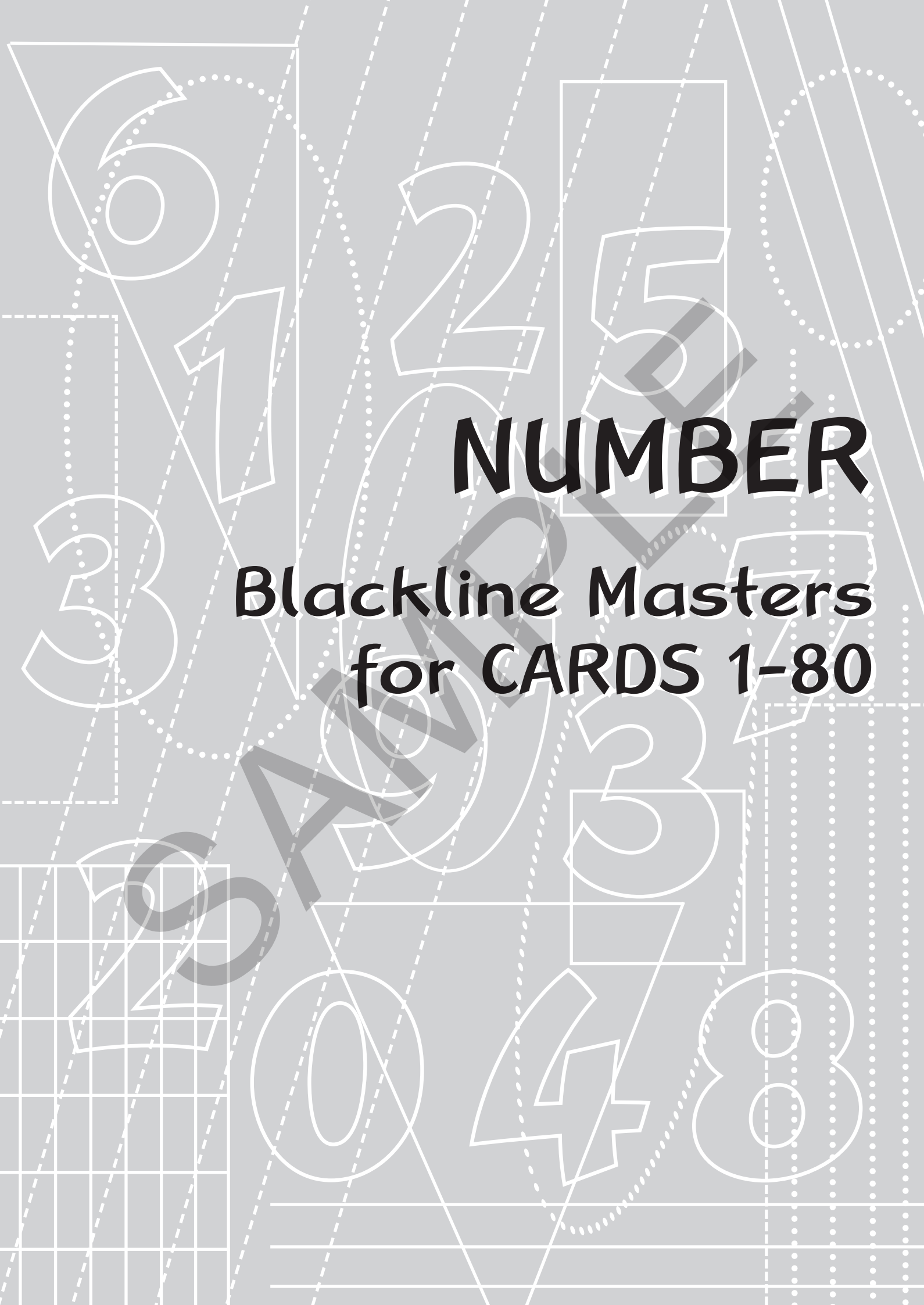


The background is a light gray with various white geometric shapes and numbers. There are large numbers like 6, 1, 2, 5, 3, 0, 4, and 8. Some numbers are solid outlines, while others are dashed or dotted. There are also rectangles, a grid in the bottom left, and diagonal lines across the page.

NUMBER

**Blackline Masters
for CARDS 1-80**

SAMPLE

Palindromic Numbers

CARD 1

1 Extend these palindromic number patterns by adding the next 5 numbers in each pattern:

a) 3, 313, 323

b) 606, 616, 626

c) 101, 20202, 3030303

d) 1223221, 12233221, 122333221

2 Why is the number 191 called a palindromic prime number?

.....

.....

3 Why is the number 676 called a palindromic square number?

.....

.....

4 What number results if 1001 is tripled? What type of number is this?

.....

5 Find out how many 4-digit palindromic numbers there are. Use the space which follows for your working.

Answer: I found that there are palindromic numbers having four digits.



Tram Route Numbers

CARD 2

Finding Prime Numbers

- 1** Use the sieve of Eratosthenes to find the prime numbers between 1 and 100.

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	34	35	36	37
	38	39	40	41	42	43
	44	45	46	47	48	49
	50	51	52	53	54	55
	56	57	58	59	60	61
	62	63	64	65	66	67
	68	69	70	71	72	73
	74	75	76	77	78	79
	80	81	82	83	84	85
	86	87	88	89	90	91
	92	93	94	95	96	97
	98	99	100			

On the chart at the right:

- Colour 1 red. It is not prime.
- Colour all multiples of 2 except 2 blue. 2 is prime.
- Colour all multiples of 3 except 3 green.
- Colour all multiples of 5 except 5 yellow.
- Colour all multiples of 7 except 7 brown.

- 2** All the numbers that are not coloured are the primes between 1 and 100.

- Except for 2 and 3, in what columns are the primes?
- Write a sentence about the numbers in column 6.
.....
.....

- 3** Fill in the blanks with 'less' or 'greater'.

- 5 is one than a multiple of 6.
- 19 is one than a multiple of 6.
- 47 is one than a multiple of 6.
- 73 is one than a multiple of 6.

- 4** Complete the following statement:

Every prime number in this table greater than 3 is more
or less than a multiple of 6.

Largest Ocean Liner

CARD 3

- 1** Daily consumption of lobster on board the *Queen Mary 2* is 73 kg. How many kg of lobster would be consumed on an 81-day world cruise?
.....
- 2** If one-quarter of the 2620 passengers on the *Queen Mary 2* disembarked in Sydney, how many remained on board?
.....
- 3** The length of the *Queen Mary 2* is 345 m, compared to 293.5 m of her sister ship the *Queen Elizabeth 2*. How much longer than the *QE2* is the *QM2*?
.....
- 4** The *QM2* has a planetarium seating 500 people, a theatre which seats 1100 and the Britannia Restaurant seating 1347. Mentally calculate how many people altogether could be seated at the three venues.
.....
- 5** Explain how you worked mentally in finding your answer to Question 4.
.....
.....
.....
.....
.....
.....
.....
.....
- 6** More than 5000 works of art, the creations of 128 artists from 16 different countries, are displayed in the various public rooms on the *QM2*. On average, how many artworks per artist is this?
.....
- 7** An order for the building of the *QM2* was placed on November 6, 2000. It commenced its maiden voyage on January 8, 2004. How many years, months and days elapsed from the day the order was placed to the ship setting out on its maiden voyage?
.....
- 8** Seventeen passengers each paid fares of \$136 500 to travel on a cruise on the *QM2*. How much money altogether did they pay?
.....



An Unusual Car Park

CARD 4

Use your ruler and design a shopping centre car park to fit 30 cars. The car park can be any shape but each car space needs to be rectangular and measure 1 cm in width on your plan.

- Make sure that you allow room for cars to turn into and out of the car park. Clearly mark an entry and exit on your plan.
- Allow lanes of about 30 mm on your plan to fit discarded shopping trolleys. You need to include some trees for shade as well.
- Label each car space with a Roman numeral so that all spaces are numbered from I to XXX.

SAMPLE

Roamin' With Romans

CARD 8

1 Write these Roman numerals as Hindu-Arabic numerals:

- | | |
|-----------------|-----------------|
| a) XV | f) XXXIX |
| b) XVIII | g) XLV |
| c) XIX | h) XLVIII |
| d) XXXVII | i) LXIII |
| e) XXIV | j) LXIX |

2 Write these Hindu-Arabic numerals as Roman numerals:

- | | |
|-------------|--------------|
| a) 13 | f) 88 |
| b) 26 | g) 106 |
| c) 29 | h) 114 |
| d) 44 | i) 135 |
| e) 57 | j) 149 |

3 On 2nd March 2003, Australia Post issued a set of five stamps in a series celebrating some of this country's most famous bridges. The Ross Bridge in Tasmania (built 1836) was one. Others included the Lockyer Creek Bridge in Queensland (built 1911), Sydney Harbour Bridge in New South Wales (opened 1932), Birkenhead Bridge in South Australia (built in 1940) and the Bolte Bridge in Victoria, (opened 1999).

Write the year each bridge opened in Roman numerals:

Ross Bridge 1836:

Lockyer Creek Bridge 1911:

Sydney Harbour Bridge 1932:

Birkenhead Bridge 1940:

Bolte Bridge 1999:

4 Write the year of your birth in Roman numerals.

5 Explain why 449 in Roman numerals is CDXLIX.

.....

.....

.....

.....

.....

Anyone for Tennis?

CARD 9

YEAR	TOTAL ATTENDANCE
1997	391 504
1998	434 807
1999	473 296
2000	501 251
2001	543 843
2002	518 248
2003	512 225
2004	521 691
2005	543 873
2006	550 550

- 1** In which year did the attendances at the Australian Open first pass 500 000?
.....
- 2** In which two years were attendances nearly identical?
.....
- 3** By how many did attendances fall between 2001 and 2003?
.....
- 4** Find the increase in attendances between 1997 and 2006.
.....
- 5** Write the 1998 attendance figure in expanded notation.
.....
.....
- 6** Round the 1999 attendance figure to the nearest ten thousand.
.....
- 7** Write in words the 2006 Australian Open attendance figure.
.....
.....
- 8** Use the $>$ and $<$ symbols to show the relationship between the 2001 and 2005 figures.
.....

Ned Kelly's Judge

CARD 11

- 1** Complete the following table by filling in the gaps with the appropriate Roman or Hindu-Arabic numeral.

ROMAN NUMERAL	HINDU-ARABIC NUMERAL
LXXVI	
	384
CCLXXIII	
	738
CDXLIV	
	1357
MCDXXIX	
	2679
MCMXLVIII	
	3863
MMMDCCLXXXVIII	

- 2** A bridge in Europe contained the following letters carved into the stonework: MCDLVIII. In which year was it constructed.

.....

- 3** A headstone in the cemetery contained the following Roman numerals: MCMXXII and MCMLXXXVIII. Write the birth and death years in Hindu-Arabic numerals.

.....

- 4** The black and white film credits displayed the year MCMXXIX. In which year was the film made?

.....

- 5** Write the year 2010 in Roman numerals.

.....

- 6** Write the date of your birth using Roman numerals for the day, month and year.

.....

Making Palindromic Numbers

CARD 12

Palindromes read the same way forwards or backwards. A word like 'dad' or a sentence like 'Madam I'm Adam.', which reads the same backwards is a palindrome.

A number like 27 572 is the same forwards and is called a palindromic number.

1 To make a palindrome:

Choose any number, say 74

74

Reverse it: 47

+ 47

Find the sum, 121 – a palindrome

121 (one stage)

2 Sometimes it is necessary to repeat this procedure to obtain a palindrome.

Choose a number: 84

84

Reverse it: 48

+ 48

Find the sum.

132

Take the answer.

132

Reverse it: 231

+ 231

Find the sum, 363 – a palindrome

363 (two stages)

3 Make palindromes out of these numbers.

a) 42

b) 65

c) 93

Answer:

Answer:

Answer:

4 Try making some palindromes of your own in the space below.

One Million Squares

CARD 13

Australia's Population

This table shows population figures for Australia in 2004.

Population of Australian states, territories and capital cities (Australian Bureau of Statistics 2004)			
STATE OR TERRITORY	POPULATION	CAPITAL CITY	POPULATION
ACT	324 100	Canberra	324 100
SA	1 532 700	Adelaide	1 123 200
QLD	3 888 100	Brisbane	1 777 700
NSW	6 720 800	Sydney	4 225 100
WA	1 978 100	Perth	1 454 600
Tas	482 200	Hobart	202 200
NT	199 800	Darwin	109 400
Vic	4 963 000	Melbourne	3 593 000

- List the populations of the capital cities in order, from smallest to largest.
.....
.....
.....
- List the populations of the states and territories in order, from smallest to largest.
.....
.....
- Mentally calculate the difference between Melbourne's population and that for Victoria.
- Which two cities have a combined population closest to that of Brisbane?
.....

Fascinating Fibonacci

CARD 14

- 1** The Fibonacci sequence begins with these eight numbers: 1, 1, 1, 2, 3, 5, 8, 13. Use an addition pattern to continue the sequence with the next 8 numbers.

- 2** Find and write the next four numbers in the Fibonacci sequence, after 610.

- 3** Explain how you calculated the fourth of the four numbers you wrote in answering Question 2.

- 4** Use a calculator to explore the Fibonacci sequence greater than 4000. List the first six numbers in the sequence above 4000.

- 5** Using your calculator, find the largest 5-digit number in the Fibonacci sequence.

- 6** Any two natural numbers may be used to generate a Fibonacci sequence. For example, starting with 2 and 4, we have 2, 4, 6, 10, 16, 26 ... Continue this sequence by supplying the next four numbers.

- 7** Choose any two single-digit numbers to generate your own Fibonacci sequence. Have a partner extend the sequence after you provide the first six numbers.

- 8** The ratio of successive terms of ANY Fibonacci sequence approaches the golden ratio. What is the golden ratio? Find out about the golden rectangle and its use in art and architecture.

How Big is Our World

CARD 15

CONTINENT	AREA IN SQUARE KILOMETRES
AFRICA	29 808 000
ASIA	44 010 000
AUSTRALIA	7 689 000
EUROPE	9 702 000
NORTH AMERICA	24 326 000
SOUTH AMERICA	17 604 000
ANTARCTICA	13 900 000

OCEAN	AREA IN SQUARE KILOMETRES
ARCTIC OCEAN	13 986 000
ATLANTIC OCEAN	82 439 000
INDIAN OCEAN	73 452 000
PACIFIC OCEAN	165 241 000

- 1** By how much is the Atlantic Ocean larger than the Indian Ocean?

.....

- 2** Mentally calculate the combined total area in square kilometres of North and South America.

.....

- 3** How much bigger is the combined area of the Arctic, Atlantic and Indian Oceans than the Pacific Ocean?

.....

- 4** Do the combined areas of Asia and Africa make up one half of the world's total land mass? Explain your answer.

.....

.....

.....

- 5** How many times would the land mass of Europe fit into the Pacific Ocean?

.....

King Kaid

CARD 16

There is a very old problem involving King Kaid of India, who was nearly tricked into bankrupting his country. For performing a service to the king a mathematician asked for the simple payment of a piece of corn on the first square of a chessboard. Further payments were to be made by doubling the pieces of corn on each successive square.

Using your calculator, try to work out how many pieces of corn this mathematician would have been paid. Go as far as you can.

Use your memory function to help you add the numbers as you go.

1	2	4	8	16	32	64	128
256							

Colour the square red where the E appears on your calculator.

What does this E mean?

.....

.....

Using a scientific calculator will help you progress beyond this point in your investigation as the display can fit more digits.

Charles Bridge, Prague

CARD 17

Using the DD-MM-YYYY format, write some palindromic dates in the table below. The first one has been done for you.

D	D	M	M	Y	Y	Y	Y
1	0	0	2	2	0	0	1



Count Like the Romans

CARD 18

1 Write each of the following Roman numerals as Hindu-Arabic numerals

- | | |
|-------------------|--------------------------|
| a) XXIV | f) CDLV |
| b) LXVIII | g) MCCXXIII |
| c) CLXVII | h) MMDCCC |
| d) CCCLXXXV | i) MDCLXVIII |
| e) DCLXVI | j) MMMDCCCLXXXVIII |

2 Write these Hindu-Arabic numerals as Roman numerals:

- | | |
|---------------|---------------|
| a) 17 | f) 89 |
| b) 44 | g) 511 |
| c) 253 | h) 2667 |
| d) 1470 | i) 497 |
| e) 777 | j) 3951 |

3 Write your house number and postcode in both Hindu-Arabic and Roman numerals.

House number: Hindu-Arabic Roman

Postcode: Hindu-Arabic Roman

Now use the Roman numerals to write your full address below:

.....

.....

4 Two world famous Sydney landmarks are the Sydney Harbour Bridge and the Sydney Opera House. Write the year in which each was opened in both Roman numerals and Hindu-Arabic numerals.

Sydney Harbour Bridge: Roman Hindu-Arabic

Sydney Opera House: Roman Hindu-Arabic

5 Explain why MDCCCLXXXVIII is 1888.

.....

.....

.....

Goldbach's Conjecture

1 INVESTIGATION: Record your answers for Question 3.

NUMBER	DOUBLE	PRIMES BETWEEN EACH NUMBER
10	20	
11	22	
12	24	
13	26	
14	28	
15	30	
16	32	
17	34	
18	36	
19	38	
20	40	

2 Express each of these even numbers as the sum of two prime numbers.

- a) 8 f) 32
- b) 14 g) 34
- c) 18 h) 38
- d) 20 i) 44
- e) 26 j) 62





Huge Numbers

Fill in the gaps to complete the table below.

NUMBER NAME	NUMERAL	POWER OF 10
THOUSAND		10^3
	1 000 000	
BILLION		10^9
TRILLION	1 000 000 000 000	
		10^{15}
QUINTILLION		
	1 000 000 000 000 000 000 000	
SEPTILLION		10^{24}
OCTILLION		10^{27}
DECILLION		

The Birthday Party (1)

CARD 21

- 1** All your relatives have given you money for your birthday.

Calculate how much you have received in total.

- 2** You also have money saved in your money barrel and money in the bank.

Select from the catalogue the items you would like to purchase (See BLM 18).

Try to spend as close to your total as possible.

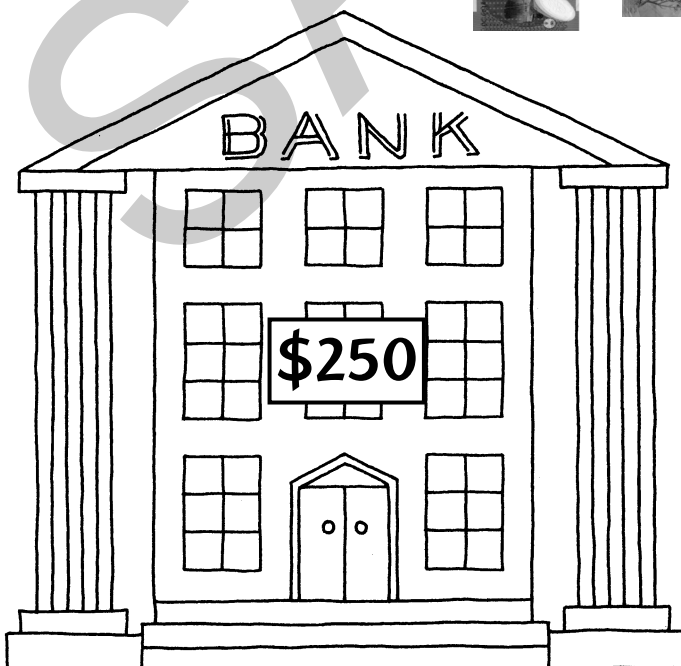
MUM and DAD



SISTER



UNCLE



**Total money
to purchase birthday
presents**

Bank

Money barrel

Money from
relatives

Total



GRANDPARENTS



\$249

\$19.85

\$14.85

\$19.85

\$24.95

\$56.50

\$18.95

\$49.95

\$16.95

\$29.85

\$25.50

\$2.99

\$249

\$29.95

\$29.95

\$149.95

\$125.95

TOTAL COST

Are You Hungry?

CARD 22

Mrs Mason uses a spreadsheet to show the cost of items at the school canteen. The parents who help in the canteen use it as a ready reckoner when students buy more than one item.

- 1** Complete the spreadsheet using a calculator constant function, then answer the questions below.

NUMBER OF ITEMS	1	2	3	4	5	6	7	8	9	10
Pie	\$1.60	\$3.20			\$8.00					
Sausage roll	\$1.05									
Vegemite sandwich	\$1.25									
Salad sandwich	\$1.65							\$13.20		
Orange juice	\$0.95									
Banana	\$0.65									
Chips	\$1.00	\$2.00								

- 2** What is the cost of 6 pies and 8 sausage rolls?
- 3** A class ordered 5 pies, 4 sausage rolls, 7 salad sandwiches, 8 orange juices, 9 bananas and 2 packets of chips. What was the total cost?
- 4** Another class ordered 4 pies, 8 sausage rolls, 6 vegemite sandwiches, 7 bananas and 12 packets of chips. What was the total cost for this class?
- 5** Survey six of your classmates to find out what they would purchase from the list above. Calculate the cost of each person's lunch. Calculate the total and average cost of the six meals. Record your answers below.

NAME	ITEM @ COST	ITEM @ COST	ITEM @ COST	ITEM @ COST	TOTAL
TOTAL COST					
AVERAGE COST					

List 1	List 2	List 3
Total =	Total =	Total =
List 4	List 5	List 6
Total =	Total =	Total =

Back to School (2)

CARD 23

It's back-to-school time and the five Anderson children – Jack and Jill (both at secondary school) and Jeremy, John and Jude (at primary school) – need new sets of stationery and supplies.

They found these items 'on special' at the newsagents.

Jeremy, John and Jude each need 1 of every item except for:

A4 display books: they need 2 each

Ballpoint pen sets: they need 2 each

A4 exercise books (96 pages): they need 2 each

Calculator: none of them needs it

A4 exercise book (128 pages): none of them needs it

School Supplies	
A4 display book with 20 pockets	\$1.95
Ballpoint pen set (2 blue, 1 black and 1 red)	\$1.30
Eraser (plastic)	\$0.60
Pencil sharpener	\$0.45
Pencils (HB) packet of 3	\$0.90
A4 exercise book (96 pages)	\$0.45
A4 exercise book (128 pages)	\$0.65
Ruler (30 cm, wooden)	\$0.30
Coloured marker pens (packet of 20)	\$3.30
Fluoro markers (packet of 4)	\$3.20
10-digit scientific calculator	\$29.00
A4 4-ring folder	\$2.10
Pencil case (tartan jumbo)	\$1.95

1 Use the memory function of your calculator to work out the cost for each for Jeremy, John and Jude.

Jeremy	\$
John	\$
Jude	\$

2 Use the memory function of your calculator and work out the cost for each of them.

Jack	\$
Jill	\$

Secondary school students Jack and Jill need slightly different supplies.

They need 1 of each item on the list except for:

A4 display books: they need 4 each

Ballpoint pen sets: they need 2 each

A4 exercise books (96 pages): they need 2 each

A4 exercise books (128 pages): they need 6 each

A4 4-ring folders: they need 3 each.

3 What is the total cost of stationery and supplies for the Anderson family?

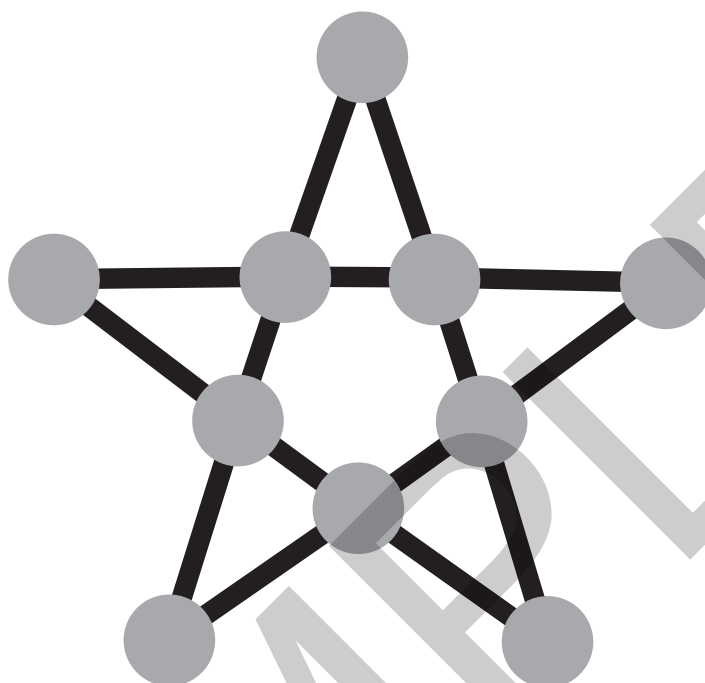
\$

Magic Stars

CARD 24

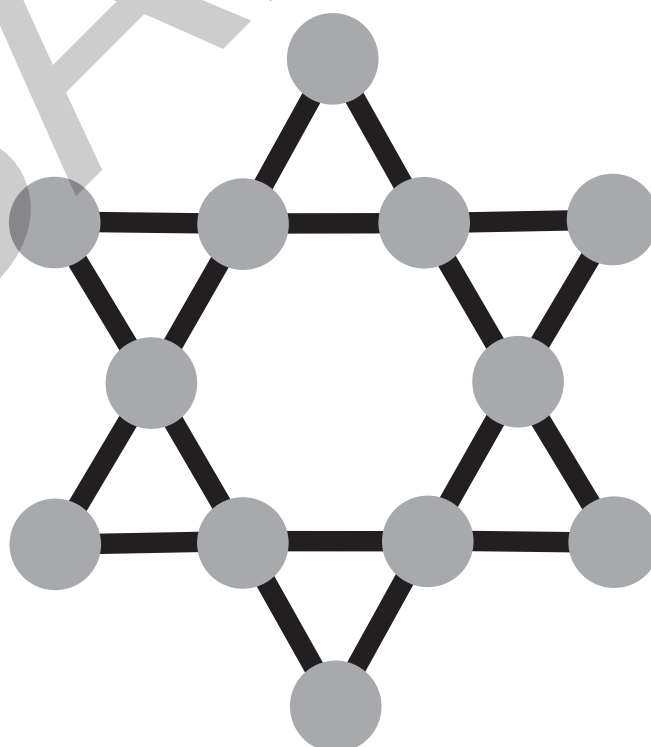
WORKING MATHEMATICALLY: Place the numbers 1 to 12 (except for 7 and 11) in the circles of the pentagram so that the sum of the numbers along any straight line is 24.

Pentagram



INVESTIGATION: Place the numbers 1 to 12 in the circles of the hexagram so that the sum of the numbers on each straight line is 26.

Hexagram



Distances to Capitals

CARD 25

WORKING MATHEMATICALLY: Fill in the missing distances in the table.

Use the table to answer the questions.

DISTANCE IN KILOMETRES	MELBOURNE	SYDNEY	BRISBANE	CANBERRA	ADELAIDE	PERTH	DARWIN
Melbourne	0	869	1679	646	728	3424	3788
Sydney		0		284	1422	3957	4028
Brisbane	1679	975	0	1254	2058	4415	3487
Canberra	646		1254	0		3732	
Adelaide	728	1422	2058	1197		2696	3020
Perth	3424	3957	4415		2696	0	4077
Darwin	3788	4028	3487	3988		4077	0

Cheaper by the Dozen

CARD 26

- 1** If a dozen eggs cost \$3.60, what is the price per egg?
- 2** The local bakery sells a dozen bread rolls for \$4.90. How much is this per roll, to the nearest cent.
- 3** The supermarket is selling a bag of 20 oranges for \$6.50 or the same oranges individually for 35 cents each. If a shopper buys 20 loose oranges instead of a bag, how much more money does she pay?
.....
.....
- 4** Single lamingtons cost 45 cents each. A dozen lamingtons cost \$4.80. How much does it cost per lamington if I buy one dozen? What saving have I made on each lamington compared to the cost of buying them individually?
.....
.....
- 5** Vegetable pies cost \$3.60 individually and \$25.90 by the dozen. How much would be saved by buying a dozen vegetable pies compared to 12 individual purchases?
.....
.....
- 6** Visit your local shopping centre and look for examples of where goods are cheaper when you buy one dozen. The bakery and supermarket would be good places to start your investigation. In the space below, record the details of what you found out.

More Magic Squares

CARD 29

You may use a calculator in completing these magic squares.

- 1** Complete the following 5 x 5 magic square. All rows, columns and diagonals must have the same total.

0	8		19	22
16		2		13
7	10			4
	1		12	15
14		20	3	6

- 2** Complete the following 6 x 6 magic square. Again, all rows, columns and diagonals are to have the same total.

22		24	25	6	7
20	23			5	4
3	0	17		35	34
1	2		18		32
31	30		9		15
28		10	11	14	

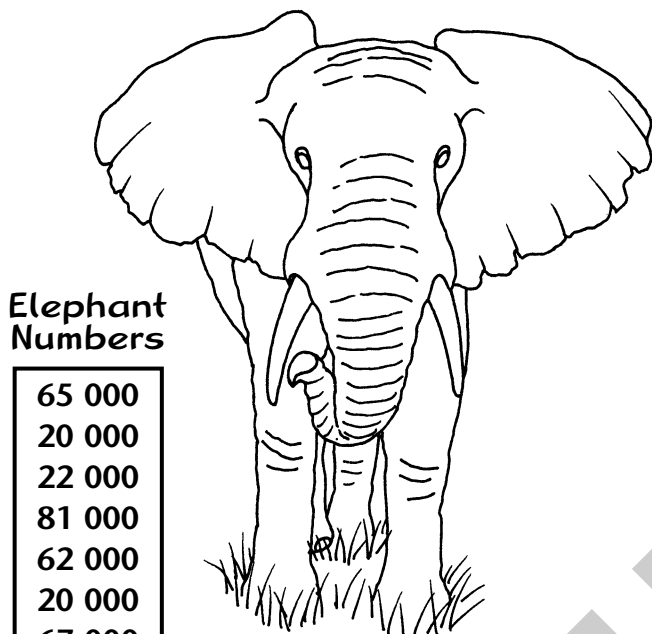
- 3** Complete the following magic square of order 8. All rows, columns and diagonals must have the same total.

0	29	40		22	11	62	35
46		6	27		37		13
	9		33	2	31	42	55
58		18	15	44	49	4	
41	52		28	63	34	23	
7		47	50	17			36
61	32	21	8	43	54	3	30
19	14	59	38		24		48

African Elephants

CARD 31

- 1** These African countries are listed in order from largest to smallest according to the number of elephants living within their borders. Match the numbers in the box with each African country. Use your calculator to find the total number of elephants in these African countries.



Elephant Numbers

65 000
20 000
22 000
81 000
62 000
20 000
67 000
44 500
74 000
32 500

COUNTRY	ELEPHANTS
BOTSWANA	81 000
TANZANIA	
ZIMBABWE	
DEMOCRATIC REPUBLIC OF CONGO	
GABON	
SUDAN	
CONGO	
CAMEROON	
KENYA	
ZAMBIA	

TOTAL

- 2** Write in words the number of elephants in these African countries.

- a) Tanzania
- b) Zambia
- c) Sudan

- 3** These numbers of elephants live in various private game parks in South Africa. Write the numbers in order beginning with the smallest.

1173, 2314, 3731, 731, 4044, 4444, 504, 4054

.....

.....

- 4** Asia has approximately 32 750 wild elephants. Write this number in words.

.....

- 5** There are about 15 000 tame elephants in Asia. Write this number in words.

.....

- 6** Mentally calculate the total number of elephants in Asia.

A Knight's Journey

CARD 34

INVESTIGATION: Use this grid to answer the questions.

1	48	31	50	33	16	63	18
30	51	46	3	62	19	14	35
47	2	49	32	15	34	17	64
52	29	4	45	20	61	36	13
5	44	25	56	9	40	21	60
28	53	8	41	24	57	12	37
43	6	55	26	39	10	59	22
54	27	42	7	58	23	38	11

A Mailbox in its Prime

CARD 35

Hundreds Chart

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	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What's the Address?

CARD 36

Here are some rules that you can use to help work out if a number is divisible by 2, 3, 5, 9 or 10.

DIVISIBLE BY 2

A number is divisible by 2 if the ones digit is an even number, i.e. 0, 2, 4, 6 or 8.

DIVISIBLE BY 3

A number is divisible by 3 if the sum of the digits is divisible by 3.

DIVISIBLE BY 5

A number is divisible by 5 if the ones digit is a 5 or 0.

DIVISIBLE BY 9

A number is divisible by 9 if the sum of the digits is divisible by 9.

DIVISIBLE BY 10

A number is divisible by 10 if the ones digit is 0.

Write a Y (Yes) or N (No) in each column to indicate whether each number is divisible by 2, 3, 5, 9 or 10.

Divisible by:

NUMBER	2	3	5	9	10
610					
378					
815					
429					
481					
584					
189					
285					
666					
712					

Unusual Buildings

CARD 38

The grid above represents the 12 rows of windows of a 12-storey office building. The windows are to be decorated with coloured solar shades.

Note that different coloured shades will be seen on various floors.

- 1** How many windows are there altogether?
- 2** One eighth of the windows have red shades. Colour this number of windows red on the grid.
- 3** One third of the shades are green. Colour the green shades.
- 4** One sixth of the windows are blue. Colour the blue shades.
- 5** One quarter of the windows are yellow. Colour the windows having yellow shades.
- 6** One eighth of the windows have brown shades. Colour the brown shades.
- 7** How many windows are shaded either brown or red?
- 8** Use the coloured shades to state the relationship between sixths and thirds in your notebook.
- 9** Write an addition algorithm showing how the number of each colour of window will add up to 144 in your notebook.

Milking the Cows

CARD 40

- 1** Farmer Jim has 260 cows each of which produces an average of 27 litres of milk each day. How much milk will the cows produce in a fortnight?

.....

.....

- 2** If Farmer Jim is paid \$0.30 per litre for his milk, how much will he receive for the fortnight's supply calculated in Question 1?

.....

.....

- 3** How much milk will Farmer Jim's cows produce in a year?

.....

.....

- 4** Farmer Jim's rotary dairy fits 36 cows. How many times will he have to operate the dairy if all the cows have to be milked?

.....

.....

- 5** It takes 12 minutes for Farmer Jim's rotary dairy to rotate completely once. For how long will the dairy need to operate to milk all his cows?

.....

.....

- 6** Farmer Jim has 45 paddocks. On average, how many cows per paddock is this, to the nearest cow?

.....

.....

- 7** The area of Farmer Jim's farm is 357 hectares. Find the average size of each of Farmer Jim's paddocks to two decimal places.

.....

.....



Dividing Three-digit Numbers

CARD 41

747

579

603

777

424

918

571

384

266

813

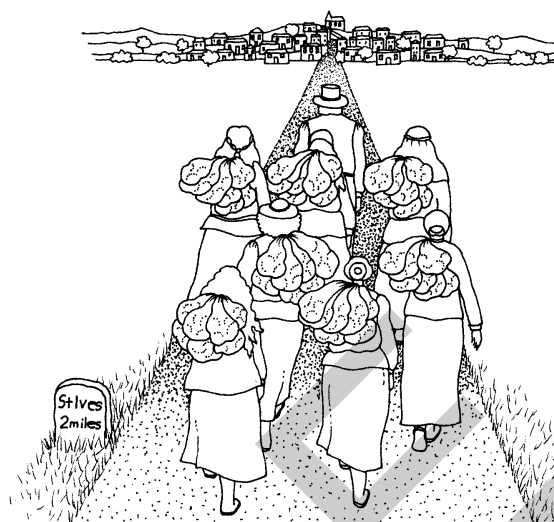
Use your knowledge of the divisibility rules in completing the following:

- 1** Circle each number in the box which is divisible by 3.
- 2** Write the rule for determining if a number is divisible by 3.
.....
- 3** Write the numeral '9' below each numeral in the box which is divisible by 9.
- 4** Write the rule for determining if a number is divisible by 9.
.....
- 5** Two of the numbers in the box are divisible by 6. Which are they?
- 6** Which rule did you use to quickly identify the two numbers in question 5?
.....
- 7** Draw a square around each number in the box which is divisible by 7.
- 8** If the number represented by the last two digits of a number is divisible by 4, then so is the number itself. Which of the numbers in the box are divisible by 4?
.....
- 9** Find a number in the box which is divisible by 2, 3, 4, 6, 8 and 12.

Going to St Ives

CARD 42

'As I was going to St Ives
I met a man with seven wives
Every wife had seven sacks
Every sack had seven cats
Every cat had seven kits.
Kits, cats, sacks and wives,
How many were going to St Ives?'



- 1** A problem similar to 'How many were going to St Ives?' was found on the Rhind Papyrus written about 1650 BC.

The information was as follows:

Houses	7 (7)
Cats	49 (7×7)
Mice	 ($7 \times 7 \times 7$)
Ears of spelt (a type of wheat)	 (..... $\times$ $\times$ $\times$)
Hekats ($\frac{1}{30}$ of a cubic metre) of grain	 (..... $\times$ $\times$ $\times$ $\times$)
TOTAL =	

The calculations required are shown as 7 , 7×7 , $7 \times 7 \times 7$, $7 \times 7 \times 7 \times 7$ and $7 \times 7 \times 7 \times 7 \times 7$.

- 2** Use the space below to work out the missing numbers in the pattern.

Eureka Tower

CARD 43

NAME OF SKYSCRAPER	LOCATION	HEIGHT IN METRES	YEAR COMPLETED
Chrysler Building			
Empire State Building			
Petronas Towers			
Sears Tower			

List two important facts (not including information from the table above):

Chrysler Building:

.....

.....

.....

Empire State Building:

.....

.....

.....

Petronas Towers:

.....

.....

.....

Sears Tower:

.....

.....

.....