

### Odd One

Choose the odd one out on each line and write its initial letter on the right. The seven letters will form a word. What is it?

TRIP	TRIO	TRIANGLE	TRIPOD
RIGHT	WRONG	ACUTE	OBTUSE
50%	HALF	EVENS	ODDS
NOUGHT	SOMETHING	ZERO	NOTHING
APRIL	SEPTEMBER	OCTOBER	NOVEMBER
METRE	KILOGRAM	OUNCE	TON
TWENTY-EIGHT	FIFTY-SIX	EIGHTY-ONE	THIRTY-FIVE

G. F.

### Bordering on Lunacy?



Here is a pattern of eight tiles. The two arcs making the 'lunes' have centres in two places: at the centre of each square and in the middle of the side of each square.

What fraction of the border is shaded?

E. G.

## Triangular Squares

Think of a whole number  $n$  (e.g. 4).

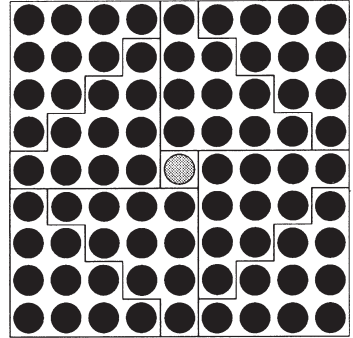
Find the  $n$ th triangular number  $t_n$  (in our example this would be the 4th triangular number,  $4 + 3 + 2 + 1 = 10$ ).

Now multiply  $t_n$  by 8 and add 1 ( $10 \times 8 + 1 = 81$ ).

Try it for a few other values of  $n$ .

What do you notice?

Can you see the connection with diagrams like the one here, which illustrates  $n = 4$ ?



E. G.

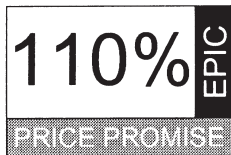
## Find the Next Letter

What is the next letter in these (numerical) sequences?

O T T F F S S E \_  
 U D T Q C S S H \_  
 E Z D V F S S A \_

J. E. B.

## Over the Moon

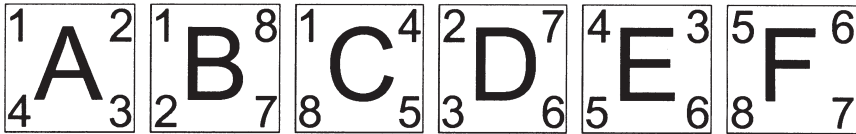
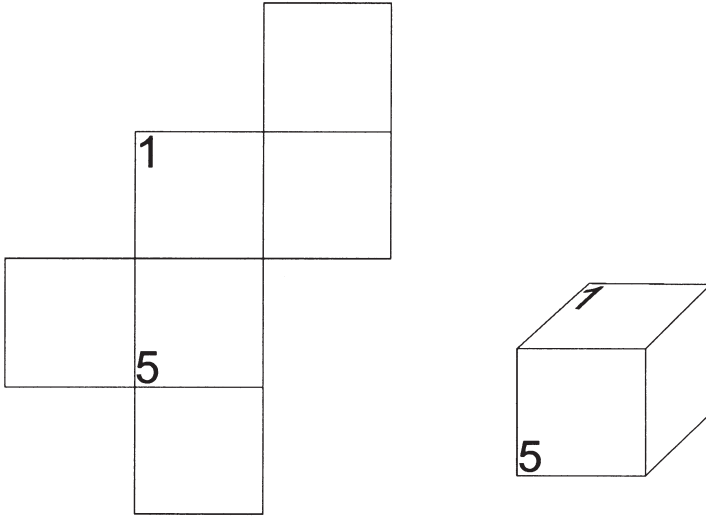


*If, within seven days, you find the same new and boxed product for less, we will refund the difference. Plus 10% of that difference.*

What ever does this mean? I don't want to pay 110% of the price.

W. R.

## Squares on the Cube



We can't give you a cube to practise on, but we can draw a picture of it, and also give you its net.

All you have to do is place the six squares on the surface of the cube so that at each corner the three numbers are the same. There is only one way to do it so that the numbers match with the two that you have already been given.

W. R.

## Subtract

Subtract 123456789 from 9876543210.

What do you notice?

J. E. B.

## Primary Arithmetic?

Think of a whole number. Multiply it by the next whole number, then add 41 to your answer.

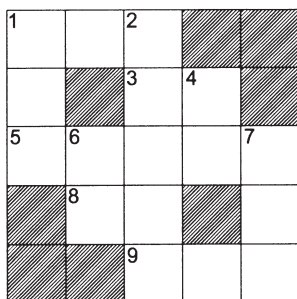
For example, I thought of 4, and worked out  $4 \times 5 + 41 = 61$ .

My result is a prime number. Was yours? (Of course if *you* chose 4 as your start as well, it would be!)

If you tried all the starting numbers from 1 to 50, how many of the results would be prime?

E. G.

## Crossnumbers with a Difference



*Hint: The number of blind rodents disappears.*

Across

1.  $233 \times 15$
3.  $3 \times 177$
5.  $500^2 - 6 \times 511$
8.  $(-3) \times (-191)$
9.  $10 \times 4^4 - 2 \times 89$

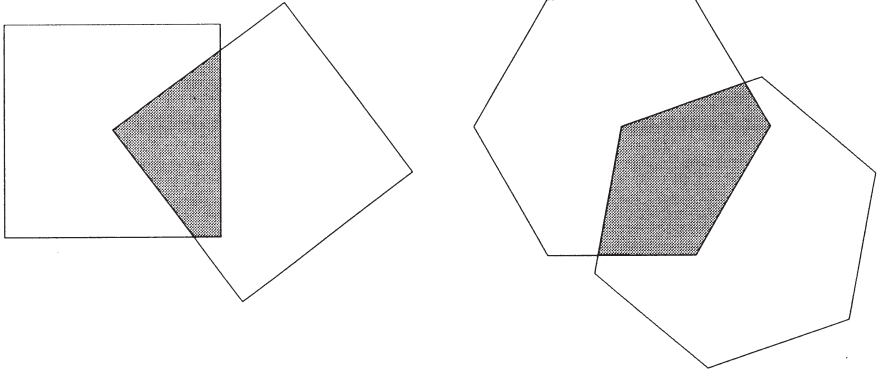
Down

1.  $32361 \div 7$
2.  $1.07 \times \frac{1}{2}$  million +  $32 \times 21$
4.  $\sqrt{361} + \frac{1}{4}$  of 1200
6. 15% of 3100 -  $\sqrt{144}$
7.  $1058 \div \frac{1}{4}$

J. E. B.

## Beer Mat-hematics

Here are four beer-mats. Two are the usual squares and two are regular hexagons. In each case, one vertex of one mat has been placed exactly on the centre of the other.



If the area of each beer-mat is  $144 \text{ cm}^2$  – I realise that's probably a gross exaggeration but it makes your calculations easier – what are the areas of the two overlaps?

E. G.

## Adding and Subtracting

Do the sums.

Your answer should be one of those given below.

$O = 843 + 79$	$M = 386 - 291$	$S = 481 - 298$
$U = 887 + 392$	$R = 920 - 385$	$Y = 897 + 206$
$D = 328 - 69$		

Write the letter next to the correct answer to crack the code.

259 92    1103 922 1279 535    183 1279 95 183

M. D.

## Square, Triangular, Cube Numbers

*Example:*

The (2 + 3) th	square number is	25	(1, 4, 9, 16, 25, ...)
	triangular number is	15	(1, 3, 6, 10, 15, ...)
	cube number is	125	(1, 8, 27, 64, 125, ...)

Fill the boxes with the digits 1, 2, 3, ..., 9, using each digit once only:

The  +  th square number is

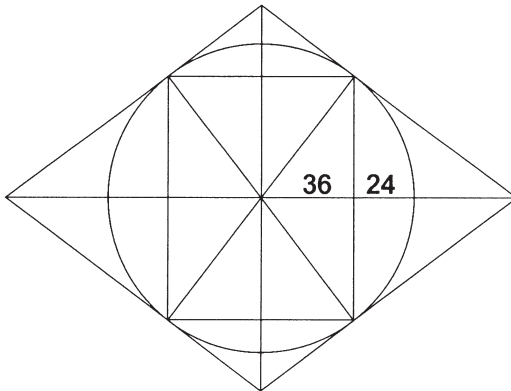
triangular number is

cube number is

J. E. B.

## Around a Rectangle

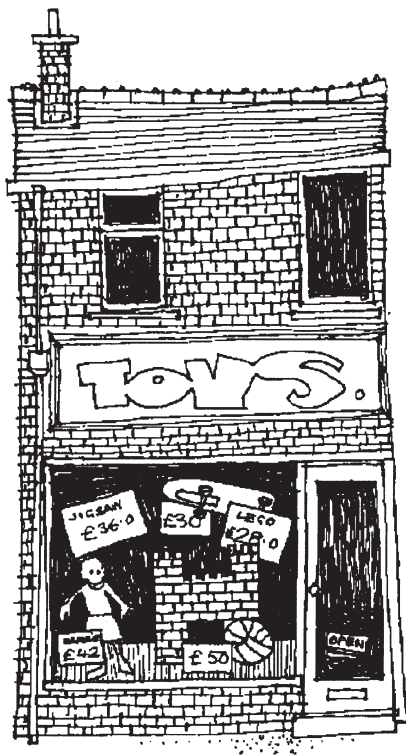
Here are a circle and a rhombus drawn around a rectangle. Find the perimeter of the rhombus.



This is not quite as easy as A, B, C – or as easy as ‘Around a Rhombus’ in Issue 147 – but it is as easy as 3, 4, 5 (or something similar).

E. G.

## Costly



What is the price of the skateboard in the unusual toy shop?

LEGO	£28
BARBIE	£42
JIGSAW	£36
FOOTBALL	£50
SKATEBOARD	£...

G. F.

## Twister

Starting at the S ringed near the middle of the grid, and twisting right, left, up or down, can you find the names of nine mathematical shapes before you leave the grid at the top?

Every square of the grid is visited once and once only and the words never go diagonally.

E. G.

L	E	X	A	E	B	E	L
G	H	E	G	O	U	C	C
N	C	E	R	N	S	E	R
A	T	T	E	Ⓢ	Q	M	I
R	K	I	L	Y	U	I	C
E	D	N	I	C	A	R	E
T	A	G	O	N	N	A	T
N	E	P	E	L	G	I	R

## Pair-ups (1)

The following list has been arranged in alphabetical order, but it really contains eleven pairs of words that belong together. Use the clues A to K to help you to rejoin the partners.

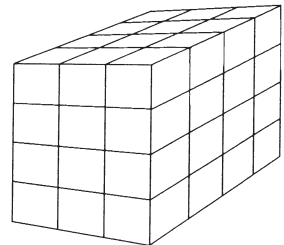
1	ACUTE	12	MIRROR
2	ALGEBRA	13	NUMBER
3	ANGLE	14	ORDERED
4	BOOLEAN	15	PAIRS
5	CALCULATOR	16	PERCENTAGE
6	DIAGONALS	17	PRIME
7	ELECTRONIC	18	PRISM
8	EQUAL	19	PROBABILITY
9	EQUATION	20	ROUGH
10	ESTIMATE	21	SIMPLE
11	IMAGE	22	TRIANGULAR

- A Less than  $90^\circ$
- B The result is a reflection
- C A problem to solve like  $2x + 5 = x + 1$
- D The modern way of doing difficult working-out
- E An integer with just two factors
- F An approximate mental calculation
- G A solid with a net made of 3 rectangles and 2 triangles
- H Numbers in twos for graphical plotting
- I One way of writing down the likelihood of an event
- J Symbolic logic as featured in "Pie" No. 148
- K One property of all rectangles

E. G.

## 84 Cubes

Michael has 84 small 1 cm cubes and arranges them into a rectangular block the perimeter of whose base is 18 cm. How high is the block? The drawing shows one of Michael's tries, but this is no good – the perimeter of the base is 14 cm and he has only used 48 cubes.



W. R.