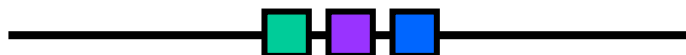
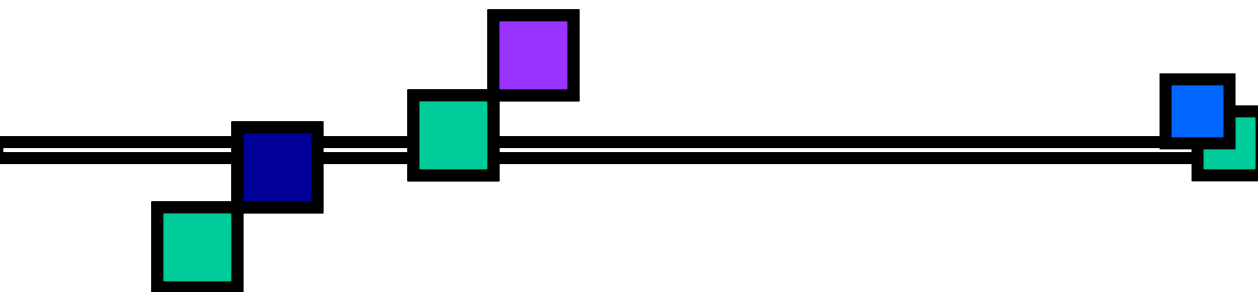
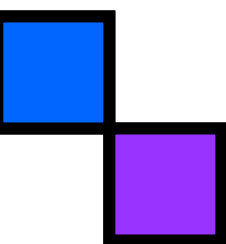


# Number Sequences





Find 4 numbers that make a sequence



2

4

17

13



9

5

1

7

16

10

8

3

6

12



A sequence begins 1, 2,....

Find 2 of these numbers to continue the sequence. How many different possibilities can you find?

3

6

?

24

8

7

5

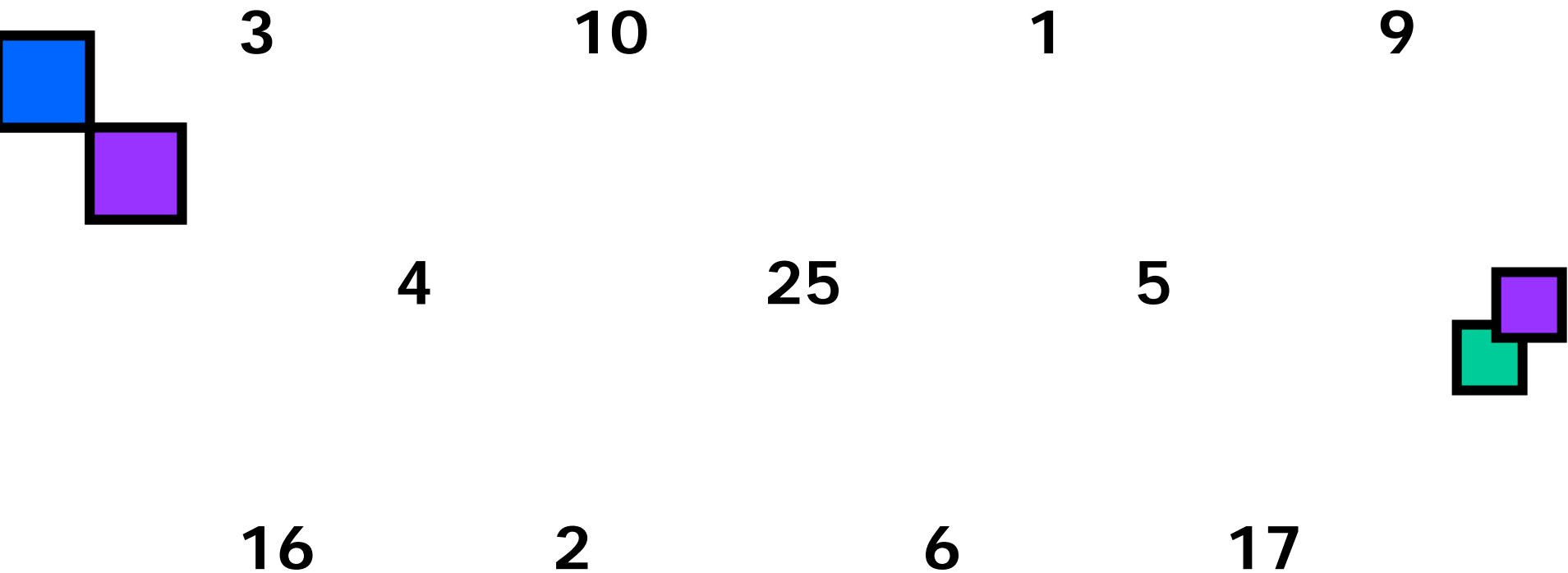
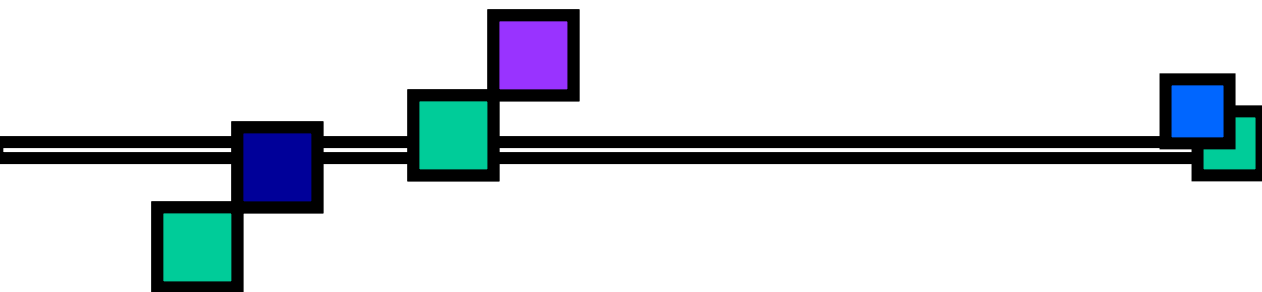
10

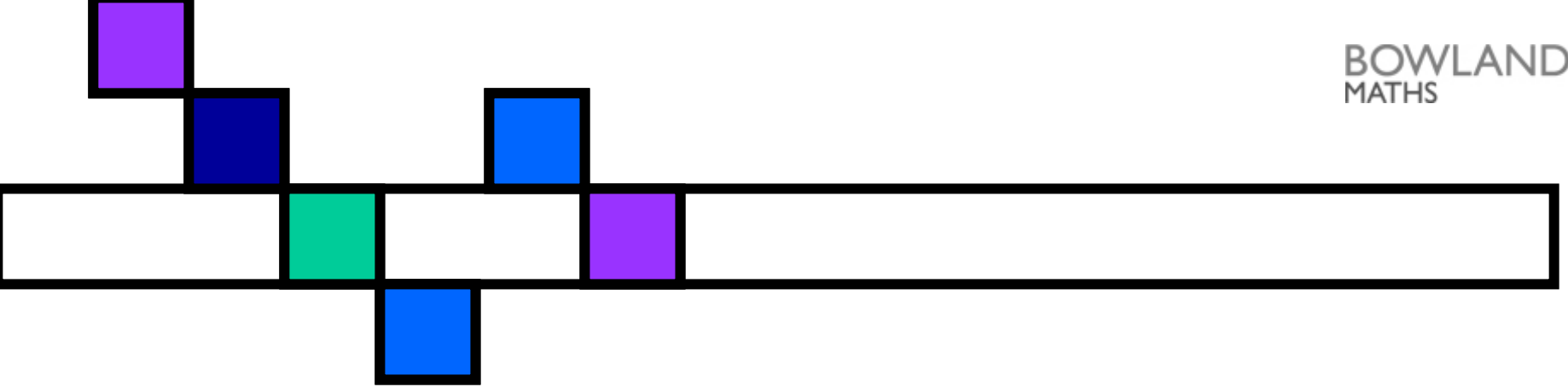
?

4

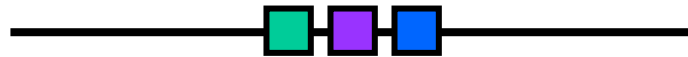
16

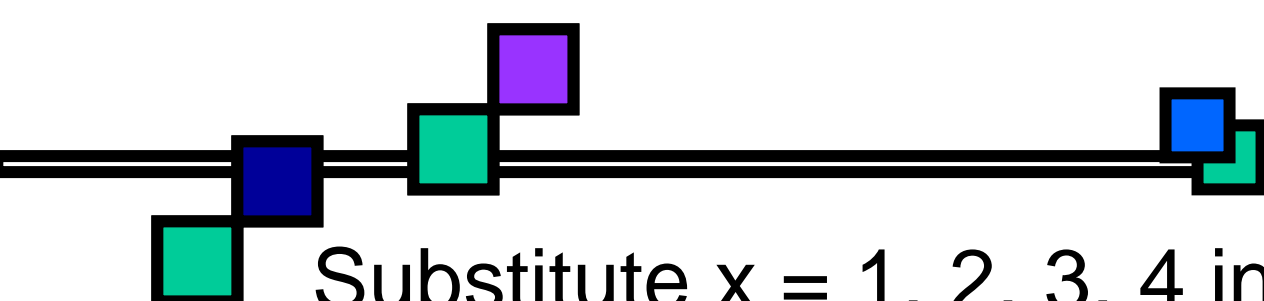






# Number Sequences





Substitute  $x = 1, 2, 3, 4$  into the following expressions to match the sequences on the left.



1.  $2x + 1$

2.  $3x - 1$

3.  $x(x+1)$

4.  $5x - 2$

5.  $x^2 + 2$

A. 3, 6, 11, 18

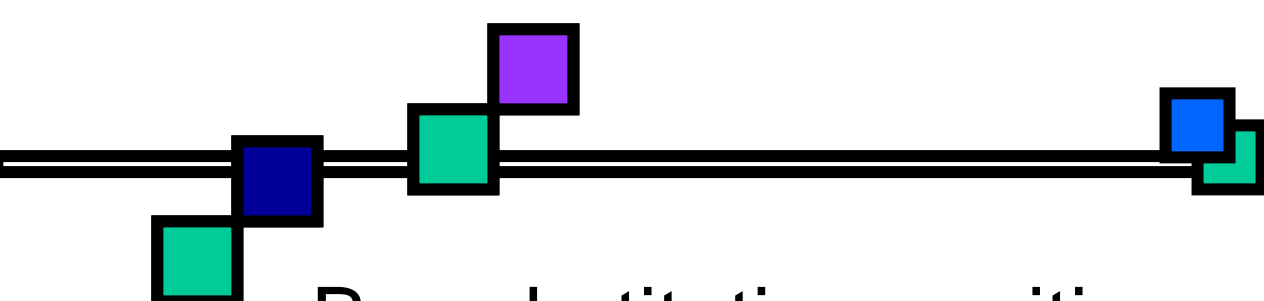
B. 2, 5, 8, 11

C. 3, 5, 7, 9

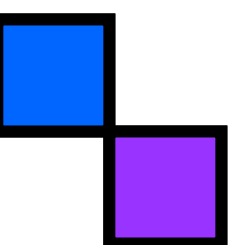
D. 2, 6, 12, 20

E. 1, 5, 9, 13





By substituting positive and negative integer values for  $x$  into the expression  $3x - 4$ , which of the following numbers can be obtained?



-10

4

20

-16

24

-6

8

29



What are the expressions that  
1, 2, 3 & 4 have been substituted  
into?

**3, 7, 11, 15**       **$4x$  .....**

**1, 6, 11, 16**      **..... - 4**

**4, 7, 10, 13**      **.....**



**Lift Puzzles**

A building has 20 floors above ground and 10 floors below ground.

**Question 1**

**Lift A: Goes up 2 floors at a time**

**Lift B: Goes down 4 floors at a time**

How can you get to the ground floor from:

i) Floor 10?

ii) Floor 16?

iii) Floor -7?

Are there any other floors from which it is impossible to reach the ground floor?

Why?

**Question 2**

**Lift A: Goes up 4 floors at a time**

**Lift B: Goes down 7 floors at a time**

Choose 3 different floors (not floor -4 or 7 or 14 though!)

How can you get to the ground floor from each one?

i) Floor ...

ii) Floor ...

iii) Floor ...

Are there any floors from which it is impossible to reach the ground floor?

**Lift Puzzles**

A building has 20 floors above ground and 10 floors below ground.

**Question 1**

**Lift A: Goes up by a triangle number of floors at a time**

**Lift B: Goes down by a prime number of floors at a time**

How can you get to the ground floor from:

i) Floor 10?

ii) Floor 16?

iii) Floor -7?

Are there any floors from which it is impossible to reach the ground floor?

Why?

**Question 2**

**Lift A: Goes up by a triangle number of floors at a time**

**Lift B: Goes down by a square number of floors at a time**

Choose 3 different floors. How can you get to the ground floor from each one?

i) Floor ...

ii) Floor ...

iii) Floor ...

Are there any floors from which it is impossible to reach the ground floor?

Why?

**Lift Puzzles**

A building has 20 floors above ground and 10 floors below ground.

Lifts will only stop at floors that can be obtained by substituting positive and negative integer values into their expressions.

**Question 1**

**Lift A:**  $x^2 + 1$

**Lift B:**  $3x + 2$

**Lift C:**  $5x - 3$

How can you get to the ground floor from:

i) Floor 10?

ii) Floor 16?

iii) Floor -7?

Are there any floors from which it is impossible to reach the ground floor?

Why?

**Question 2**

Can you create a set of 3 lifts that will allow a solution for every floor?

**Lift A:**

**Lift B:**

**Lift C:**