

**GCSE (9 – 1) Mathematics**  
**J560/04 Paper 4 (Higher Tier)**

**Question Set 1**

1. Calculate.

$$\sqrt[3]{\frac{210}{10^2 + 5^2}}$$

Give your answer correct to 3 significant figures.

..... [3]

2 The ratio 50 grams to 1 kilogram can be written in the form 1 :  $n$ .

Find the value of  $n$ .

$n =$  ..... [2]

3 (a) A bus timetable shows the following information.

- A bus following route T leaves for the train station every 20 minutes.
- A bus following route A leaves for the airport every 18 minutes.
- A bus following route T and a bus following route A both leave at 8.37 am.

(a) When is the next time one of each bus is timetabled to leave at the same time?

(a) ..... [4]

(b) Write down one assumption that was necessary to solve this problem.

.....

..... [1]

4

Bennie is 7 years older than Ayesha.  
Chloe is twice as old as Bennie.  
The sum of their three ages is 57.

Work out the ages of Ayesha, Bennie and Chloe.

Ayesha's age is .....

Bennie's age is .....

Chloe's age is ..... **[6]**

5 120 students in Year 10 and Year 11 sit a test.

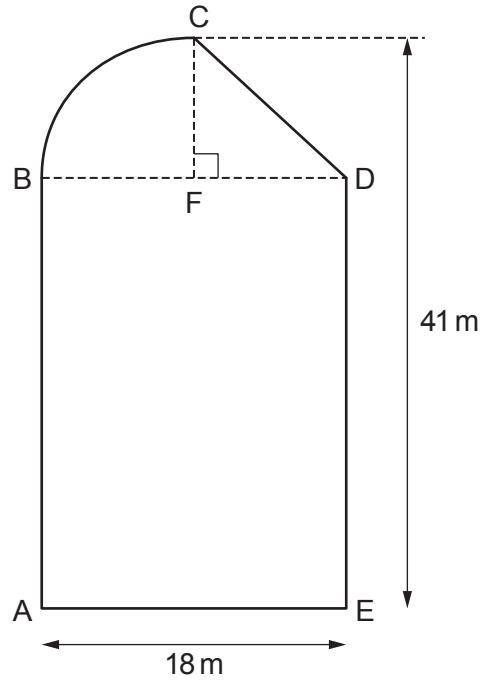
- 61 of the students are in Year 10.
- 83 of the students are right-handed.
- 20 of the students in Year 11 are left-handed.

One of the students in Year 10 and one of the students in Year 11 are chosen at random.

Which one is more likely to be left-handed?

Show your working. You may use the table if you wish.


- 6 The diagram shows a shape ABCDE.  
The shape is made from a rectangle, a right-angled triangle and a quarter of a circle.



Not to scale

F is the mid-point of BD.  
AE = 18 m and the perpendicular distance from C to AE is 41 m.

Work out the **perimeter** of the shape ABCDE.

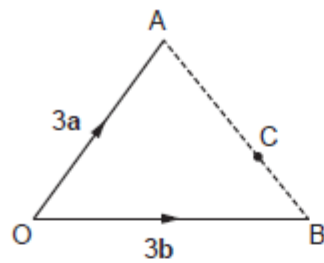
7

Claudia invests £25 000 at a rate of 2% per year compound interest.

Calculate the total amount of **interest** she will have earned after 5 years.  
Give your answer correct to the nearest penny.

£ ..... [4]

8



Not to scale

• D

$$\vec{OA} = 3\mathbf{a} \text{ and } \vec{OB} = 3\mathbf{b}.$$

C lies on AB such that  $AC = 2CB$ .

D is such that  $\vec{BD} = 2\mathbf{a} + \mathbf{b}$ .

Show, using vectors, that OCD is a straight line.

[5]

- 9 (a) The table shows values of  $x$  and  $y$ .

$x$	4	16	36
$y$	6	3	2

Show that these values fit the relationship that  $y$  is inversely proportional to  $\sqrt{x}$ . [2]

- (b)  $a$  is inversely proportional to  $b^2$  and  $a = 3.75$  when  $b = 4$ .

Find a formula linking  $a$  and  $b$ .

(b) ..... [3]

10

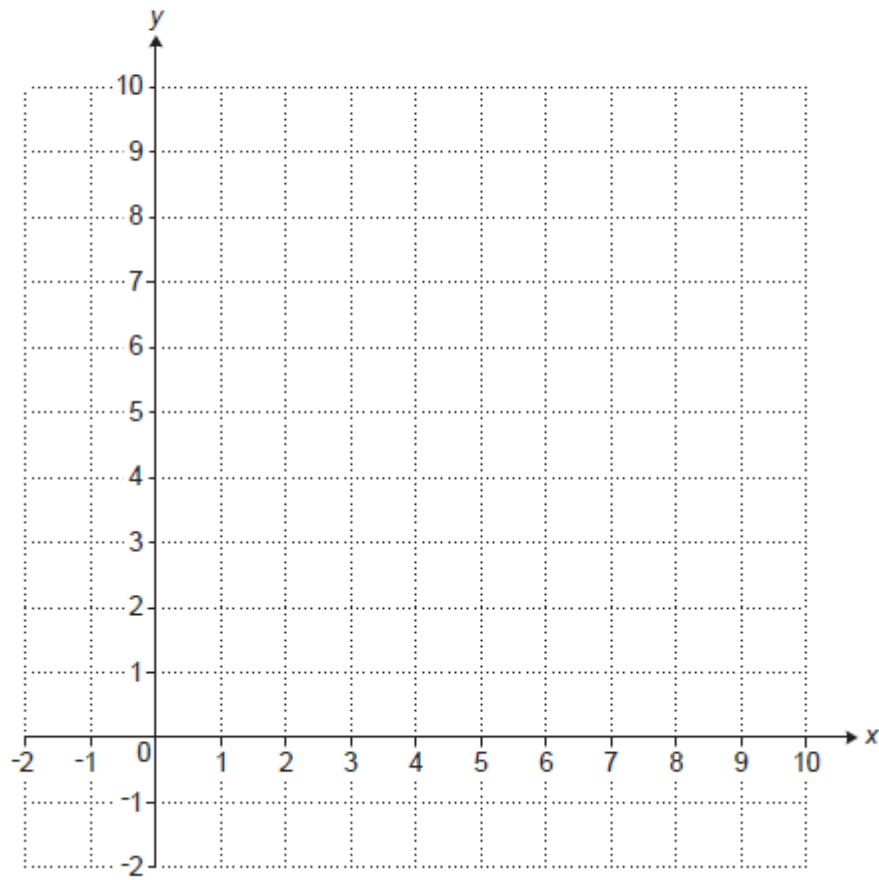
Show that  $(a^3)^{-\frac{1}{3}} \times (a^2)^{\frac{1}{2}} = 1$ .

[3]

Region R satisfies these inequalities.

$$\begin{aligned}y &> 3 \\y &\geq x \\x + y &\leq 9\end{aligned}$$

By drawing three straight lines on the grid, find and label the region R.



[6]

**Total Marks for Question Set 1: 51**





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