SEQUENCES (NTH TERM)

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Foundation Tier

1.

20 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n, for the nth term of this sequence.

.....

(Total for Question 20 is 2 marks)

Pearson Edexcel - Monday 8 June 2020 - Paper 3 (Calculator) Foundation Tier

2.

12 Here are the first five terms of a number sequence.

45 40 35 30 25

(a) (i) Write down the next two terms of this sequence.

....., ...

(1)

A term of this sequence is −5

(ii) Which term?

.....

(1)

The nth term of a different sequence is given by the expression $4n + 3$

(b) Find the 9th term of this sequence.

.....

(1)

(Total for Question 12 is 3 marks)

Pearson Edexcel - Thursday 6 June 2019 - Paper 2 (Calculator) Foundation Tier

3.

28 Here are the first five terms of a Fibonacci sequence.

3 3 6 9 15

(a) Write down the next two terms of the sequence.

..... , ...

(1)

The first three terms of a different Fibonacci sequence are

a a $2a$

(b) Find the 6th term of this sequence.

.....

(2)

(Total for Question 28 is 3 marks)

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Foundation Tier

4.

13 The first term of a sequence of numbers is 24
The term-to-term rule of this sequence is 'add 8'

Josie says,

"No number in this sequence is in the 5 times table."

(a) Give an example to show that Josie is wrong.

.....

(1)

(b) Is 85 a number in this sequence?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 13 is 2 marks)

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Foundation Tier

5.

9 (a) The nth term of a sequence is $3n + 4$

Explain why 21 is not a term of this sequence.

.....

.....

(2)

(b) Here are the first three terms of a different sequence.

1 2 4

Write down two numbers that could be the 4th term and the 5th term of this sequence.
Give the rule you have used to get your numbers.

.....

.....

.....

(2)

(Total for Question 9 is 4 marks)

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Foundation Tier

6.

26 Here are the first four terms of an arithmetic sequence.

5 11 17 23

Write down an expression, in terms of n, for the nth term of the sequence.

.....

(Total for Question 26 is 2 marks)

Pearson Edexcel - Tuesday 12 June 2018 - Paper 3 (Calculator) Foundation Tier

7.

4 Here are the first 4 terms of a sequence.

2 9 16 23

(a) (i) Write down the next term in the sequence.

.....

(1)

(ii) Explain how you got your answer.

.....

(1)

(b) Work out the 10th term of the sequence.

.....

(1)

(Total for Question 4 is 3 marks)

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Foundation Tier

8.

5 Here are the first four terms of a number sequence.

2 5 11 23

The rule to continue this sequence is

multiply the previous term by 2 and then add 1

Work out the 5th term of this sequence.

.....

(Total for Question 5 is 1 mark)

Pearson Edexcel - Wednesday 8 November 2017 - Paper 3 (Calculator) Foundation Tier

9.

18 Here is a sequence of patterns made with counters.

pattern number 1 pattern number 2 pattern number 3

(a) Find an expression, in terms of n, for the number of counters in pattern number n.

.....

(2)

Bayo has 90 counters.

(b) Can Bayo make a pattern in this sequence using all 90 of his counters?
You must show how you get your answer.

(2)

(Total for Question 18 is 4 marks)

Pearson Edexcel – Specimen 2 - Paper 1 (Non-Calculator) Foundation Tier

10.

24 Here are the first five terms of a sequence.

2 8 18 32 50

(a) Find the next term of this sequence.

.....

(1)

The nth term of a different sequence is $3n^2 - 10$

(b) Work out the 5th term of this sequence.

.....

(1)

(Total for Question 24 is 2 marks)

Pearson Edexcel – Specimen 2 - Paper 2 (Calculator) Foundation Tier

11.

11 The first three terms of a number pattern are 1 2 4

Hester says the first five terms of this number pattern are 1 2 4 8 16

(a) Write down the rule Hester could have used to get the 4th and 5th terms.

.....

(1)

(b) Write down the 6th term of Hester's number pattern.

.....

(1)

Jack uses a different rule.

He says the first six terms of the number pattern are 1 2 4 7 11 16

(c) Write down the 7th and 8th terms of Jack's number pattern.

....., ...

(1)

(Total for Question 11 is 3 marks)

Pearson Edexcel – Specimen 2 - Paper 3 (Calculator) Foundation Tier

12.

21 Here are the first five terms of an arithmetic sequence.

-3 1 5 9 13

Find an expression, in terms of n, for the nth term of this sequence.

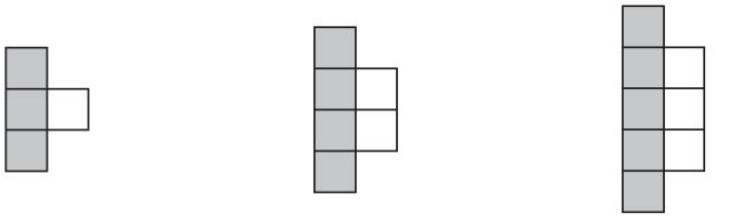
.....

(Total for Question 21 is 2 marks)

Pearson Edexcel – Specimen 1 - Paper 1 (Non-Calculator) Foundation Tier

13.

13 Here is a sequence of patterns made with grey square tiles and white square tiles.



pattern number 1 | pattern number 2 | pattern number 3

(a) In the space below, draw pattern number 4

(1)

(b) Find the total number of tiles in pattern number 20

.....

(2)

(c) Write an expression, in terms of n, for the number of grey tiles in pattern number n.

.....

(2)

(Total for Question 13 is 5 marks)

Pearson Edexcel – Specimen 1 - Paper 3 (Calculator) Foundation Tier

14.

13 Here are the first three terms of a sequence.

32 26 20

Find the first two terms in the sequence that are less than zero.

....

(Total for Question 13 is 3 marks)

Pearson Edexcel – Sample Paper 1 (Non-Calculator) Foundation Tier

15.

3 Write down the 20th odd number.

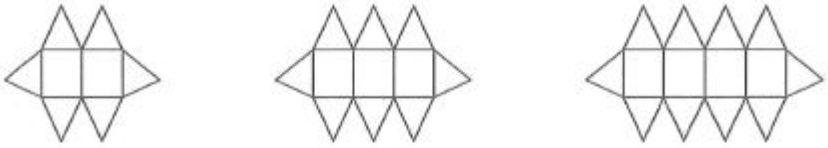
39

(Total for Question 3 is 1 mark)

Pearson Edexcel – Sample Paper 1 (Non-Calculator) Foundation Tier

16.

12 Here are the first three patterns in a sequence.
The patterns are made from triangles and rectangles.



pattern number 1 pattern number 2 pattern number 3

(a) How many triangles are there in pattern number 7?

6 8 10

[2n + 4] 6, 8, 10, 12, 14, 16, 18 18

(2)

Charlie says

"There are 4 rectangles in pattern number 3 so there will be 8 rectangles in pattern number 6"

(b) Is Charlie right?
Give a reason for your answer.

Charlie is not right. The number of rectangles is increasing by 1 each time There will be 7.

(1)

(Total for Question 12 is 3 marks)

OCR November 09 November 2020- Morning (Calculator) Foundation Tier

17.

2 **(a)** Complete the first seven square numbers.

1 4 9 16 ..... 36 49 **[1]**

(b) Write the missing term in each sequence.

(i) 18 16 14 ..... 10 8 **[1]**

(ii) ..... 14 20 26 32 38 **[1]**

OCR Tuesday 21 May 2019 – Morning (Calculator) Foundation Tier

18.

4 Here are the first four terms of a sequence.

3 8 13 18

(a) **(i)** Write down the next term of the sequence.

(a)(i) ..... **[1]**

(ii) Explain how you worked out your answer.

..... **[1]**

(b) Explain why 534 is **not** a term in this sequence.

..... **[1]**

OCR Tuesday 11 June 2019 – Morning (Calculator) Foundation Tier

19.

9 Here are the first three patterns in a sequence.

(a) Draw Pattern 4 in the sequence.

Pattern 4

[1]

(b) Without drawing it, work out how many dots there are in Pattern 8.
Explain how you decide.

..... dots because .....

.....

..... **[2]**

(c) Pattern n has 196 dots.

Find the value of n.

(c) $n =$ ..... **[1]**

OCR Tuesday 6 November 2018 – Morning (Calculator) Foundation Tier

20.

26 Here are the first four terms of a sequence.

28 23 18 13

Find the *n*th term of the sequence.

..... **[2]**

OCR Thursday 8 November 2018 – Morning (Non-Calculator) Foundation Tier

21.

14 The next term in each of these Fibonacci sequences is found by adding together the two previous terms.
Work out the missing terms in each sequence.

(a) 2 5 7 12 .... **[1]**

(b) .... 22 34 **[2]**

OCR Monday 24 May 2018 – Morning (Calculator) Foundation Tier

22.

2 Here are the first four terms of a sequence.

2 4 8 16

(a) What is the next term in the sequence?

(a) ..... **[1]**

(b) Explain how you worked out your answer.

..... **[1]**

OCR Tuesday 12 June 2018– Morning (Calculator) Foundation Tier

23.

14 Here are the first four terms of a sequence.

6 10 14 18

(a) Write down the next term.

(a) ..... **[1]**

(b) Write an expression for the *n*th term.

(b) ..... **[2]**

(c) Explain why 511 is **not** a term in the sequence.

.....

..... **[1]**

(d) Find the term in the sequence that is nearest to 511.

(d) ..... **[3]**

OCR Monday 6 November 2017– Morning (Calculator) Foundation Tier

24.

16 **(a)** Write the next term in each of these sequences.

(i) 1 1 2 3 5 8

(a)(i) ..... **[1]**

(ii) 2 4 8 16 32 64

(ii) ..... **[1]**

(b) Write an expression for the *n*th term of the sequence below.

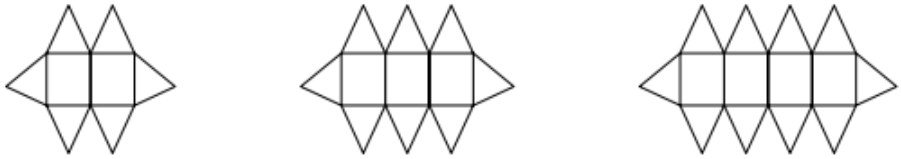
15 12 9 6

(b) ..... **[2]**

Pearson Edexcel – Sample Paper 1 (Non-Calculator) Foundation Tier

25.

12 Here are the first three patterns in a sequence.
The patterns are made from triangles and rectangles.



pattern number 1 pattern number 2 pattern number 3

(a) How many triangles are there in pattern number 7?

.....

(2)

Charlie says

"There are 4 rectangles in pattern number 3 so there will be 8 rectangles in pattern number 6"

(b) Is Charlie right?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 12 is 3 marks)

26.

25 Here are the first four terms of an arithmetic sequence.

6 10 14 18

(a) Write an expression, in terms of n, for the nth term of this sequence.

(2)

The nth term of a different arithmetic sequence is $3n + 5$

(b) Is 108 a term of this sequence?
Show how you get your answer.

(2)

(Total for Question 25 is 4 marks)

27.

20 Here are the first six terms of a Fibonacci sequence.

1 1 2 3 5 8

The rule to continue a Fibonacci sequence is,

the next term in the sequence is the sum of the two previous terms.

(a) Find the 9th term of this sequence.

.....

(1)

The first three terms of a different Fibonacci sequence are

a b $a + b$

(b) Show that the 6th term of this sequence is $3a + 5b$

(2)

Given that the 3rd term is 7 and the 6th term is 29,

(c) find the value of a and the value of b.

$a =$ .....

$b =$ .....

(3)

(Total for Question 20 is 6 marks)

OCR Thursday 8 June 2017 – Morning (Non - Calculator) Foundation Tier

28.

11 **(a)** These are the first five terms in a Fibonacci sequence.

1 3 4 7 11

Write down the next two terms in the sequence.

(a) ..... **[1]**

(b) In a different Fibonacci sequence the fourth term is 31 and the fifth term is 50.

Work out the first term in this sequence.

(b) ..... **[2]**

(c) The second and third terms in the following Fibonacci sequence are x and y.

Write down algebraic expressions for the first, fourth and fifth terms.

..... x y .... **[3]**

OCR Tuesday 13 June 2017 – Morning (Calculator) Foundation Tier

29.

10 **(a)** Write down the second and third terms of the following two sequences.

(i) Rule : To get the next term **subtract 4** from the previous term.
First term = 19.

19 .... **[1]**

(ii) Rule : To get the next term **multiply** the previous term **by 5** and then **add 3**.
First term = 7.

7 .... **[1]**

(b) Here are the first four terms of another sequence.

5 9 13 17

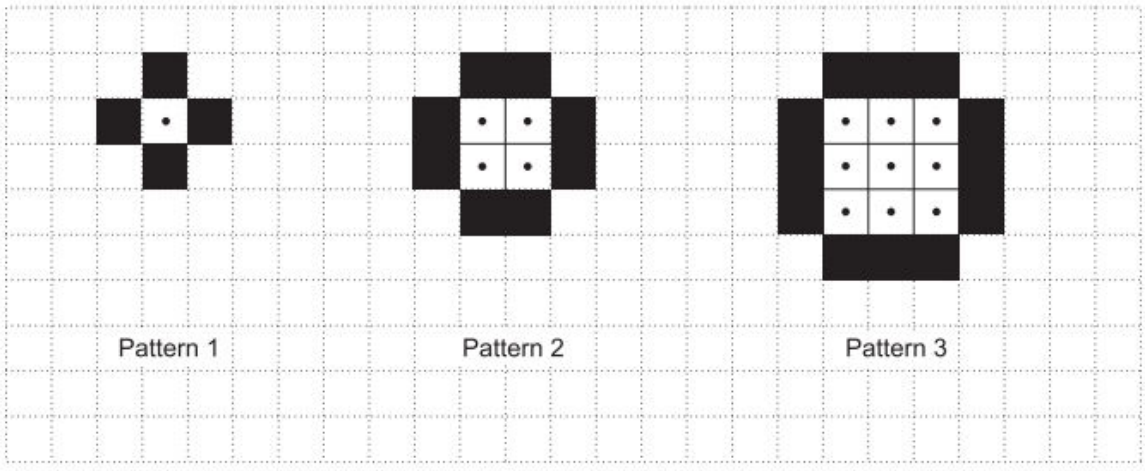
Write an expression for the *n*th term of this sequence.

(b) ..... **[2]**

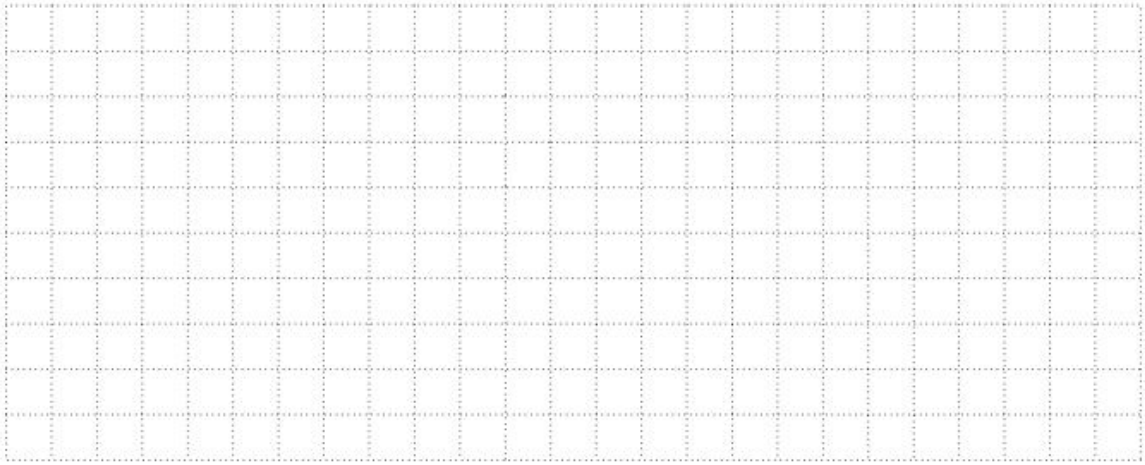
OCR Sample Question Paper 1 – Morning/Afternoon (Calculator) Foundation Tier

30.

12 Here are the first three patterns in a sequence.



(a) Draw Pattern 4 in this sequence on the grid below.



[2]

(b) Pattern 3 has 9 dotted squares and 12 black squares.

How many **dotted** squares will there be in Pattern 8?

(b) ..... **[2]**

(c) Write an expression for the number of **black** squares in the *n*th pattern.

(c) ..... **[2]**

(d) Sally looks at the patterns.
She says

> If the pattern number is odd, the total number of squares will be odd.
> If it is even, the total number of squares will be even.

Explain clearly why Sally is right for **all** patterns in the sequence.

.....

.....

.....

.....

..... **[6]**

OCR Sample Question Paper 2 – Morning/Afternoon (Non - Calculator) Foundation Tier

31.

17 In this row of boxes, you start with 5 and 7.

5	7			

You add 5 and 7 to get 12 to go in the third box.
You add 7 and 12 to get 19 to go in the fourth box.
You add 12 and 19 to get 31 to go in the fifth box.

5	7	12	19	31

Complete these rows of boxes using the rule shown above.

(a)

4	6			

[1]

(b)

			34	55

[2]

(c) Complete this row of boxes, writing your expressions in their simplest form.

a	b			

[2]

(d) Use your answer to **(c)** to help you fill in the missing numbers in this row of boxes.

6				57

[3]

OCR Sample Question Paper 3 – Morning/Afternoon (Calculator) Foundation Tier

32.

8 **(a)** The nth term of a sequence is given by $3n + 5$.

Explain why 21 is not a term in this sequence.

.....

..... **[2]**

(b) Here are the first three terms in a sequence.

1 2 4

This sequence can be continued in different ways.

(i) Find one rule for continuing the sequence and give the next two terms.

Rule 1 .....

Next two terms .... **[2]**

(ii) Find a second rule for continuing the sequence and give the next two terms.

Rule 2 .....

Next two terms .... **[2]**

AQA Tuesday 19 May 2020 – Morning (Non-Calculator) Foundation Tier

33.

21 (a) All the terms of a **geometric** progression are positive.

The second and fourth terms are shown.

..... 4 16

Work out the first and third terms.

[2 marks]

First term _____

Third term _____

21 (b) The first two terms of an **arithmetic** progression are shown.

p $5p$ .....

The sum of the first three terms is 90

Work out the value of p.

[3 marks]

Answer _____

AQA Thursday 4 June 2020 – Morning (Calculator) Foundation Tier

34.

4 The term-to-term rule for a sequence is

add 1 then double

The first two terms are 2 and 6

Circle the next term.

[1 mark]

9 13 14 18

AQA Thursday 6 June 2019 – Morning (Calculator) Foundation Tier

35.

28 A linear sequence starts

11 21 31 41 ...

Work out an expression for the nth term of the sequence.

[2 marks]

Answer _____

AQA Thursday 11 June 2019 – Morning (Calculator) Foundation Tier

36.

12 The first four triangular numbers are 1, 3, 6, 10

Circle the next triangular number.

[1 mark]

14 15 16 19

AQA Tuesday 6 November 2018 – Morning (Non-Calculator) Foundation Tier

37.

14 The nth term of a sequence is $5n - 2$

Work out the 3rd term.

Circle your answer.

[1 mark]

51 5 123 13

AQA Thursday 8 November 2018 – Morning (Calculator) Foundation Tier

38.

21 The first four terms of a linear sequence are

7 11 15 19

Circle the expression for the nth term.

[1 mark]

$n + 6$ $4n + 3$ $7n + 4$ $n + 4$

AQA Monday 12 November 2018 – Morning (Calculator) Foundation Tier

39.

14 (a) The term-to-term rule of a sequence is

Add 8 and divide by 2

The first term of the sequence is –24

Work out the next two terms.

[2 marks]

Answer _____ and _____

14 (b) The term-to-term rule of a different sequence is

Subtract 1 and multiply by 5

The third term of this sequence is 120

.... 120

Work out the first term.

[2 marks]

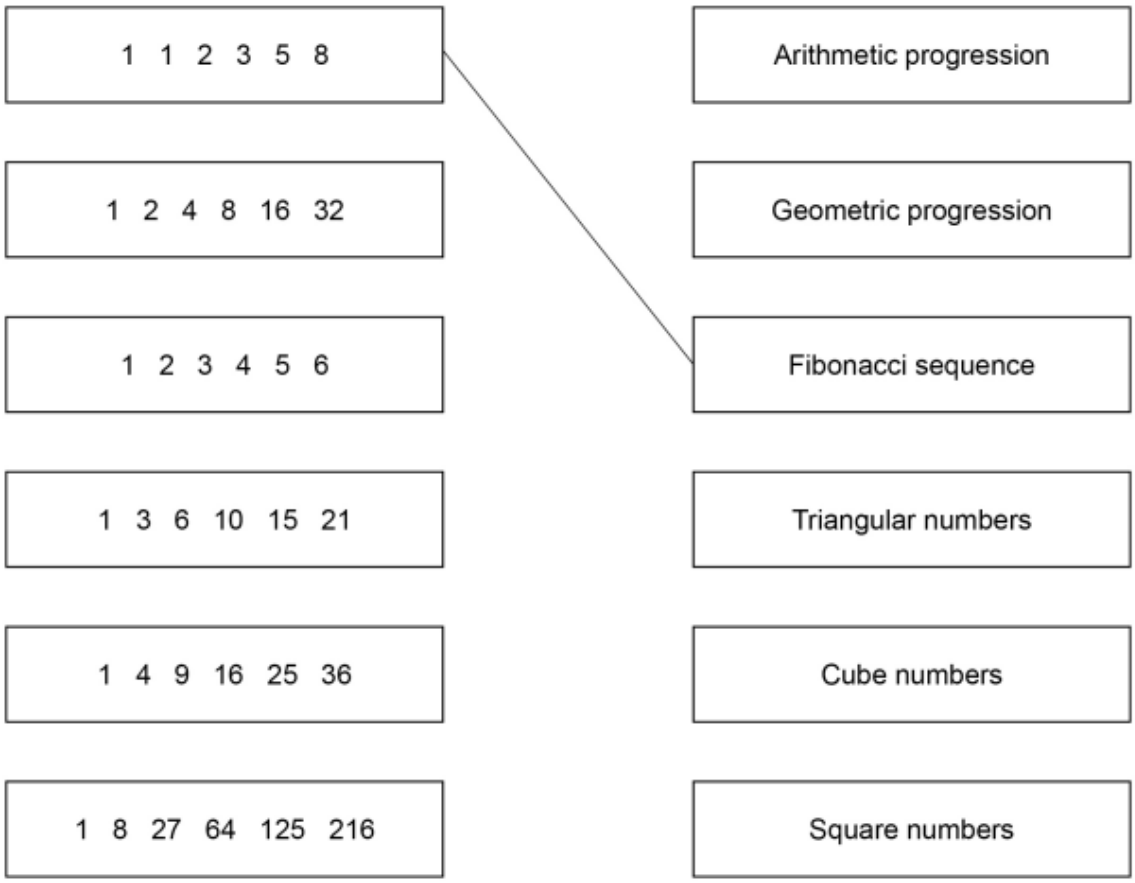
Answer _____

AQA Thursday 7 June 2018 – Morning (Calculator) Foundation Tier

40.

23 Match each sequence to its description.
One has been done for you.

[4 marks]



AQA Tuesday 12 June 2018 – Morning (Calculator) Foundation Tier

41.

22 Here is a rule for a sequence.

After the first two terms, each term is half the sum of the previous two terms

22 (a) Here is a sequence that follows this rule.

2 10 6 ....

Show that the 6th term is the first one that is **not** a whole number.

[3 marks]

22 (b) A different sequence follows the same rule.

The 1st term is 4

The 3rd term is 9.5

4 ..... 9.5

Work out the 2nd term.

[3 marks]

Answer _____

AQA Tuesday 12 June 2018 – Morning (Calculator) Foundation Tier

42.

29 The nth term of a sequence is $12n - 5$

Work out the numbers in the sequence that

have two digits

and

are **not** prime.

[3 marks]

Answer _____

AQA Thursday 2 November 2017 – Morning (Non-Calculator) Foundation Tier

43.

17 A sequence has three terms.

The term-to-term rule for the sequence is

multiply by 8 and then add 11

17 (a) The first term of the sequence is –1

Work out the third term.

[2 marks]

Answer _____

17 (b) The order of the three terms is reversed to make a new sequence.

Work out the term-to-term rule for this sequence.

[1 mark]

Answer _____

AQA Monday 6 November 2017 – Morning (Calculator) Foundation Tier

44.

28 Work out the next term of this quadratic sequence.

[2 marks]

5 8 14 23 .....

Answer _____

AQA Thursday 8 June 2017– Morning (Calculator) Foundation Tier

45.

15 Here are some numbers.

10 13 15 20 27 39

10 15 20 is an arithmetic progression.

Use **three** of the numbers to make a different arithmetic progression.
Describe the rule.

[2 marks]

Answer _____ _____ _____

Rule _____

_____

AQA Sample Paper 1– Morning (Non-Calculator) Foundation Tier

46.

27 The nth term of a sequence is $2n + 1$

The nth term of a different sequence is $3n - 1$

Work out the **three** numbers that are

in both sequences

and

between 20 and 40

[3 marks]

Answer _____ , _____ , _____

AQA Sample Paper 2– Morning (Calculator) Foundation Tier

47.

20 Which sequence is a geometric progression?

Circle your answer.

[1 mark]

1 2 3 4 1 2 4 7

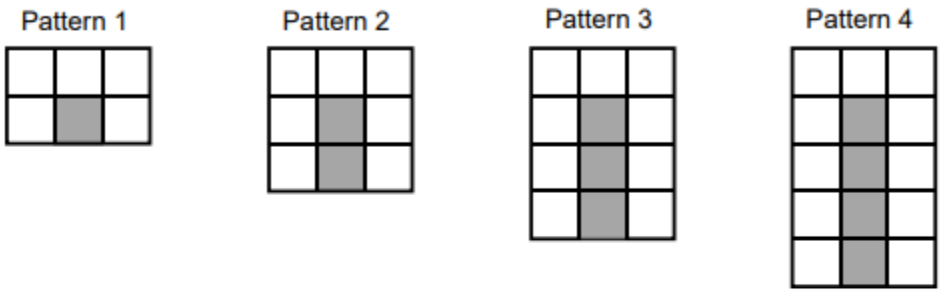
1 2 4 8 1 2 3 5

AQA Sample Paper 3– Morning (Calculator) Foundation Tier

48.

11 A sequence of patterns uses grey squares and white squares.

Here are the first four patterns.



11 (a) Work out the **total** number of squares in Pattern 100

[3 marks]

Answer _____

11 (b) Complete this number machine for the sequence of patterns.

[1 mark]