

OCR GCSE Mathematics Non-Calculator 2024 Higher Paper 2 Revision Worksheet

Questions 1–12

1. Work out. $1.2 + 0.03$

2. Kai has these four number cards: 0, 2, 5, 9.

Kai takes two of the cards at random without replacement and finds the positive difference between the two numbers.

(a) Complete the table to show all of the possible differences.

	0	2	5	9
0				
2				
5				
9				

(b) Find the probability that Kai takes two cards with a difference that is an even number or a factor of 10.

3

(a) Ryan makes a journey of 200 miles from his home to the coast.

- $\frac{1}{10}$ of the journey is on roads with a speed limit of 40 mph.
- 40% of the journey is on roads with a speed limit of 50 mph.
- The remainder of the journey takes a time of 1 hour 30 minutes.

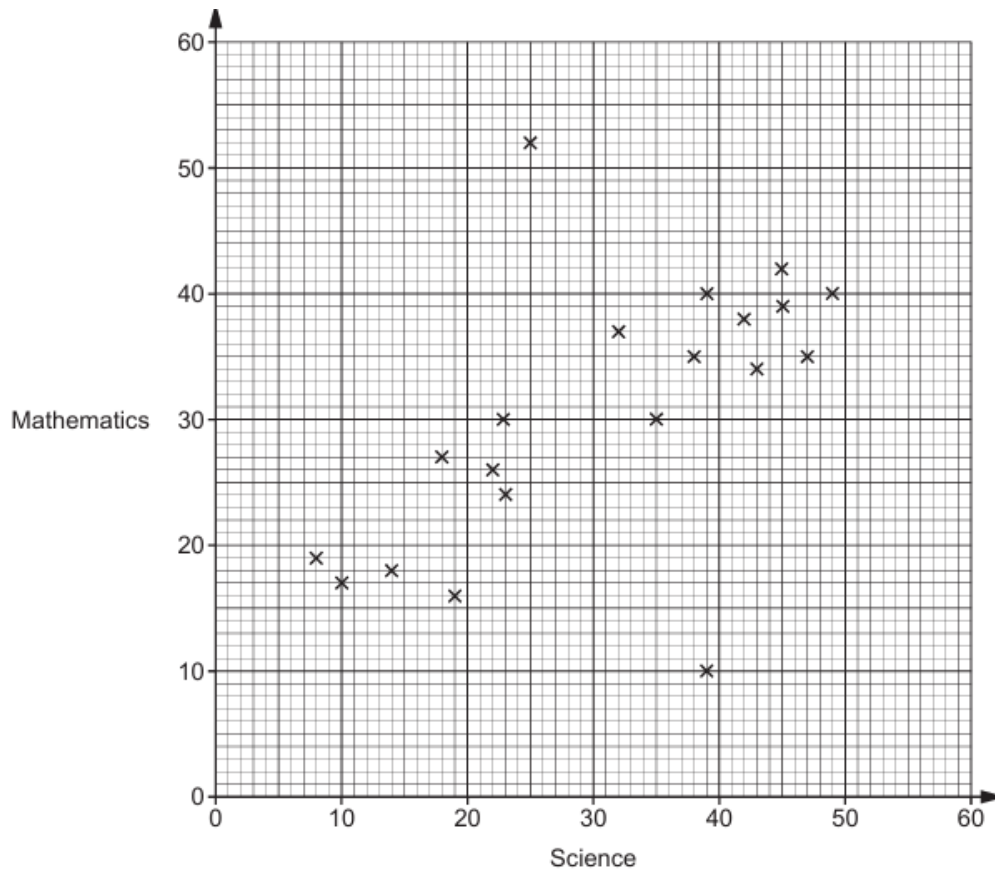
Ryan leaves home at 08:50 and does not exceed the speed limits on the journey.

Find the earliest time that Ryan could arrive at the coast. **You must show your working.**

(b) Write down an assumption you have made when working out the answer to part (a).

4

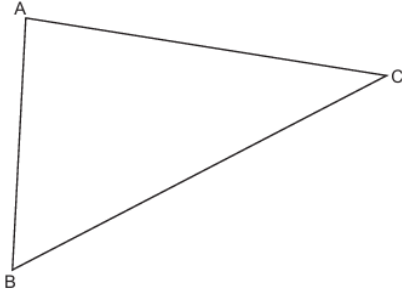
The scatter diagram shows the test scores for 20 pupils in Science and Mathematics.



- Describe the type of correlation shown in the scatter diagram.
- One pupil took the Science test but was then ill during the Mathematics test and had to leave early. On the scatter diagram, circle the point that is most likely to represent this pupil.
- By drawing a line of best fit, estimate the test score in Mathematics for a pupil who scored 28 in the Science test.
- Explain why using the scatter diagram to estimate the test score in Mathematics for a pupil who scored 60 in Science may be unreliable.
- Find the percentage of the 20 pupils who scored less than 30 marks in both Science and Mathematics.

5

Triangle ABC is drawn below.



Using a ruler and compasses only, construct and shade the region which is closer to AB than AC.

6

A bronze ornament has a volume of 198 cm^3 . The density of bronze is 8.9 g/cm^3 .

By rounding each value correct to one significant figure, work out an estimate for the mass of the bronze ornament.

7

A bottle contains $\frac{3}{4}$ litres of cordial.

To make orange squash, 1 part of this cordial is mixed with 7 parts of water.

Cups that can hold $\frac{1}{6}$ of a litre are completely filled with this orange squash.

Work out the maximum number of cups that can be filled from the bottle of cordial. You must show your working.

8

(a) y is directly proportional to x . Write down the percentage increase in y when x is increased by 100%.

(b) z is inversely proportional to x . Write down the percentage decrease in z when x is increased by 100%.

9

The following kinematics formulas may be used in this question.

$$v = u + at$$

$$v^2 = u^2 + 2as$$

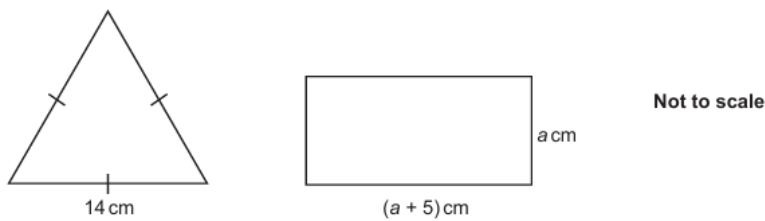
A particle has an initial velocity of 0 m/s.

The particle accelerates uniformly at 3 m/s^2 for 4 seconds.

Find the distance travelled by the particle in the 4 seconds.

10

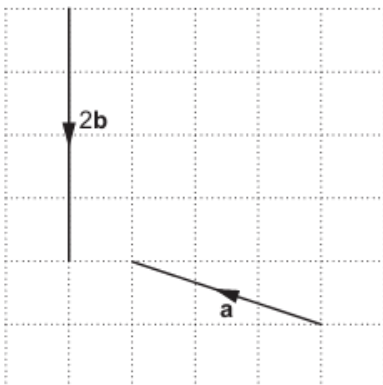
The diagram shows an equilateral triangle and a rectangle.



The equilateral triangle has the same perimeter as the rectangle. Find the value of a .

11

Vector $\mathbf{a}$ and vector $2\mathbf{b}$ are drawn on a grid.



(a) Write vector $\mathbf{a}$ as a column vector.

(b) Write a column vector that is different in direction but has the same length as vector $\mathbf{a}$.

12

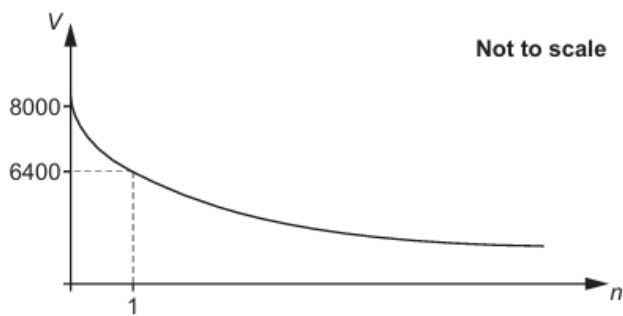
(a) Sasha invests £1000 at a rate of 5% per year compound interest. Sasha says:

"After one year, my investment will get £50 in interest and will be worth £1050. Therefore, after two years, my investment will get another £50 in interest and will be worth £1100."

Is Sasha correct? Give a reason for your answer.

(b) Sasha buys a car. The value, £ V , of the car after n years is given by the formula $V = ab^n$.

The graph shows some information about the value of the car. Find the value of a and the value of b .



Find the value of a and the value of b .