

Kim Freeman

## What is Mighty Math?

Mighty Math is a series of workbooks designed to support the Math Curriculum. Each book is a culmination of many years teaching experience by the author. By using these books, students can practise and discover the mathematical concepts and principles that are essential for success in school mathematics. The following pages provide Year 1 and 2 students with both reinforcement and extension to their normal school mathematics lessons. This allows them to maintain the skills that they already have and helps to overcome any weaknesses. The pages can also complement school lessons, helping the student to develop faster in mathematics, and give them a "head start" in class.

The Mighty Math series covers all the strands and relevant age group levels of Mathematics in the New Zealand Curriculum: Number, Measurement, Geometry, Algebra, and Statistics. Within these strands, students will get practice at: calculating, estimating and using measuring equipment. We are sure that the work will fit into any mathematics curriculum.

## PayPal

If you use the sheets in this book often, or if you just find Mighty Math really useful then you might consider a donation. Send your money through PayPal: admin@mahobe.co.nz

## MIGHTY MATHS - National Curriculum Standards for Year 1 and 2

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Published in 2011 by:
Mahobe Resources (NZ) Ltd
P.O. Box 109-760

Newmarket, Auckland
New Zealand
© Mahobe Resources (NZ) Ltd
ISBN(13) 9781877489198
www.mahobe.co.nz
www.mathscentre.co.nz


#### Abstract

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## THE NATIONAL CURRICULUM

The pages in this book are designed to support the New Zealand Mathematics Curriculum, the New Zealand Mathematics Standards and the New Zealand Numeracy Programme.

After ONE year at school, students should be achieving at Level 1 of the New Zealand Curriculum. Year 1 of the Mathematics Curriculum is focused mainly on number and the manipulation of small numbers. Students should be able to count to 10 and add, subtract and multiply numbers with totals up to 10 . They should also be able to recognise shapes and compare lengths areas and capacities. Finally, they should be able to follow or give directions forward, back, turn left and turn right.

For a complete learning sequence then parents and teachers should purchase Mighty Maths Beginner Mathematician for 4-6 year olds. There are 4 books in this RED series and the books start with basic counting and writing numbers, simple addition through to more structured arithmetic. It is available through Mahobe.

The titles in the RED Beginner Mathematician series are:
Let's Learn to Count
Let's Use Numbers
Addition and Subtraction are Easy Multiplication and Division are Fun.

After TWO years at school students will still be achieving at Level 1 however they should be able to count and manipulate numbers to 100 . They should be able to continue number patterns based on ones, twos, fives and tens. They should also be able to compare different measures, complete simple transformations and represent simple statistical data in categories.

For a complete learning sequence for Year 2 then parents and teachers should purchase Mighty Maths Developing Mathematician for 5-7 year olds. There are 3 books in this YELLOW series. The books follow a structured learning sequence that starts by comparing smaller and larger numbers, teaches about bigger numbers up to 100 and focuses on the 1 to 5 times tables as well as the general arithmetic operations of addition and subtraction up to 100. After completing this series, students will have increased confidence in dealing with numbers.

The titles in the YELLOW Developing Mathematician series are:
Let's Look at Numbers
Let's Step up to Bigger Numbers
Let's Find all the Right Numbers
For older children look out for the:
BLUE Advancing Mathematician series (for 6-8 year olds), GREEN Maturing Mathematician series (for 7-9 year olds),
ORANGE Master Mathematician series (for $8-10$ ) year olds and Mighty Math for $9-12$ year olds.

You can be confident that you are covering all the right work when you use Mighty Math.

## SHAPE SEQUENCES

Continue the patterns by drawing the shapes that come next．

## प०ムロOム

## §00々00

$\sum_{2}$


## 气 $\triangle$ OOA气



Help Chopper count the carrots in each．


If Chopper continued the carrot squares，how many carrots would he need for the next set of squares？


FIVE PIN BOWLING
(3)
$8+8=6$ 时踠
$8+8 \cdot 6(5)=$
$g^{g}+g^{8}+g^{g}=6$

FIVE PIN BOWLING
Dennis is preparing for another bowl.
Find different ways:



Add the numbers on each snowball and write the answer.


0000000000


0000000000


0000000000

0000000000


0000000000


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SNOW BALL SUBTRACTIONS

Choose a pair of snow balls:


Subtract the numbers on the snowballs and write the answer.


## BALLS IN A BUCKET

B.J throws 3 balls. Each ball goes into a bucket.

Sometimes more than one ball goes into the same bucket.


2. Find three ways to score 6 .



3. Find three ways to score 9 .




## 3 BALLS IN A BUCKET

## B.J. throws 3 balls. Each ball goes into a bucket.

Sometimes more than one ball goes into the same bucket.

Write all the ways to get these scores.

3
(11) (11) (11) (1) (1) (1) (1) (ID) (1) (1) (ID) (1) (1) (1)

## 4

(11)(11)(11)(11)(11)(1)(1)(1) (1) (1) (1) (1) (1) (1)

## 5

(11)(11)(11)(11)(11)(11) (11) (11) (1) (1) (1) (1) (1) (11)

8
(11)(11)(11) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (10)
(11)(11)(11)(11) (1) (1) (1) (1) (1) (1) (1) (1) (1) (10)

5
(11)(11)(11)(11)(11)(11) (11) (11) (1) (1) (1) (1) (1) (1)


## HIDDEN SNAKES

Colour the numbers in order from 1 to 16 . The first one is done for you. You will end up with 5 more snakes.


| 1 | $=8$ | 9 | $=10$ |
| :--- | :--- | :--- | :--- |
| 2 | 7 | -12 | $=11$ |
| 3 | 6 | 13 | 14 |
| 4 | 1 | 16 | 15 |
| 4 | 5 | 16 | 10 |


| 1 | $=4$ | $=5$ |
| :---: | :---: | :---: |
| 1 | $=6$ |  |
| 2 | $=3$ | $=8$ |
| $=7$ |  |  |
| 15 | $=16$ | $=9$ |
| 14 | $=13$ | -12 |
| 13 | $=11$ |  |

$1=2=9=10$
$4=3=8=11$
$5-6-7-12$
$16-15-14-13$

| 9 | -8 | 5 | -4 |
| :---: | :---: | :---: | :---: |
| 10 | 7 | $=6$ | -3 |
| 11 | 12 | -13 | $=2$ |
| 16 | 15 | -14 | $=1$ |

## CLIMB THE BEANSTALK

There are six ways of climbing the beanstalk. The first is done for you.

Find the other five ways of climbing the beanstalk.
right, left, right, left


ISBN 9781877489198


## UNLOCK THE CODE

Solve the number sequences.
Fill in the missing numbers. Write the rule beside each.


Rule =


## Rule =

Rule =


## COUNTING ON STATISTICS



## THE GOLD BAR CHALLENGE



Alicia has 4 piles of gold bars.
She can move one or more bars at a time.
She has to make all the piles the same height.
Alicia can make 4 equal piles in two moves.
How does she do it?

Below are 9 gold bars. If B.J., Dennis and Alicia each take the same number of gold bars, how many would each take?


FIND THE MISSING VALUES

All the bars should add up to 10 Write the value of each the missing shaded bars.
$\square$
$\square$
$\square$
6
2
$\square$

$$
5
$$

$\square$
3
$\qquad$

## TEN

Use three cards. How many ways can you arrange 3 cards to make a sum of 10?


TWELVE
Colour three cards in each row that sum to equal 12.

$$
\begin{array}{|l|l|l|l|l|l|l|l|l|}
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
\hline
\end{array}
$$

THE KIWI EGG CHALLENGE
Each of the kiwi eggs below are numbered 1 to 5 .


Arrange the eggs so that each line adds up to 10.


Rearrange the eggs so that each line adds up to 9 .


## DARTS



1. $5+7-1$
2. $2+2+4$
3. $7+5-10$
4. $11-8$
5. $2+2+2$
6. $1+1-1$
7. $6+2-4$
8. $9+2-4$
9. $4+4+4$
10. $8+4-7$
11. $11-4+2$
12. $3+5+2$

## SUM UP

Dennis has four cards.


Make these totals from the cards.
$5=\square$
$6=$
7 =
$9=$
$10=$
$11=$
$12=$
$13=$
$14=$
$15=$
Only use each card once within each sum.

## NUMBER LINES

Make each line add up to 16 .


## CARD SUMS <br> 

Pick three cards that sum to a total of 12.
There are 10 different ways.


Pick four cards that have a sum of 12.
There are 9 different ways.


## BUCKETS OF BALLS

Dennis has three buckets below. Inside each bucket is an odd number of balls. There are 19 balls in total.


Write the possible number of balls in each bucket.
Bucket $1+$ Bucket $2+$ Bucket $3=19$


## CARD SUMS

Dennis has four cards. The cards are numbered: $1,2,5$ and 10.

Make the totals below using up to 3 of the numbers. You can use any of the numbers more than once




Is it possible to make these sums using any 3 of the numbers above?


## TASK FORCE

Task 1: Write down 5 odd numbers less than 20.
Three of the numbers must have 2 digits and two of the numbers must have only 1 digit.


Task 2: Write the numbers in order from least to greatest.


Task 3: Write down 5 numbers less than 30.
Write beside each whether they are odd or even.


Task 4: Write a number between 25 and 31.
Is the number closer to 25 or 31 ?
Show your answer on the number line below.


Task 5: What number is half way between 25 and 31? Mark the number on the number line above.

## MIRRORED REFLECTIONS



Put a mirror along the red mirror line. What do you see? Colour in the mirror image of the top grid in each square in the bottom grid to find the hidden message.

$\square$


Which coloured cubes will go onto spaces 13 and 14 ?


DIGIT CARDS

1. Each player chooses a coloured pencil.
2. Shuffle the hundreds cards, tens cards and unit cards.
3. Shuffle the hundreds cards, tens cards and
4. Players take turns to pick one hundreds card, one tens
card and one units card. They can then cross out each of card and one units card. They can then cross out each of
those digits on any one stone.
5. If a player crosses out the last digit on a stone then they
6. When all stones are coloured the winner is the player


## CHRISTMAS DELGHTS

Dennis has 16 Christmas trees to decorate. He has put 4 stars on each tree. He can colour the stars RED or BLUE.
Show all the different ways that Dennis can colour the four stars. He has coloured the first tree all red.



Page 6
FIVE PIN BOWLING
Dennis is preparing for another bowl.
Find different ways:


Page 5
FIVE PIN BOWLING
Which pins must Dennis knock over to score exactly 6 ? Write the numbers on the pins.

(8)


Page 7


Add the numbers on each snowball and write the answer.

$$
\begin{aligned}
& \text { (1) }+3=4 \\
& (1)+(8)=9(3)+(8)=11 \\
& (1)+(4)=5 \\
& (4)+(4)=7 \\
& (4)=12
\end{aligned}
$$

## Page 8

SNOW BALL SUBTRACTIONS

Choose a pair of snow balls:


Subtract the numbers on the snowballs and write the answer.


Page 10

## 3 BALLS IN A BUCKET

B.J. throws 3 balls. Each ball goes into a bucket.

Sometimes more than one ball goes into the same bucket.


Write all the ways to get these scores. 2 balls in 2

33 balls in 1
2 balls in 1
41 ball in 2

52 balls in 1
1 ball in 3

$5^{1}$ ball in 1
2 balls in 2


81 ball in 4
 1 ball in 2
2 balls in 3
1 81 ball in 1
81 ball in 1
1 ball in 3, 1 in 4

$10^{1}$ ball in 2 om balls in 4

71 ball in 1 2 balls in 3
 72 balls in 2 1 balls in 3

71 ball in 1
1 ball in 2, 1 ball in 4


All this activity leaves B.J. a little tired

Page 9

## BALLS IN A BUCKET

B.J throws 3 balls. Each ball goes into a bucket.

Sometimes more than one ball goes into the same bucket.

1. What is the highest score B.J. can get?

123 balls in 4


2. Find three ways to score 6 .

1 ball in 4, 2 bags in 1

1 ball in 1, 1 ball in 2, 1 ball in 3

3 balls in 2

3. Find three ways to score 9 .

1 ball in 1, 2 balls in 4

1 ball in 2, 1 ball in 3, 1 ball in 4


3 balls in 3



## Page 11

## HIDDEN SNAKES

Colour the numbers in order from 1 to 16 . The first one is done for you. You will end up with 5 more snakes.



Page 13


Can you help Dennis group all these shapes into some sort of order? He has finished the squares and started the triangles, circles, rectangles, squiggles and stars.
Which shape does he have the most of?


Page 16

## THE GOLD BAR CHALLENGE



Alicia has 4 piles of gold bars.
She can move one or more bars at a time.
She has to make all the piles the same height.
Alicia can make 4 equal piles in two moves.
How does she do it?

Below are 9 gold bars. If B.J., Dennis and Alicia each take the same number of gold bars, how many would each take?

3 gold bars each


Page 18
TEN
Use three cards. How many ways can you arrange 3 cards to


$$
1+2+7=10
$$

$$
2+3+5=10
$$

$$
1+3+6=10
$$

$$
1+4+5=10
$$

Page 17

## FIND THE MISSING VALUES

All the bars should add up to 10
Write the value of each the missing shaded bars.


Page 19
TWELVE
Colour three cards in each row that sum to equal 12


| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |




Page 23
SUM UP


Dennis has four cards.
Make these totals from the cards.

$$
\begin{aligned}
& 5=2+3 \\
& 6=2+4 \\
& 7=3+4 \\
& 9=2+3+4 \\
& 10=2+8 \\
& 11=3+8 \\
& 12=4+8 \\
& 13=2+3+8 \\
& 14=2+4+8 \\
& 15=3+4+8 \\
& \text { Only use each card one one within each sum. }
\end{aligned}
$$

## Page 24

## NUMBER LINES

Make each line add up to 16.


Page 26

## BUCKETS OF BALLS

Dennis has three buckets below. Inside each bucket is an odd number of ball There are 19 balls in total.

Write the possible number of balls in each bucket


Page 25

## CARD SUMS



Pick three cards that sum to a total of 12.
There are 10 different ways.
1.

6.


Pick four cards that have a sum of 12.
There are 9 different ways.
1.
2.

6.
7.
8.
9.


Page 27

## CARD SUMS

Dennis has four cards.
The cards are numbered:
$1,2,5$ and 10.
Make the totals below using

up to 3 of the numbers. You can use any of the numbers more than once


Page 28

## TASK FORCE

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Task 3: Write down 5 numbers less than 30.
Write beside $\epsilon$ ath whether they are odd or even


Task 4: Write a number between 25 and 3


Is thie number closer to 25 or 31 ? 25
Show your answer on the number line below.


Task 5: What number is half way between 25 and 31 ? Mark the number on the number line above. 28

Page 32

## CHRISTMAS DELIGHTS

Dennis has 16 Christmas trees to decorate. He has put 4 stars on each tree.
He can colour the stars RED or BLUE.
Show all the different ways that Dennis can colour the four stars. He has coloured the first tree for you (all red)


Page 29

## MIRRORED REFLEGTIONS



Put a mirror along the red mirror line. What do you see? Colour in the mirror image of the top grid in each square in the bottom grid to find the hidden message.


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