Answers

Calculator Overlap questions November 2018 Paper 3

20/1 (*a*) Write 73577 correct to 3 significant figures.

7360

.....

(1)

(*b*) Work out $\dfrac{\sqrt{17+4^2}}{7.3^2}$

Write down all the figures on your calculator display.

0.1077981356

.....

(2)

21/2 Last year Jo paid £245 for her car insurance.
This year she has to pay £883 for her car insurance.

883 − 245 = 638

Work out the percentage increase in the cost of her car insurance.

$$\%\ \text{increase} = \frac{\text{increase}}{\text{original}} \times 100$$

$$= \frac{638}{245} \times 100$$

$$= 260.40816326\ldots$$

260 %

.....

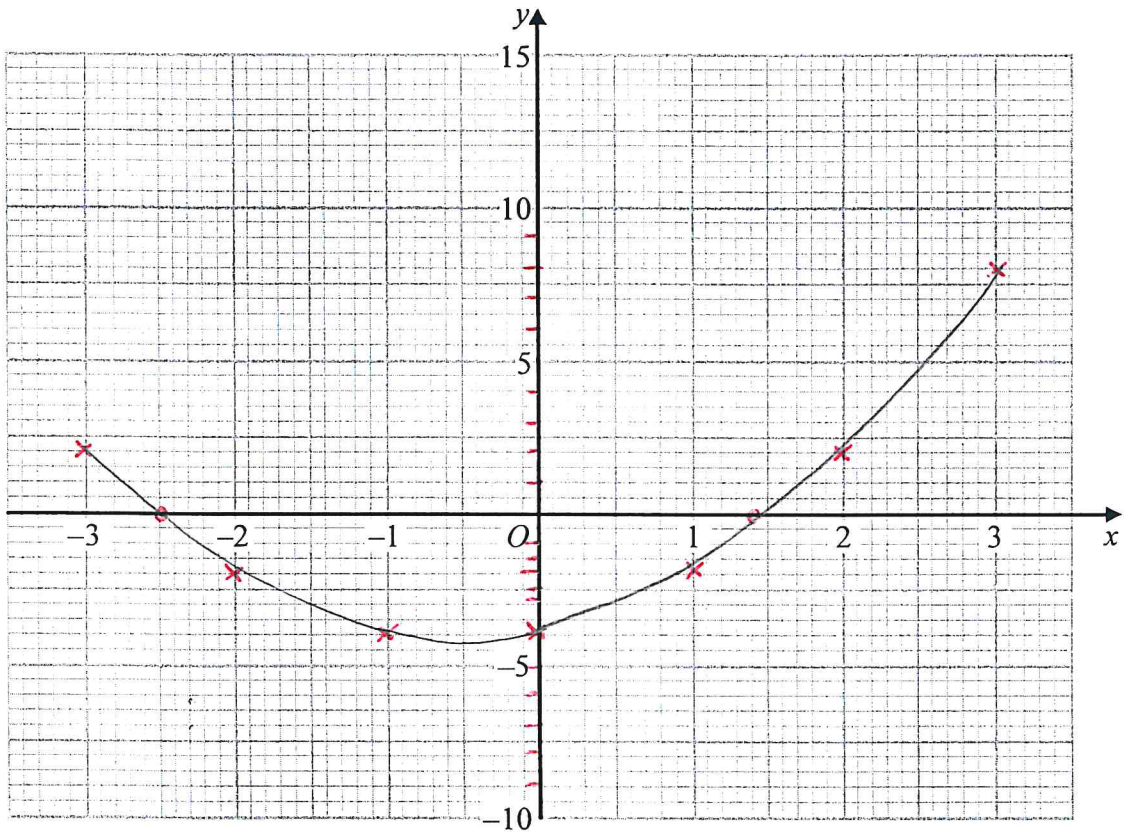
(3)

22/3 (*a*) Complete this table of values for $y = x^2 + x - 4$ use table function

x	–3	–2	–1	0	1	2	3
y	2	–2	–4	–4	–2	2	8

(2)

(*b*) On the grid, draw the graph of $y = x^2 + x - 4$ for values of x from –3 to 3



(2)

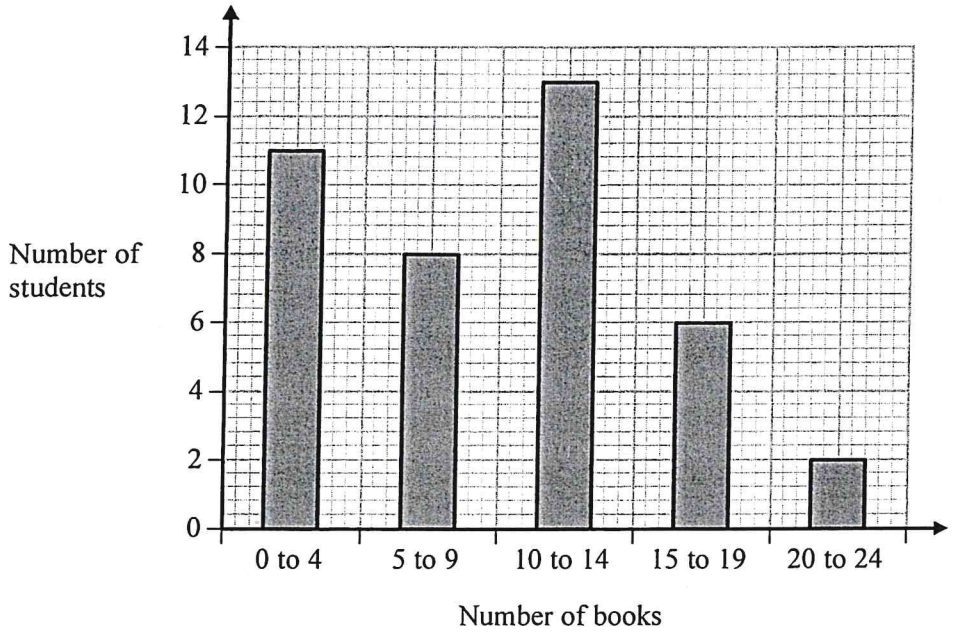
(*c*) Use the graph to estimate a solution to $x^2 + x - 4 = 0$ cuts y=0 (x axis)

–3.5 and 1.4

(1)

23/4 Fran asks each of 40 students how many books they bought last year.

The chart below shows information about the number of books bought by each of the 40 students.



(*a*) Work out the percentage of these students who bought 20 or more books.

$\frac{2}{40} = 0.05$ ..... 5 .....%

(2)

(*b*) Show that an estimate for the mean number of books bought is 9.5
You must show all your working.

Books	Freq		Midpoint		subtotal
0–4	11	×	2	=	22
5–9	8	×	7	=	56
10–14	13	×	12	=	156
15–19	6	×	17	=	102
20–24	2	×	22	=	44
Total	40		Total		380

mean $= \frac{380}{40} = 9.5$

(4)

24/5 Lara is a skier.
She completed a ski race in 1 minute 54 seconds.
The race was 475 m in length.
Lara assumes that her average speed is the same for each race.

(*a*) Using this assumption, work out how long Lara should take to complete a 700 m race.
Give your answer in minutes and seconds.

$S = \frac{D}{T} = \frac{475}{114} = \frac{25}{6}$ m/s

$T = \frac{D}{S} = \frac{700}{25/6} = 168$ seconds

$= 2$ min 48 sec

..... 2 ..... minutes ..... 48 ..... seconds

(3)

Lara's average speed actually increases the further she goes.

(*b*) How does this affect your answer to part (*a*)?

..... 700 ÷ bigger number .....

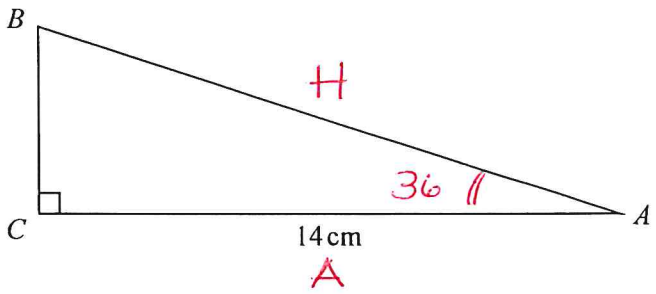
..... will mean the time is reduced .....

(1)

25/6 *ABC* is a right-angled triangle.
AC = 14 cm.
Angle *C* = 90°

size of angle *B* : size of angle *A* = 3 : 2

Work out the length of *AB*.
Give your answer correct to 3 significant figures.



3 : 2
B : A

90° in ratio

90 ÷ 5 × 2 = 36

C A H

$H = \frac{A}{\cos x} = \frac{14}{\cos(36)}$

$= 17.304\,95168$

..... 17.3 .....cm

(4)

TOTAL FOR PAPER IS 25 MARKS