Mr Ram the mind reader

Setting the context

The fair was back in town and the new attraction was causing quite a stir. People swarmed around Mr Ram the mind reader, like bees round a honey pot.

'Roll up, roll up!' shouted the attendant, 'Marvel at Mr Ram's incredible mind. Dare you have a go?!'

Joey had a go. He read the instructions at the counter:

> Look at the six number boards. Now choose a number, but don't tell Mr Ram. Just point to the board it appears on. If it appears on more than one board then point to those boards too. Mr Ram will tell you your number.

Joey pointed to boards 1, 2, 3 and 5. (See photocopiable page 25.)

Mr Ram looked Joey in the eyes for about ten seconds and then said, 'Your number is ... 29!'

Joey couldn't believe it. It was 29.

Problem

How did Mr Ram know that Joey's number was number 29?

Objectives

To solve mathematical problems and puzzles.
To recognise and explain patterns and relationships.

You will need

An enlarged copy of photocopiable page 25.

Solving the problem

- Read out the story and present the problem.
- First, ask a range of questions about numbers on the boards. For example, on board 1: *What do you get if you add the first row with the number second from bottom in column 3?* (36 + 41 = 77.) *Subtract the number of even numbers on board 4 from the odd numbers on board 1, then add this to the smallest prime number on board 3.* (30 – 15 = 15, 15 + 11 = 26.)
- Ask the children to look carefully at the boards that contain the number 29. Is there anything special about them? Do they share other numbers? (For example, 31 also appears on boards 1, 2, 3 and 5.)
- Ask the children to talk in small groups about the problem.
- Take on the role of Mr Ram and ask one of the children to choose a number and point to the boards it appears on. Hold back from telling the children the solution (for each of the boards pointed to, add the number in the top-right corner).
- Repeat this three or four times. Remember to exploit the number chosen by drawing out its properties. Then encourage the children to try the trick in pairs.
- It is unlikely that the children will be able to solve the problem without help so give them a clue: *If this problem has you cornered, then that's the place to start looking!*
- Share the solution so that the children can test different numbers.
- Re-enact the fairground scene, letting the children take the part of Mr Ram.

Drawing together

- Can the children work out why the method works? Does it work if the top-left numbers are added together?
- Share an example that does use the top-left numbers and ask the children to practise using the boards below.

Board 1

1	3	5	7	9	11	13	15
17	19	21	23	25	27	29	31
33	35	37	39	41	43	45	47
49	51	53	55	57	59	61	63

Board 2

2	3	6	7	10	11	14	15
18	19	22	23	26	27	30	31
34	35	38	39	42	43	46	47
50	51	54	55	58	59	62	63

Board 3

4	5	6	7	12	13	14	15
20	21	22	23	28	29	30	31
36	37	38	39	44	45	46	47
52	53	54	55	60	61	62	63

Board 4

8	9	10	11	12	13	14	15
24	25	26	27	28	29	30	31
40	41	42	43	44	45	46	47
56	57	58	59	60	61	62	63

Board 5

16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63

Board 6

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

Support

Start with the following number boards to give the children confidence. This trick requires adding the numbers in the top-left corner.

Board 1

1	3	5	7
9	11	13	15

Board 3

4	5	6	7
12	13	14	15

Board 2

2	3	6	7
10	11	14	15

Board 4

8	9	10	11
12	13	14	15

Extension

This is an outstanding trick that the children can practise on each other once they learn the method. Look at the number board below. With the board hidden from you, ask a child to select a circled number, then offer to tell them the seven-digit number underneath.

To reveal the seven-digit number, follow these steps:

1. Add 11 to the chosen number.
2. Reverse the result. Now start writing down the digits.
3. Keep on adding the two previous numbers, leaving out the tens.
4. Say the number.

For example, say that the chosen circled number is 12:

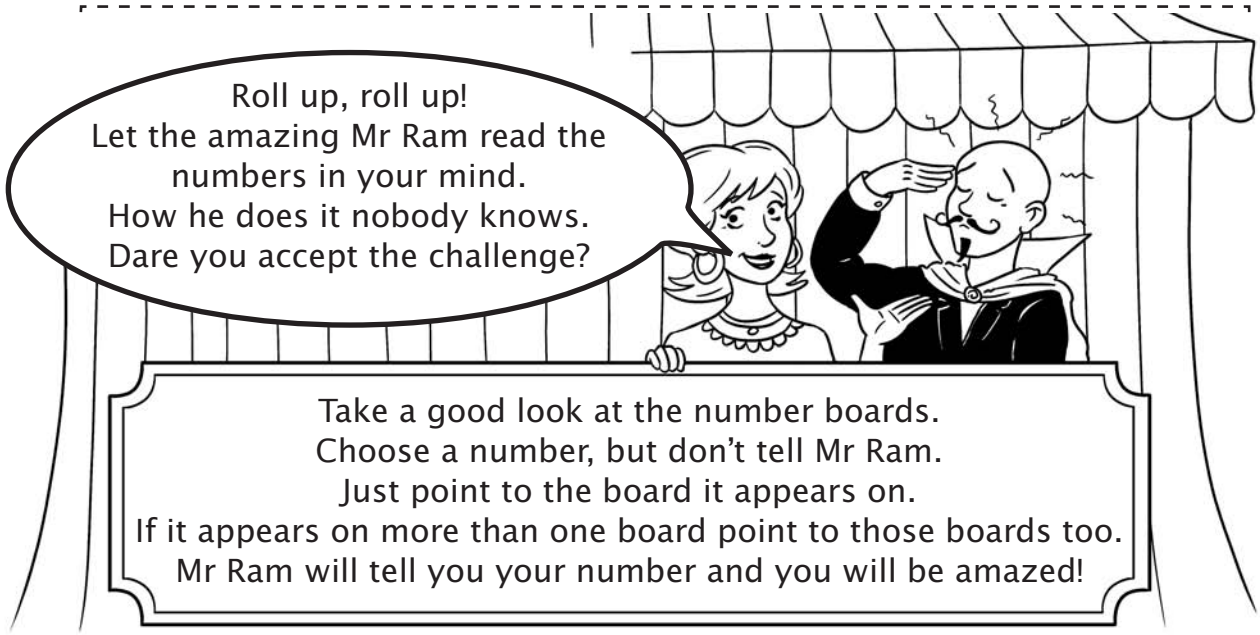
1. Add 11 to 12 to get 23.
2. Reverse 23 to get 32.
3. Add 3 and 2 to get 5; add 2 and 5 to get 7; add 5 and 7 to get 12 (omit 10 and just put down the 2); add 7 and 2 to get 9; add 2 and 9 to get 11, but omit the 10 and just put down 1.
4. The number is 3257291!

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
(23) 4370774	(39) 0550550	(18) 9213471	(22) 3369549	(4) 5167303	(38) 9437077	(16) 7291011
(2) 3145943	(45) 6516730	(30) 1459437	(34) 5493257	(25) 6392134	(6) 7189763	(15) 6280886
(9) 0224606	(37) 8426842	(46) 7527965	(3) 4156178	(1) 2134718	(17) 8202246	(32) 3471897
(21) 2358314	(5) 6178538	(44) 5505505	(11) 2246066	(41) 2572910	(19) 0336954	(8) 0101123
(29) 0448202	(12) 3257291	(33) 4482022	(13) 4268426	(43) 4594370	(7) 8190998	(10) 1235831
(49) 0662808	(14) 5279651	(24) 5381909	(47) 8538190	(26) 7303369	(40) 1561785	(28) 9325729
(31) 2460662	(27) 8314594	(35) 6404482	(48) 9549325	(20) 1347189	(42) 3583145	(36) 7415617

Further idea

Choose any number, such as 35. Multiply by 3 = 105; add 2 = 107; multiply by 3 = 321. Add a number that is 2 more than the number first thought of. The number after the unit digit in the final answer will always be the number first thought of = 358.

Mr Ram – mind reader



Take a good look at the number boards.
Choose a number, but don't tell Mr Ram.
Just point to the board it appears on.
If it appears on more than one board point to those boards too.
Mr Ram will tell you your number and you will be amazed!

1

3	5	7	9	11	1
13	15	17	19	21	23
25	27	29	31	33	35
37	39	41	43	45	47
49	51	53	55	57	59

2

5	6	7	13	12	4
14	15	20	21	22	23
28	29	30	31	36	37
38	39	44	45	46	47
52	53	54	55	60	13

3

9	10	11	12	13	8
14	15	24	25	26	27
28	29	30	31	40	41
42	43	44	45	46	47
56	57	58	59	60	13

4

3	6	7	10	11	2
14	15	18	19	22	23
26	27	30	31	34	35
38	39	42	43	46	47
50	51	54	55	58	59

5

17	18	19	20	21	16
22	23	24	25	26	27
28	29	30	31	48	49
50	51	52	53	54	55
56	57	58	59	60	31

6

33	34	35	36	37	32
38	39	40	41	42	43
44	45	46	47	48	49
50	51	52	53	54	55
56	57	58	59	60	46

Once you have been told the secret of this trick, explore whether it works for every number.