

Notes: T4-61 Into to Sequences

Definitions:

A _____ function whose domain is a set of consecutive integers (list of ordered numbers separated by commas).

Each number in the list is called a term.

- For Example:

Sequence 1
Term 1, 2, 3, 4, 5

2, 4, 6, 8, 10

Domain (a_n) – relative position of each term (1,2,3,4,5) Usually begins with position 1 unless otherwise stated.

Range – the actual “terms” or outcomes of the sequence (2,4,6,8,10)

Sequence 2
Term 1, 2, 3, 4, 5

-3, -6, -9, -12, -15,...

A sequence can be *finite* or *infinite*.

The sequence has a last term or *final* term. (such as seq. 1)

The sequence continues without stopping. (such as seq. 2)

Both sequences have an equation or general rule: $a_n = 2n$ where n is the term # and a_n is the n th term.

The general rule can also be written in function notation: $f(n) = 2n$

1) Write the first 6 terms of $a_n = 5 - n$

$a_1 =$

$a_2 =$

$a_3 =$

$a_4 =$

$a_5 =$

$a_6 =$

2) Write the first 6 terms of $a_n = 2^n$

$a_1 =$

$a_2 =$

$a_3 =$

$a_4 =$

$a_5 =$

$a_6 =$

3) Write the first 6 terms of $f(n) = (-2)^{n-1}$

$$a_1 =$$

$$a_2 =$$

$$a_3 =$$

$$a_4 =$$

$$a_5 =$$

$$a_6 =$$

Sequences comes in different types of patterns. Write the next 3 terms of the sequence.

4)

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8,$

1, 10, 101, 1010, 10101,

5)

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8,$

A, C, E, G, I,

6)

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8,$

$\frac{2}{8}, \frac{3}{7}, \frac{4}{6}, \frac{5}{5}, \frac{6}{4},$

7)

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8,$



Give two examples of sequence in real life, only one can contain numbers.

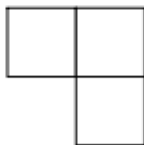
8)

9).

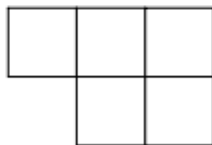
Assignment: T4-61 Into to Sequences

1. Here is a pattern of squares

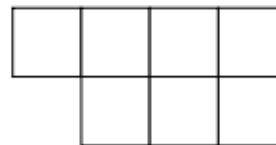
Pattern 1



Pattern 2



Pattern 3



- a) Draw pattern 4
- b) How many squares will there be in pattern number 13?
- c) Which pattern has 27 squares?

2. Here is a pattern of dots

Pattern 1



Pattern 2



Pattern 3



- a) Draw pattern 4
- b) How many dots will there be in pattern 15?
- c) Jack says there are 70 dots in pattern 20. Is he right? You must explain your answer.

3. Here is a made from bricks

Pattern 1



Pattern 2



Pattern 3



- a) Draw pattern 4
- b) How many bricks will there be in pattern number 8?
- c) Which pattern will have 49 bricks?
- d) How many bricks will there be in pattern n?

4. Here is a made from white and grey tiles.

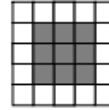
Pattern 1



Pattern 2



Pattern 3



- Draw pattern 4
- How many white tiles will there be in pattern number 10?
- How many grey tiles will there be in pattern 8?
- Miles has 49 grey tiles and 32 white tiles. Which pattern can he make?
- Emma has 90 grey tiles and 42 white tiles. She says she can make pattern number 10. She is incorrect, explain why.
- How many more grey and white tiles will Emma need to make pattern number 10.

Find the next three terms in the given sequence.

5. $-10, 0, 10, 20, \dots$

6. $-31, 169, 369, 569, \dots$

7. $16, 36, 56, 76, \dots$

8. $131, 252, 373, 494, 5115, \dots$

Find the next four numbers in the sequence and name the sequences (you may have to do a little research!)

9. $1, 1, 2, 3, 5, 8, \dots$

10. $1, 131, 13431, 1347431, \dots$