

Mathemagical

Number and Algebra

- Think of a number
- Double it
- Add 8
- Divide by two
- Subtract the number you first thought of
- 1=A, 2=B, 3=C, 4=D, etc etc
- x
- $2x$
- $2x + 8$
- $x + 4$
- 4
- D E ...



Magic Squares ($x = n-30$)

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

BIDMAS is Magic

- 291161
- + 0 (Anything you want)
- = 291161
 - Check your calculator and hold on tight!

Professor's Nightmare

- $\frac{1}{2}a + \frac{1}{2}c = b$
- Given that $b = 20$
- both a and c are integers
- and that $a < c$
- Find all possible values of a



Prime Cards

- 5 cards
- Know the bottom card
- Pick a number between 1 and 4
- Deal down and turn over – The last card not turned over will be the bottom card.
- Why
- Last card is a prime number \therefore Any multiple of the chosen number will only come up as the final unchanged card.

Primes and Patterns

- What are prime numbers?
- How do you find prime numbers?
- How to make a £billion by discovering the pattern of the primes.
- Cross curricular links to music, code history, economics etc.

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

Distance = Speed x Time

- So Speed = ?
- Distance / Time
- If I increase the distance but keep the time the same, what happens to the speed?
- The faster I throw something the further it goes!

DATA HANDLING

- Disraeli - 'There are lies, damn lies, and statistics.'
- Everyone knows probability of picking a heart from a deck of cards is 1 in 4 ...
- Or is it?
- Cross cut, slip cut, classic force...
The WHY of statistics

Experimental Probability

Dice

- War hammer
- Wooden or Casino
- Two fives
- Weighted

Call yourself a maths teacher?

- I have control of the cards!
- What is the probability of two numbers being next to each other in a pack?
- More than 0.9!

Lies, Damn Lies and Statistics

- In 2000, coffee prices went up by 2%
- In 2001 coffee prices went up by 3%
- Did coffee prices go up by 1% 2%, 2.5%, 3%, 5% or 50%?
- Government spending on Education
- 1998 £38bn
- 1999 £41bn
- 2000 £45.5bn
- 2001 £47.5bn

So government spending has increased by how much?

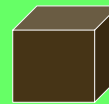
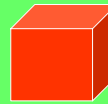
Predictions for cash

- I can predict the sex of your new baby
- I know who will win the FA cup.

Shape Space and Measure



- Volume
- length
- width
- height
- capacity



AT1 – The Joy of Number Patterns

- Fibonacci in Magic
- The boring teacher method of discovering Fibonacci
- Fibonacci to the Golden Ratio
- Golden Ratio in Nature
- Why (some) big illusions work

Maths, Magic and Work Related Learning

- Jasper Maskelyne
- 1939 Concert Party
- 1941 A force
- 1941 The magic Gang save the Port of Alexandria
- 1942 El Alemein – the mass production of tricks, swindles and devices

The Biggest Illusion Ever?

- Thunder flashes
- Mirrors
- Optical Illusion
- Electrical engineering
- Misdirection

8	9	10	11
12	13	14	15

4	5	6	7
12	13	14	15

2	3	6	7
10	11	14	15

1	3	5	7
9	11	13	15