------|--------|
| Less than 5 | Red |
| 6-10 | Orange |
| 11-15 | Purple |
| 16-20 | Blue |
| 21-25 | Green |

Speed Chart

Time taken in minutes and seconds

| | | | |
|----------|----------|----------|----------|
| 1 | 11 | 21 | 31 |
| 2 | 12 | 22 | 32 |
| 3 | 13 | 23 | 33 |
| 4 | 14 | 24 | 34 |
| 5 | 15 | 25 | 35 |
| 6 | 16 | 26 | 36 |
| 7 | 17 | 27 | 37 |
| 8 | 18 | 28 | 38 |
| 9 | 19 | 29 | 39 |
| 10 | 20 | 30 | 40 |

Best Time:.....
Can you create
a color chart to
show your times?



Solutions

Arithmerobics I

Set 1

1. $3 \times 2 = 6$
2. $\frac{1}{2}$ of 8 = 4
3. $4 \times 3 = 12$
4. 1 more than 21 = 22
5. $5 \times 4 = 20$
6. 3 less than 12 = 9
7. $6 \times 3 = 18$
8. $2 + 3 + 4 + 6 = 15$
9. $3 \times 4 = 12$
10. $50 - 7 = 43$
11. $4 \times 6 = 24$
12. $11 + 10 = 21$
13. $7 \times 3 = 21$
14. $12 - 9 = 3$
15. 3 more than 22 = 25
16. $4 + 5 - 2 = 7$
17. $3 \times 8 = 24$
18. $16 \div 4 = 4$
19. $29 + 2 = 31$
20. $13 - 7 = 6$
21. $6 + 3 + 11 = 20$
22. $8 \times 3 = 24$
23. $\frac{1}{2}$ of 16 = 8
24. $9 \times 2 = 18$
25. 4 less than 8 = 4

Set 2

1. $3 \times 3 = 9$
2. $\frac{1}{2}$ of 16 = 8
3. $5 \times 5 = 25$
4. 6 more than 7 = 13
5. $3 \times 9 = 27$
6. $6 + 3 + 2 = 11$
7. 5 less than 12 = 7
8. $2 \times 4 = 8$
9. $3 + 3 + 7 = 13$
10. $4 \times 4 = 16$
11. $21 - 6 = 15$
12. $15 + 6 = 21$
13. $9 \div 3 = 3$
14. $12 \div 4 = 3$
15. 5 more than 27 = 32
16. $6 + 3 + 7 = 16$
17. $4 \times 5 = 20$
18. $3 \times 3 = 9$
19. $31 + 6 = 37$
20. $12 - 11 = 1$
21. $6 \times 4 = 24$
22. $3 \div 3 = 1$
23. $\frac{1}{2}$ of 20 = 10
24. $16 \div 2 = 8$
25. 5 less than 19 = 14

Set 3

1. $3 \times 5 = 15$
2. $\frac{1}{2}$ of 22 = 11
3. $6 \times 5 = 30$
4. 7 less than 21 = 14
5. $4 \times 9 = 36$
6. $7 + 4 + 3 = 14$
7. 9 more than 9 = 18
8. $2 \times 9 = 18$
9. $4 + 4 - 3 = 5$
10. $16 - 9 = 7$
11. $16 + 9 = 25$
12. $12 \div 2 = 6$
13. $9 + 3 + 5 = 17$
14. $29 - 10 = 19$
15. 7 more than 29 = 36
16. $7 + 3 + 9 = 19$
17. $3 \times 4 = 12$
18. $3 \times 8 = 24$
19. $3 + 3 = 6$
20. 4 is half of 8
21. $27 - 9 = 18$
22. $20 - 10 + 10 = 20$
23. $9 \div 3 = 3$
24. $\frac{1}{3}$ of 12 = 4
25. 7 less than 14 = 7

Problems to ponder

Use a calculator to complete these.

$$250 + 251 \times 76 = 38076 : \text{GLOBE}$$

$$(40 + 27) \times 5 = 335 : \text{SEE}$$

$$(70 \times 2) \times 25 + 1 = 3501 : \text{LOSE}$$

Turn the calculator upside down and read what each says.