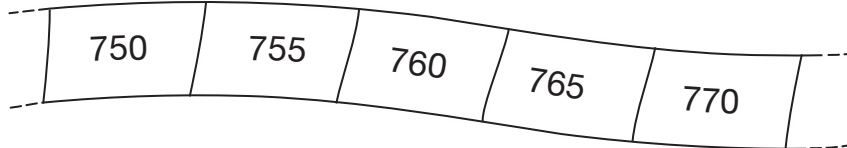


1

Here is part of a number sequence.

[2007]

The numbers increase by the same amount each time.



The sequence continues.

Circle **all** of the numbers below that would appear in the sequence.



840

905

989

1000

2051

[1 mark]

2

Here is part of a number sequence.

[2011]

The numbers in the sequence increase by 25 each time.

50

75

100

125

...

Circle **all** of the numbers below that will appear in the sequence.



255

650

735

900

995

[1 mark]

3

The numbers in this sequence increase by 75 each time.

[2008]

Write in the two missing numbers.




725

800

875

950

[2 marks]

4

The numbers in this sequence increase by 14 each time.

[2016]

Write the missing numbers.

82

96

124

138

[2 marks]

5

The numbers in this sequence increase by 30 each time.

[2015]

20

50

80

110 ...

The sequence continues in the same way.

Which number in the sequence will be **closest to 300**?

Show your method

[2 marks]

6

The numbers in this sequence increase by 3 each time.

[2011]

3          6          9          12    ...

The numbers in this sequence increase by 5 each time.

5          10          15          20    ...

Both sequences continue.

Write a number **greater than 100** which will be in **both** sequences.

Show your method

[2 marks]

7

The numbers in this sequence increase by the same amount each time.

[2006]

Write in the missing numbers.







[1 mark]

**8**

The numbers in this sequence increase by 10 each time.

[2014]

3      13      23      ...

The sequence continues in the same way.

Write **two** numbers from the sequence that add to make a total of **96**



and

Explain why it is **not** possible to find **three** numbers from the sequence that add to make a total of **96**

[2 marks]

**9**

The numbers in this sequence increase by the same amount each time.

[2014]

Write the two missing numbers.



610

650

690

[2 marks]

10

[2001]

The rule for this sequence of numbers is 'add 3 each time'.

1      4      7      10      13      16 ...

The sequence continues in the same way.

Mary says,

***'No matter how far you go there will never be a multiple of 3 in the sequence'.***

Is she correct?  
Circle Yes or No.



Yes / No

Explain how you know.

[1 mark]

11

[2010]

Liam makes a sequence of numbers starting with 300

He subtracts 125 each time.

Write the next two numbers in Liam's sequence.



300

175

50

[2 marks]

**12**

[2002]

A sequence starts at **500** and **80** is **subtracted** each time.

500      420      340 ...

The sequence continues in the same way.

Write the **first two numbers** in the sequence which are **less than zero**.



[2 marks]

**13**

[2000]

This sequence of numbers **goes up by 40** each time.

40    80    120    160    200    ...

This sequence continues.

Will the number **2140** be in the sequence?  
Circle Yes or No.



Yes / No

Explain how you know.

[1 mark]

**14**

The numbers in this sequence increase by the same amount each time.

[2017]

Write the missing numbers.

1

 $1\frac{5}{8}$  $2\frac{1}{4}$ 

[2 marks]

**15**

The numbers in this sequence increase by 7 each time.

[2008]

1

8

15

22

29

....

The sequence continues in the same way.

Will the number 777 be in the sequence?  
Circle **Yes** or **No**.



Yes / No

Explain how you know.

[1 mark]

16

The numbers in this sequence increase by equal amounts each time.

[2015]

Write in the three missing numbers.



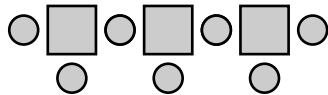
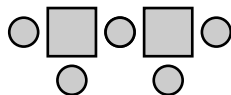
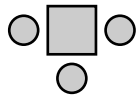



[1 mark]

17

Here is a sequence of patterns made from squares and circles.

[2001]



| number of squares | number of circles |
|-------------------|-------------------|
| 1                 | 3                 |
| 2                 | 5                 |
| 3                 | 7                 |

The sequence continues in the same way.

Calculate how many **squares** there will be in the pattern which has **25 circles**.

Show your method

[2 marks]

18

[2002]

Paulo makes a sequence of numbers.

He chooses a starting number and then subtracts equal amounts each time.

The **third number** in his sequence is **45**

The **tenth number** is **-32**

|  |  |    |  |  |  |  |  |  |  |     |
|--|--|----|--|--|--|--|--|--|--|-----|
|  |  | 45 |  |  |  |  |  |  |  | -32 |
|--|--|----|--|--|--|--|--|--|--|-----|

What is the **first** number in the sequence?

Show your method

[2 marks]

19

[2000]

Look at the sequence below.

To get the next term in the sequence, **subtract 90** from the term before.

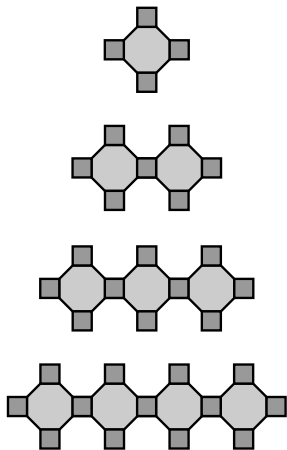
500                  410                  320                  ...

Write the first two terms of the sequence that are **less than zero**.

\_\_\_\_\_ , \_\_\_\_\_

[2 marks]

The sequence continues.



| number of octagons ( <b>n</b> ) | number of squares ( <b>q</b> ) |
|---------------------------------|--------------------------------|
| 1                               | 4                              |
| 2                               | 7                              |
| 3                               | 10                             |
| 4                               | 13                             |

How many **squares** will there be in the pattern that has **40 octagons**?

A blank sheet of graph paper with a grid pattern. The grid consists of small squares formed by thin red lines. A thick black border runs along the top and left edges of the page. On the right side, there is a rectangular box with a thick black border, which appears to be a placeholder for a label or title. The box is empty.

**n** represents the number of octagons.

## What is the rule connecting $q$ and $n$ ?



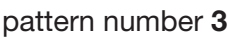
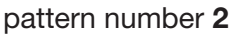
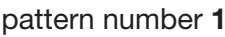
.....

.....

.....

[3 marks]

[2000]



Number of **grey** hexagons =  $n + 1$

Number of **white** hexagons =  $2n$

Show your method

\_\_\_\_\_

[2 marks]