Answers

Calculator Overlap questions June 17 Paper 2

17/1 The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	1	2	3	4	5	6
Probability		0.17	0.18	0.09	0.15	0.1

0.69

Neymar rolls the biased dice 200 times.
Work out an estimate for the total number of times the dice will land on 1 or on 3.

$P(1) = 0.31$

$P(1 \text{ or } 3) = 0.31 + 0.18$
$= 0.49$

200×0.49

98

(3)

18/2 On Saturday, some adults and some children were in a theatre. A C
The ratio of the number of adults to the number of children was 5 : 2

Each person had a seat in the Circle or had a seat in the Stalls.

$\frac{3}{4}$ of the children had seats in the Stalls. $\frac{1}{4}$ have seats in Circle

117 children had seats in the Circle.

There are exactly 2600 seats in the theatre.

On this Saturday, were there people on more than 60% of the seats?
You must show how you get your answer.

117 = $\frac{1}{4}$ of children

468 = all children

A : C
5 : 2
×234 (1170 : 468) ×234

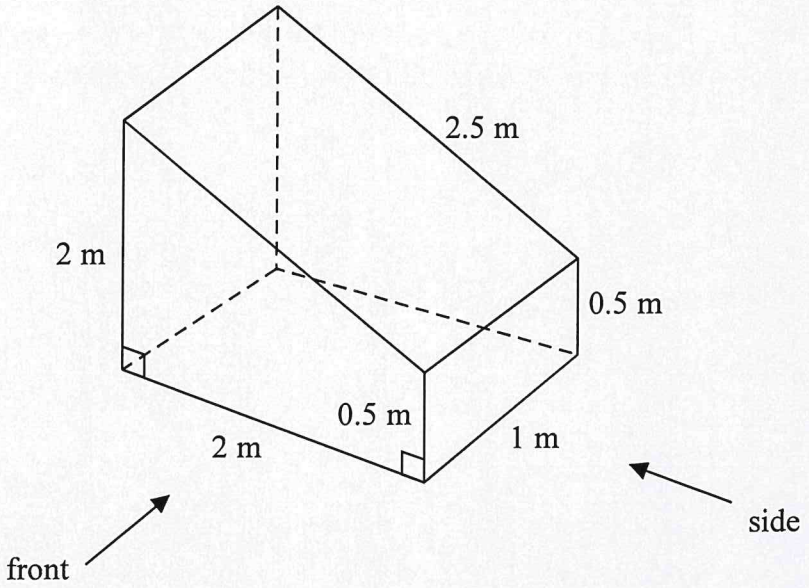
Total seats used = 1170 + 468 = 1638

60% of 2600 = $\frac{60}{100} \times 2600 = 1560$

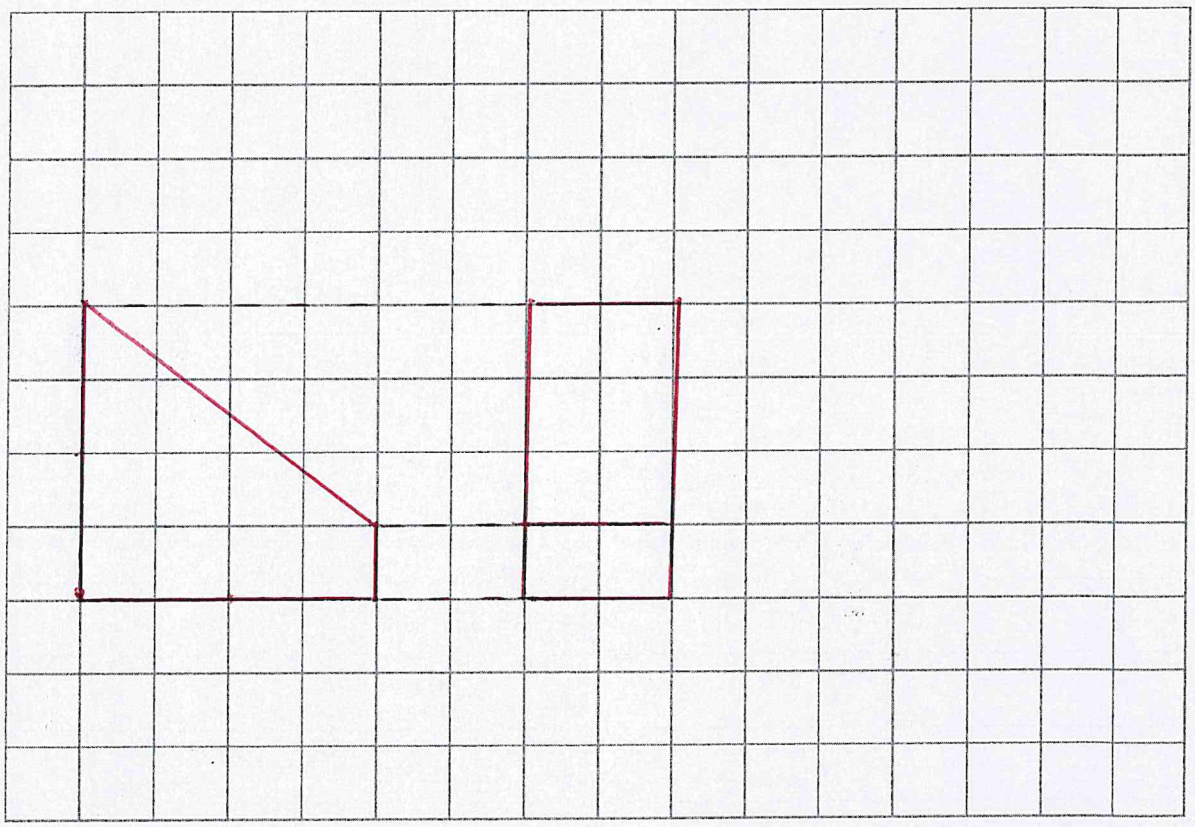
More than 60% of seats were used

(5)

19/3 The diagram shows a prism with a cross section in the shape of a trapezium.



On the centimetre grid below, draw the front elevation and the side elevation of the prism.
Use a scale of 2 cm to 1 m.



(4)

20/4 Olly drove 56 km from Liverpool to Manchester.
He then drove 61 km from Manchester to Sheffield.

S D T

Olly's average speed from Liverpool to Manchester was 70 km/h.
Olly took 75 minutes to drive from Manchester to Sheffield.

(*a*) Work out Olly's average speed for his total drive from Liverpool to Sheffield.

D=56 km D=61 km

L S = 70km/h M T = 75 min S

= 1h15

= 1.25h

Average speed = Total D / Total T

L → M time = D / S

= 56 / 70 = 0.8 hours

Av. speed = 117 / 2.05 = 57.07317

57 ..... km/h

(4)

Janie drove from Barnsley to York.

Janie's average speed from Barnsley to Leeds was 80 km/h.
Her average speed from Leeds to York was 60 km/h.

Janie says that the average speed from Barnsley to York can be found by working out the mean of 80 km/h and 60 km/h.

(*b*) If Janie is correct, what does this tell you about the two parts of Janie's journey?

only true if both distance are the same. .....

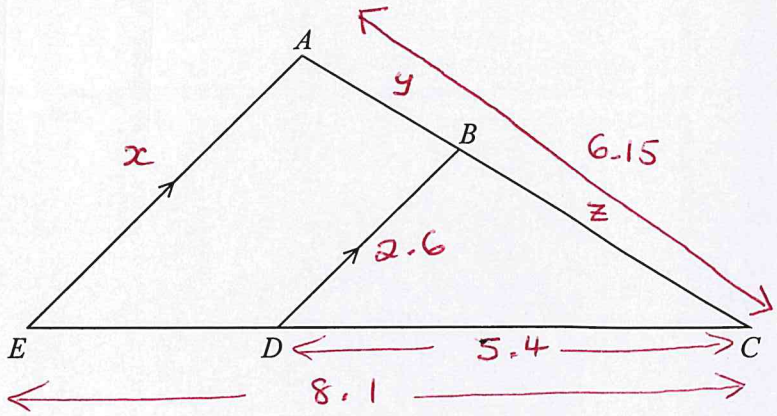
.....

(1)

21/5

ABC and *EDC* are straight lines.
EA is parallel to *DB*.

EC = 8.1 cm.
DC = 5.4 cm.
DB = 2.6 cm.



(*a*) Work out the length of *AE*.

SF = 8.1 / 5.4 = 3 / 2

x = 3/2 × 2.6 = 39/10 = 3.9

3.9 ..... cm

(2)

AC = 6.15 cm.

(*b*) Work out the length of *AB*.

z = 6.15 ÷ 3/2 = 41/10 = 4.1

y = 6.15 − 4.1

2.05 ..... cm

(2)

22/6 Anil wants to invest £25 000 for 3 years in a bank.

Personal Bank	**Secure Bank**
Compound Interest 2% for each year	Compound Interest 4.3% for the first year 0.9% for each extra year

Which bank will give Anil the most interest at the end of 3 years?
You must show all your working.

$25\,000 \times 1.02^3$

$= 26530.20$

Interest $= £1530.20$

$25000 \times 1.043 \times 1.009^2$

$= 26546.46208$

$= 26546.46$

Interest $= £1546.46$

Secure bank will give the most interest

(3)

23/7 A number, n, is rounded to 2 decimal places.
The result is 4.76.
Using inequalities, write down the error interval for n.

$4.755 \leqslant n < 4.765$

(2)