

Calculator Overlap questions November 2019 Paper 3

22/1

(a) Expand and simplify $(x + 5)(x - 9)$

$$\begin{array}{r|rr} & x & -9 \\ x & x^2 & -9x \\ +5 & 5x & -45 \end{array}$$

$$\underline{\underline{x^2 - 4x - 45}} \quad (2)$$

(b) Factorise fully $9x^2 + 6x$

$$3x(3x + 2)$$

$$\underline{\underline{3x(3x + 2)}} \quad (2)$$

23/2 (a) Use your calculator to work out $\frac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$

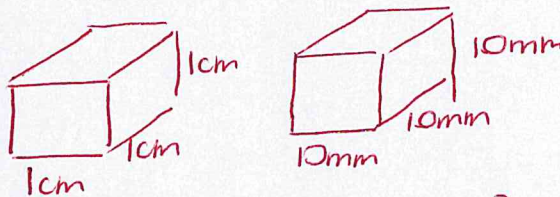
Write down all the figures on your calculator display.

$$\underline{\underline{157.668255}} \quad (2)$$

(b) Write your answer to part (a) correct to 4 significant figures.

$$\underline{\underline{157.7}} \quad (1)$$

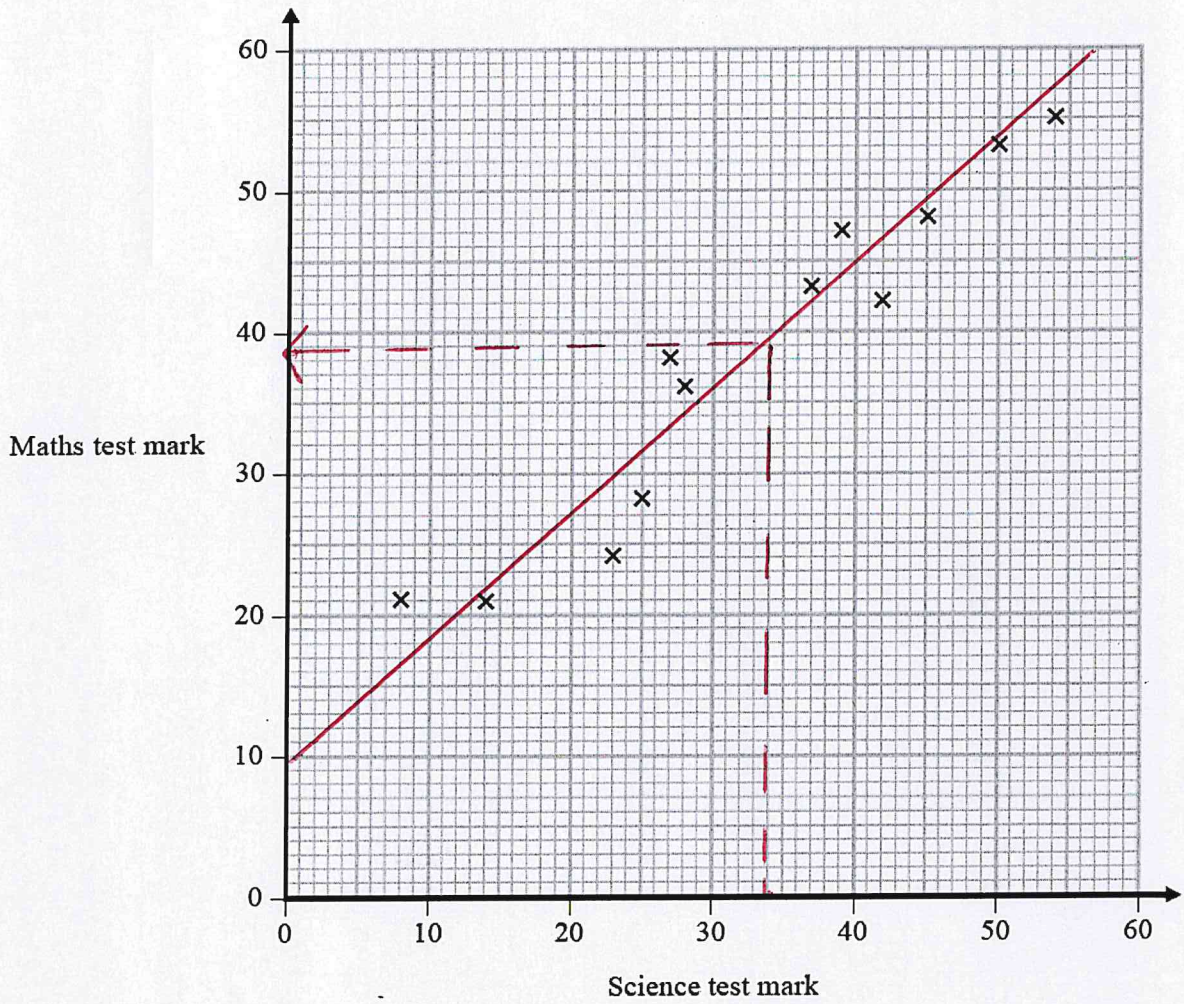
26/5 Write 37 cm^3 in mm^3



$$\begin{aligned} 1\text{cm}^3 &= 1000\text{mm}^3 \\ 37\text{cm}^3 &= \underline{\underline{37000\text{mm}^3}} \end{aligned}$$

$$\underline{\underline{37000}} \text{mm}^3 \quad (1)$$

24/3 The scatter graph shows information about the marks a group of students got in a Science test and in a Maths test.



Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test.

..... 39 marks
(2)

25/4 The table gives information about the times taken, in seconds, by 18 students to run a race.

Time (t seconds)	Frequency	Mid P	subTotal
$5 < t \leq 10$	1	7.5	= 7.5
$10 < t \leq 15$	2	12.5	= 25
$15 < t \leq 20$	7	17.5	= 122.5
$20 < t \leq 25$	8	22.5	180
Total		18	Total 335

Work out an estimate for the mean time.
Give your answer correct to 3 significant figures.

$$\begin{aligned} \text{Estimate of mean} &= \frac{335}{18} \\ &= 18.61111\dots \end{aligned}$$

..... 18.6 seconds
(3)

28/7 (a) Write 32 460 000 in standard form.

..... 3.246×10^7
(1)

(b) Write 4.96×10^{-3} as an ordinary number.

..... 0.00496
(1)

Asma was asked to compare the following two numbers.

$$A = 6.212 \times 10^8 \quad \text{and} \quad B = 4.73 \times 10^9$$

She says, "6.212 is bigger than 4.73 so A is bigger than B."

(c) Is Asma correct? You must give a reason for your answer.

No
.....
 $6.212 \times 10^8 = 621,200,000$
.....
 $4.73 \times 10^9 = 4,730,000,000$
.....
(1)

- 27/6 Nimer was driving to a hotel.
He looked at his Sat Nav at 13 30

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

Work out the average speed of the car from 13 30 to 14 48

You must show all your working.

$$\text{Time} = 1 \text{ hour } 18 \text{ min} = 1 \frac{18}{60} = 1.3 \text{ hours}$$

$$\text{Speed} = \frac{\text{Dist}}{\text{Time}} = \frac{65}{1.3} = 50 \text{ mph}$$

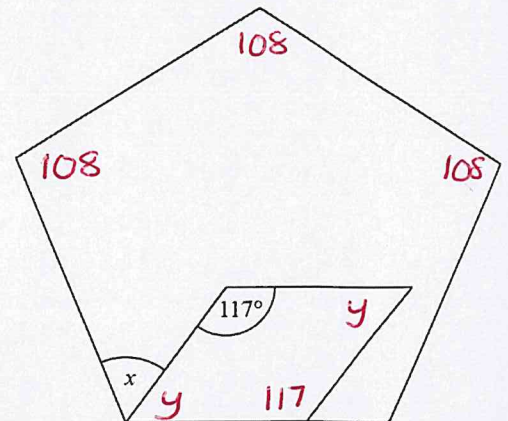
..... 50 mph
(4)

- 29/8 The diagram shows a regular pentagon and a parallelogram.

$$\text{Total} = 3 \times 180 = \underline{540^\circ}$$

Work out the size of the angle marked x.
You must show all your working.

$$\text{Each interior} = 540 \div 5 = \underline{108^\circ}$$



$$2y + 117 + 117 = 360$$

$$2y + 234 = 360$$

$$2y = 126$$

$$\underline{y = 63}$$

$$x + y = 108$$

$$x + 63 = 108$$

$$\underline{x = 45}$$

..... 45 °
(4)

TOTAL FOR PAPER IS 24 MARKS