

GCSE Maths: Special sequences (Higher): worksheet

GCSE Maths - Sequences and nth Term - Higher - Lesson 11.6

Name: _____

Date: _____

Score: _____

13 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch11-sequences/higher/special-sequences/

Exercise 11F Special sequences Non-calculator

1 Work out each of these.

(a) The 9th square number

Answer: _____

(b) The 4th cube number

Answer: _____

(c) The 7th triangular number

Answer: _____

(d) The 8th power of 2

Answer: _____

(e) The 15th square number

Answer: _____

(f) The 6th cube number

Answer: _____

2 Write down the name of each sequence and the next two terms.

(a) 1, 4, 9, 16, ...

Answer: _____

(b) 1, 8, 27, 64, ...

Answer: _____

(c) 3, 6, 10, 15, ...

Answer: _____

(d) 4, 9, 16, 25, ...

Answer: _____

(e) 2, 4, 8, 16, ...

Answer: _____

(f) 10, 100, 1000, ...

Answer: _____

3 Which term of the sequence is each number?

(a) 169 in the square numbers

Answer: _____

(b) 343 in the cube numbers

Answer:

(c) 55 in the triangular numbers

Answer:

(d) 64 in the powers of 2

Answer:

(e) 1000 in the powers of 10

Answer:

4 The first two terms of each Fibonacci-type sequence are given. Write down the first eight terms.

(a) 1, 1, ...

Answer:

(b) 2, 3, ...

Answer:

(c) 1, 3, ...

Answer:

(d) 5, 2, ...

Answer:

5 Each of these is part of a Fibonacci-type sequence. Find the missing terms.

(a) 3, 5, ?, 13, ?

Answer:

(b) ?, ?, 7, 11, 18

Answer:

(c) 1, ?, ?, 7, 11

Answer:

(d) 2, 5, ?, 12, ?

Answer:

(e) ?, ?, ?, 11, 18

Answer:

6 Tins are stacked in a triangular pile with 1 tin in the top row, 2 in the next row, 3 in the next row, and so on.

(a) How many tins are in a pile with 9 rows?

Answer:

(b) A pile has 66 tins. How many rows does it have?

Answer:

7 A cube is made from small cubes. A 5 by 5 by 5 cube is made from 125 small cubes. How many **more** small cubes are needed to make a 6 by 6 by 6 cube?

Answer:

8 In a computer game, level 1 needs 2 points, level 2 needs 4 points, level 3 needs 8 points and the number of points doubles with each level. How many points are needed for level 10?

Answer:

- 9** Work out the sum of each pair of consecutive triangular numbers. What do you notice?

(a) $3 + 6$

Answer:

(b) $6 + 10$

Answer:

(c) $10 + 15$

Answer:

- 10** Is 50 a triangular number? Give a reason.

Answer:

- 11** Pete says that 2^n and n^2 are the same. Show that Pete is wrong.

Answer:

- 12** The first term of a Fibonacci-type sequence is x and the second term is 3. The sixth term is 36. Find the value of x .

Answer:

- 13** Show that no square number ends in 2, 3, 7 or 8.

Answer: