

New wave

Number and Algebra

This book belongs to:

.....

TONY DOYLE



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FOREWORD

The Australian Curriculum – Mathematics is organised around three content strands. Number and Algebra is the first strand. This strand is then arranged under four content areas—Number and place value, Fractions and decimals, Money and financial mathematics, and Patterns and algebra. Each content area is organised around a series of content descriptions and the pages of this book reflect these 13 descriptions. Many of the content descriptions are linked to each other and natural relationships between aspects of number will appear. Not all content descriptions are equally represented.

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FUN WITH COMPOSITE NUMBERS

1. What is a composite number?

2. Name the 5 composite numbers from 1 to 10.

3. Name the 6 composite numbers from 11 to 20.

4. Name the 8 composite numbers from 31 to 40.

5. Name the 7 composite numbers from 41 to 50.

6. Name the 8 composite numbers from 51 to 60.

7. Prove these star numbers are composite numbers writing their factors around the stars.



90

87

119

114

81

96

108

Content description: Identify and describe properties of prime, composite, square and triangular numbers (ACMNA122)

TRIANGULAR NUMBERS

- 1 Complete this number pattern below by adding the previous answer to the following equation.

$$\underline{1} + \underline{2} = \underline{3}$$

$$\underline{1} + \underline{2} + \underline{3} = \underline{\quad}$$

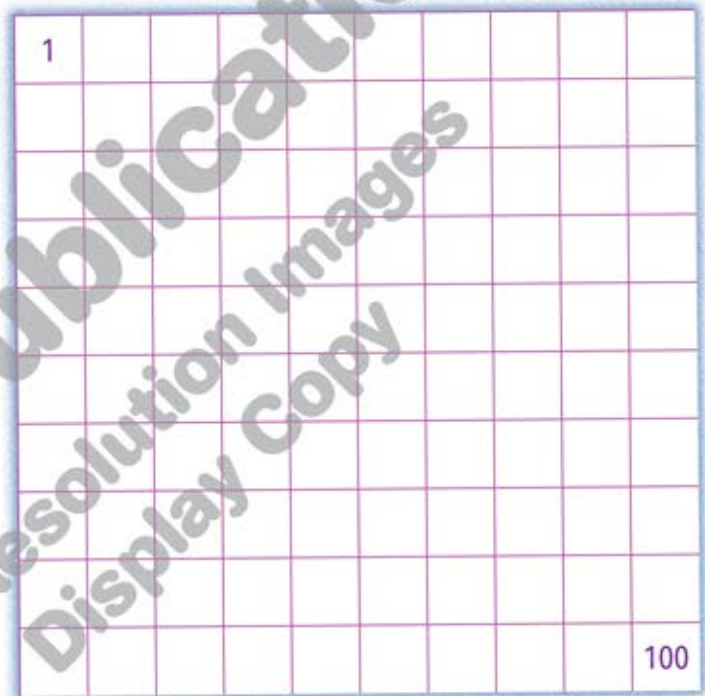
$$\underline{1} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{1} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{1} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{1} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

- 2 Complete this grid and mark as many triangular numbers as possible. Does any pattern stand out and can you explain it?

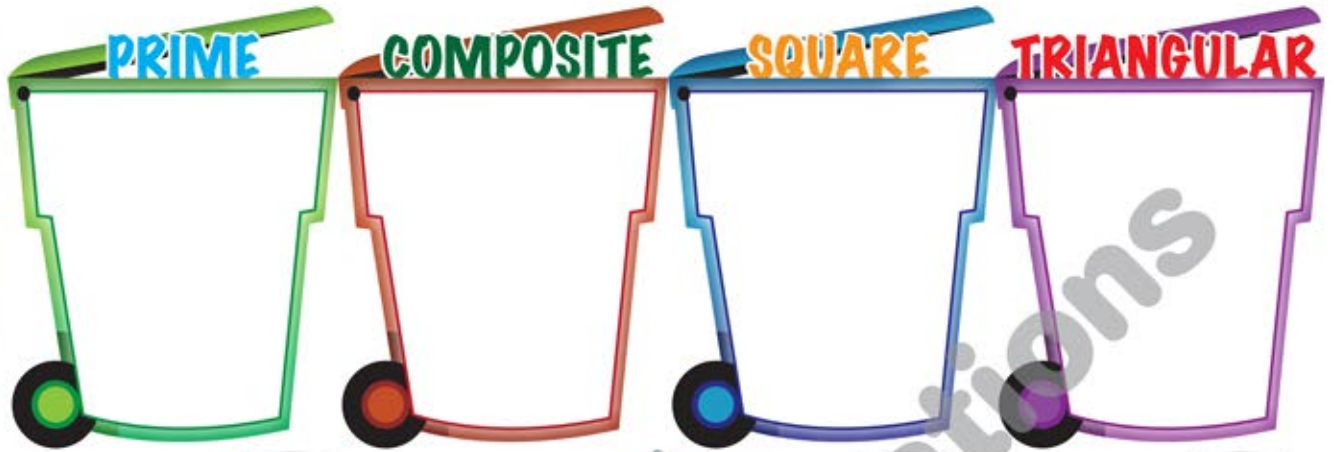


- 3 Continue this triangular number pattern by drawing triangles for the next four numbers in the sequence.



COLOUR CODE

Colour code the prime, composite, square and triangular numbers and record them in the correct bins. Do any numbers appear more than once?



Content description: Identify and describe properties of prime, composite, square and triangular numbers (ACMNA122)

THE SEARCH FOR PRIMES

Over 2000 years ago, Eratosthenes, a Greek mathematician, created a way of finding primes that still works today. We call it the Sieve of Eratosthenes.

Firstly, complete this grid as neatly as you can.

1									
81									90
							99		

1. With a red pen or marker cross out all the multiples of 2, which is all the even numbers except 2.
2. In green, cross out all the multiples of 3, except 3, up to 99.
3. In purple, cross out all the multiples of 5, except 5, up to 100.
4. In blue, cross out all the multiples of 7, except 7, up to 98.
5. Draw circles around the remaining numbers. These are the prime numbers from 1 to 100.
6. Record these below.



GOLF ANYONE?



Golf cards contain so many different numbers. Create a colour code for:

Prime numbers ● Composite ● Square ● Triangular ●

Hole	Metres	Par	Stroke index	Your score	Partner's score
1	410	4	3	5	7
2	359	4	9	3	6
3	173	3	13	7	4
4	323	4	15	6	4
5	451	4	11	5	5
6	424	4	1	4	9
7	441	4	5	7	4
8	129	3	17	9	2
9	501	5	7	5	6
Total		35		51	47

Hole	Metres	Par	Stroke index	Your score	Partner's score
10	166	3	8	4	3
11	431	5	4	9	5
12	288	4	14	4	6
13	220	3	2	5	6
14	301	4	10	6	6
15	153	3	16	7	5
16	297	4	18	3	4
17	289	4	6	4	4
18	419	5	12	8	5
Total		35		46	44

ADDITION AND SUBTRACTION GO TOGETHER



Complete the following equations without the assistance of a calculator. Show your working in the boxes provided.

$667 + 486 =$

$789 + 396 =$

$1938 + 495 =$

$337 + 872 =$

$593 + 985 =$

$958 + 730 =$

$902 - 345 =$

$1120 - 736 =$

$1007 - 225 =$

$1234 - 558 =$

$912 - 385 =$

$1289 - 447 =$

$1010 - 374 =$

$1194 - 818 =$

$1310 - 997 =$

Content description: Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (ACMNA123)



PUMP PRICE DISCOUNTS

Fancy Fuel Inc. offers 4c and 6c a litre petrol discounts for shopping at their Fancy Foods outlets. Using a calculator, work out the missing data below.

Price per litre \$	Pump total \$	Litres purchased	4c per litre discount =	You pay \$
\$1.24	\$43.40	35 L	\$1.40	\$42.00
\$1.24	\$64.48			
\$1.24		42 L		
\$1.24	\$48.36			
\$1.24	\$59.52		\$1.76	
\$1.24			\$2.00	
\$1.24		36 L		
\$1.24			\$1.84	
\$1.24	\$84.32			
\$1.24			\$1.48	

Price per litre \$	Pump total \$	Litres purchased	6c per litre discount =	You pay \$
\$1.31	\$60.26		\$2.76	
\$1.31		56L		
\$1.31			\$2.94	
\$1.31	\$91.70			
\$1.31		61L		
\$1.31			\$1.02	
\$1.31	\$37.99			
\$1.31		52 L		
\$1.31		43L		
\$1.31			\$3.66	

SUBTRACTION WITH ZEROS - DON'T BE HEROES

Content description: Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (ACMNA123)

$$\begin{array}{r} 7000 \\ - 5675 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6000 \\ - 4787 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10\ 000 \\ - 7\ 649 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4000 \\ - 1267 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 700\ 000 \\ - 78\ 605 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 600\ 000 \\ - 22\ 787 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 100\ 000 \\ - 84\ 919 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 40\ 100 \\ - 22\ 658 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 8100 \\ - 5488 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6100 \\ - 3387 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10\ 100 \\ - 3\ 349 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4100 \\ - 1727 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 7001 \\ - 3542 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6001 \\ - 4465 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10\ 001 \\ - 2\ 765 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4001 \\ - 3157 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 7010 \\ - 3485 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6010 \\ - 5697 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10\ 010 \\ - 2\ 259 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4010 \\ - 2637 \\ \hline \\ \hline \end{array}$$



ADDITION, ADDITION, ADDITION

$$\begin{array}{r} 3999 \\ + 1431 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4999 \\ + 4323 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 19\ 999 \\ + 3\ 441 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4999 \\ + 1243 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 37\ 777 \\ + 32\ 471 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 47\ 777 \\ + 22\ 323 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 177\ 777 \\ + 24\ 111 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4\ 717 \\ + 22\ 412 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 2188 \\ + 1422 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5864 \\ + 3323 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 21\ 189 \\ + 3\ 341 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4167 \\ + 1323 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 3991 \\ + 3142 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 8991 \\ + 4441 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 13\ 491 \\ + 2\ 341 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5891 \\ + 3113 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 22\ 919 \\ + 3\ 421 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6459 \\ + 1413 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 21\ 319 \\ + 2\ 211 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6319 \\ + 2433 \\ \hline \\ \hline \end{array}$$

