

Turning Patterns

This is the beginning of a 2, 3, 4 pattern.

The instructions are:

FORWARD 2

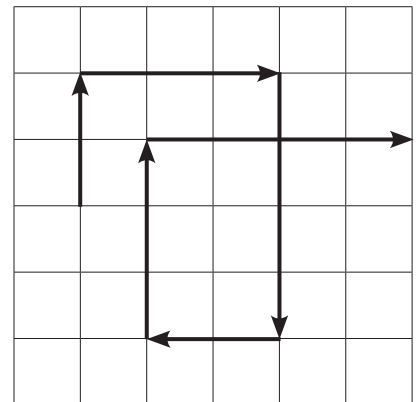
RIGHT TURN 90°

FORWARD 3

RIGHT TURN 90°

FORWARD 4

RIGHT TURN 90°



Continue repeating the sequence. What happens?

Try a 2, 3, 6 pattern.

Make some more patterns with three digits.

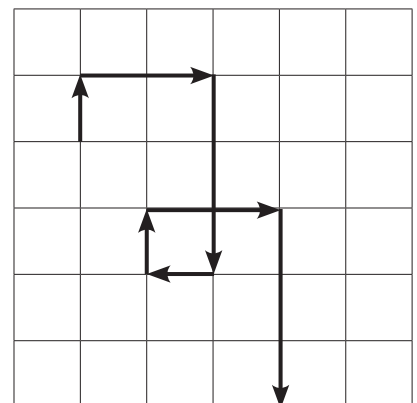
Do you always get back to where you started?

What else can you say about the patterns?

Here is the beginning of a
1, 2, 3, 1 pattern.

What happens if you
continue it?

Investigate different turning
patterns.



Magic Square Madness

In the following 4 x 4 Magic Square all of the rows, columns and diagonals add to 34.

Try creating a not so magic square where you don't use the numbers 2 and 15, but must use all the other numbers from 1 to 16. Only two repeat numbers are allowed. The rows, columns and diagonals must total 34.

1	14	7	12
15	4	9	6
10	5	16	3
8	11	2	13

My Square

In this square every row, column and diagonal adds up to 34.

14	1	12	7
11	8	13	2
5	10	3	16
4	15	6	9

Change the numbers in the shaded squares so that each row, column and diagonal adds up to 39.

	1	12	7
11	8		2
5	10	3	
4		6	9

1, 2, 3, 4

Using **all four** of the numbers 1, 2, 3, 4 and the mathematical operations +, -, × and ÷ make equations that equal 0 through to 10.

Note: you may use an operation more than once. Numbers do not have to be in numerical order.

For example: $(4 + 3) \times (2 - 1) = 7$

Challenge: Try continuing from 11 to 20.

Old Age

Linda is 7 years older than her little sister Maxine. In 4 years' time she will be twice her age.

How old is Linda now?

Lolly Jar

James received a jar of lollies as a present on Monday. His friends ate half the lollies.

The next day, they ate three-quarters of the number of lollies that they had eaten the day before.

There were eight lollies left.

How many lollies were in the jar to begin with?



The Age Game

Bianca's mother is four times as old as Bianca is now. In four years, Bianca's age will be one third of her mother's age.

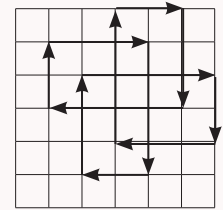
How old are they now?

Challenge: When will Bianca be half her mother's age?

Answers

Turning Patterns

As students continue the 2, 3, 4 pattern, they will find that they get back to the point from which they started and they may notice the four overlapping rectangles that touch at one corner, or a 2,



Magic Square Numbers

If for the 2 and 15 you substitute 7 and 10, repeated, the square can be formed as shown.

1	10	9	14
13	10	5	6
8	3	16	7
12	11	4	7

My Square

19	1	12	7
11	8	18	2
5	10	3	21
4	20	6	9

1, 2, 3, 4

$$(4 + 1) - (2 + 3) = 0$$

$$(3 \times 2) - 4 - 1 = 1$$

$$4 - 3 + 2 - 1 = 2$$

$$(2 \times 3) - 4 + 1 = 3$$

$$4 + 3 - 2 - 1 = 4$$

$$1 \times (4 \div 2) + 3 = 5$$

$$4 + 3 - 2 + 1 = 6$$

$$(4 + 3) \times (2 - 1) = 7$$

$$(4 + 3) + (2 - 1) = 8$$

$$1 \times (4 + 3 + 2) = 9$$

$$1 + 2 + 3 + 4 = 10$$

$$(4 \times 2) + (3 \times 1) = 11$$

$$(4 \times 2) + 3 + 1 = 12$$

$$(4 \times 3) + 2 - 1 = 13$$

$$(4 \times 3) + (2 \times 1) = 14$$

$$(4 \times 3) + (2 + 1) = 15$$

$$4 \times (3 + 2 - 1) = 16$$

$$3 \times (4 + 2) - 1 = 17$$

$$3 \times (4 + 2 \times 1) = 18$$

$$3 \times (4 + 2) + 1 = 19$$

$$(4 \times 1) \times (3 + 2) = 20$$

Old Age

Linda is 10 years old.

Lolly Jar

There were 64 lollies in the jar.

The Age Game

Bianca is 8 years old and her mother is 32.

When Bianca is 24 her mother will be 48.

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