

OCR GCSE Mathematics Non-Calculator 2023 Higher Paper 2 Revision Worksheet

Question 7

A motorist wants to buy a new car but does not have enough money. The price of the car is £16000. The motorist sees this notice for a deal on the car they want to buy:

Pay 15% of the price of the car now and then equal monthly payments of £300

The number of equal monthly payments is hidden.

Work out the number of monthly payments if the total cost of the car to the motorist is £17400.

You must show your working.

Question 8

The density of some concrete is 2.4 g/cm^3 . A lump of this concrete has a volume of 400 cm^3 .

Work out the mass of the lump of concrete.

Question 9

A box contains only red, green and black pens.

The ratio of red pens to green pens to black pens is $1 : 4 : 11$.

(a) Work out the percentage of the pens that are green.

(b) There are 24 more green pens than red pens. Work out the total number of pens in the box.

Question 10

(a) Find the next term of this sequence: 1, 3, 9, 27, 81,

(b) In the Fibonacci sequence below, the next term is found by adding the two previous terms. The third term is 0.83 and the fourth term is 1.29

Complete the first, second and fifth terms of the sequence.

..... 0.83, 1.29

Question 11

(a) Work out $0.8 \div 0.004$

(b) A carpenter has a plank of wood of length w metres.

The carpenter cuts $\frac{3}{5}$ of the plank into 20 equal pieces.

Each piece has length 0.06 metres.

Work out the value of w , the original length of the plank of wood. You must show your working.

Question 12

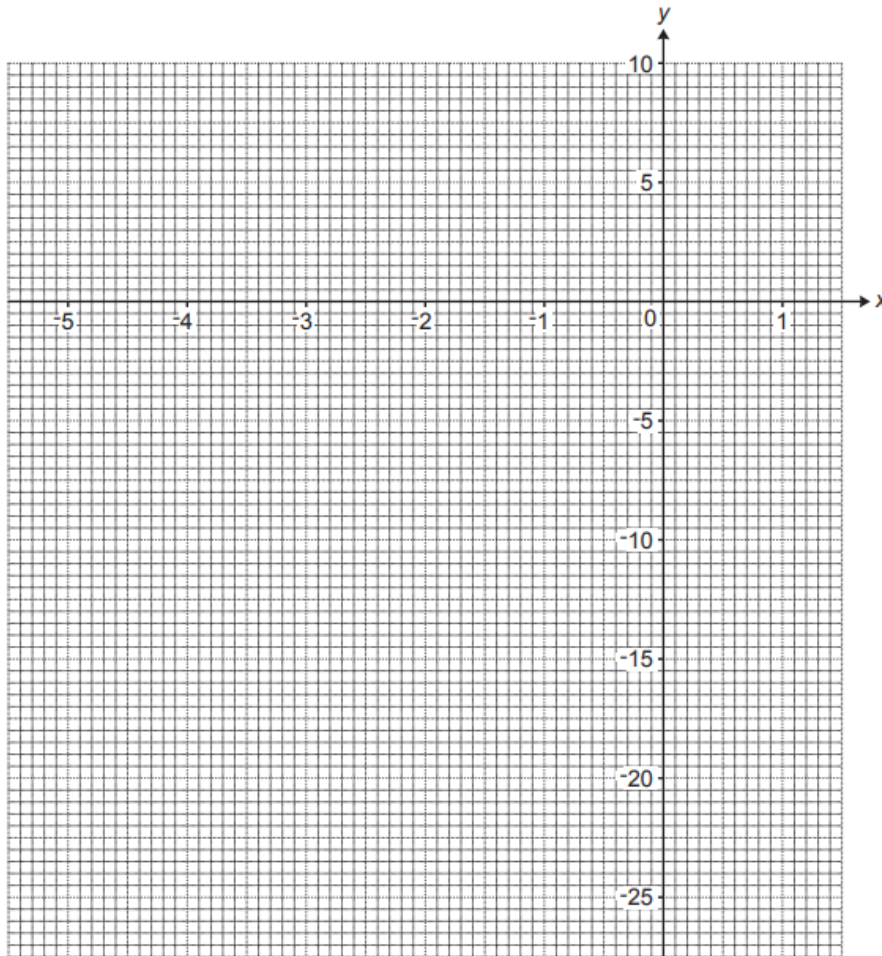
Write down an equation for the line that is parallel to $y = 3x - 5$ and passes through the point $(0, 1)$.

Question 13

(a) Complete the table for $y = x^3 + 4x^2$.

x	-5	-4.5	-4	-3	-2	-1	0	1
y	-25	-10.1	0	9	8		0	5

(b) Draw the graph of $y = x^3 + 4x^2$ for $-5 \leq x \leq 1$.



(c) The equation $x^3 + 4x^2 = k$, where k is an integer, has exactly one solution for $-5 \leq x \leq 1$.

Find the greatest possible value of k .

Question 14

A teacher is planning a theme day for the 500 pupils at their school. The teacher asks a sample of 20 pupils from year 8 which theme they would prefer. The results are shown in the table:

Theme	Number of pupils
Sport	7
Art and design	3
Recipes	2
Music and movies	8

- (a) Describe two disadvantages of the teacher's sampling method.
- (b) Using the results from the table the teacher estimates that 175 pupils in the school would prefer a sport theme. Here is the teacher's method: $\frac{7}{20} \times 500 = 175$

Write down **one** assumption the teacher has made when making their estimate.