

**Calculator Overlap questions June 18 Paper 1**

19/1 (a) Work out  $2\frac{1}{7} + 1\frac{1}{4}$

$$\begin{aligned}
 & 3\frac{1}{7} + \frac{1}{4} \\
 &= 3\frac{4}{28} + \frac{7}{28} \\
 &= 3\frac{11}{28}
 \end{aligned}$$

$$3\frac{11}{28}$$

.....(2)

(b) Work out  $1\frac{1}{5} \div \frac{3}{4}$

Give your answer as a mixed number in its simplest form.

$$\begin{aligned}
 & \frac{6}{5} \div \frac{3}{4} \\
 &= \frac{6}{5} \times \frac{4}{3} \\
 &= \frac{8}{5} = 1\frac{3}{5}
 \end{aligned}$$

$$1\frac{3}{5}$$

.....(2)

20/2 In a village  
 the number of houses and the number of flats are in the ratio 7 : 4  
 the number of flats and the number of bungalows are in the ratio 8 : 5

There are 50 bungalows in the village.  
 How many houses are there in the village?

$H : F$	$F : B$
$7 : 4$	$8 : 5$
<u><math>140 : 80</math></u>	<u><math>80</math></u> 50

$$140$$

.....  
 (Total for Question 20/2 is 3 marks)

21/3

Renee buys 5 kg of sweets to sell.

5000g

She pays £10 for the sweets.

Renee puts all the sweets into bags.

She puts 250 g of sweets into each bag.

She sells each bag of sweets for 65p.

Renee sells all the bags of sweets.

Work out her percentage profit.

$$\text{Number of bags} = 5000 \div 250 = \underline{20}$$

$$\text{Money made} = 65p \times 20 = \underline{\underline{\pounds 13.00}}$$

$$\text{Profit} = \pounds 13 - 10 = \underline{\underline{\pounds 3}}$$

$$\% \text{ profit} = \frac{\text{Profit}}{\text{cost}} \times 100$$

$$= \frac{3}{10} \times 100$$

$$= 30\%$$

.....30.....%

(4)

22/4

A cycle race across America is 3069.25 miles in length.

3000 miles

20 mph.

Juan knows his average speed for his previous races is 15.12 miles per hour.

For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

$$\text{Distance every day} \approx 20 \times 8 = 160$$

$$\text{Days} \approx \frac{3000}{160} \approx \frac{300}{15} = 20 \text{ days}$$

.....20 days.....(3)

Juan trains for the race.

The average speed he can cycle at increases.

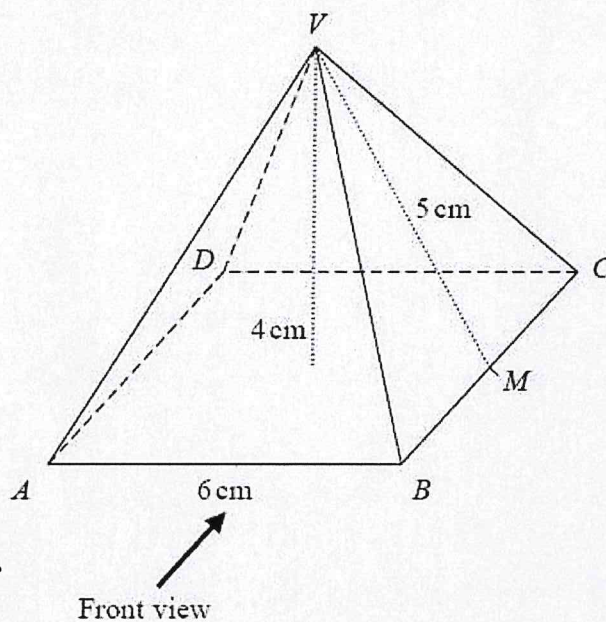
It is now 16.27 miles per hour.

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

It will be reduced as he travels further every day

(1)

23/5 Here is a solid square-based pyramid,  $VABCD$ .

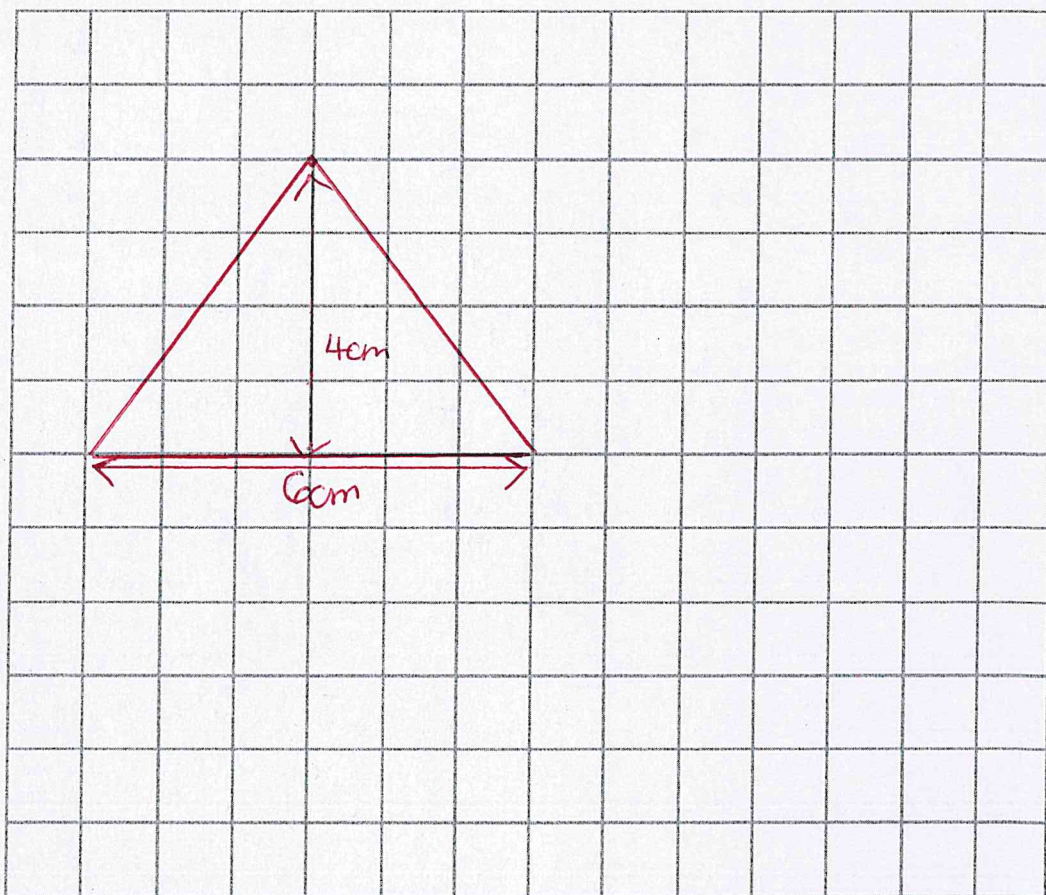


The base of the pyramid is a square of side 6 cm.

The height of the pyramid is 4 cm.

$M$  is the midpoint of  $BC$  and  $VM = 5$  cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.



(2)

(b) Work out the total surface area of the pyramid.

$$\text{Base} = 6 \times 6 = \underline{36 \text{ cm}^2}$$

$$\text{Triangular face} = \frac{6 \times 5}{2} = \underline{15 \text{ cm}^2}$$

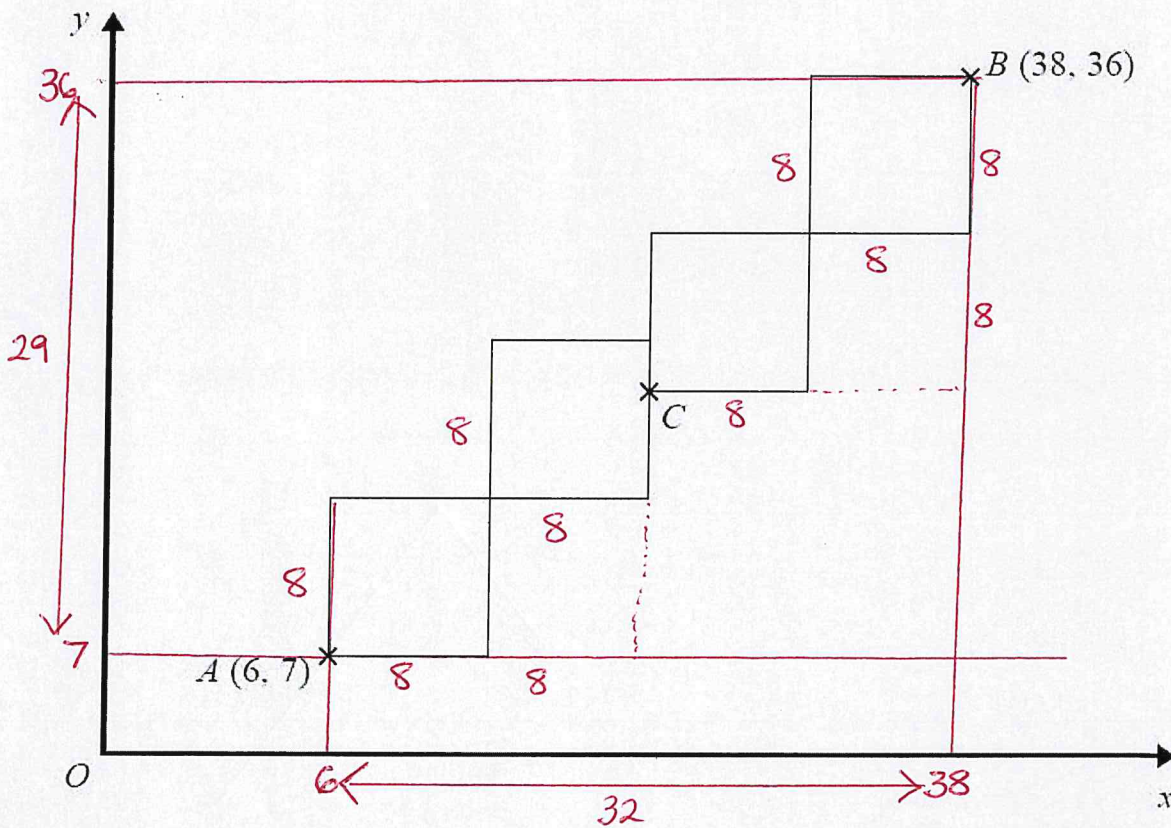
$$\begin{aligned} \text{Total surface area} &= 15 + 15 + 15 + 15 + 36 \\ &= 96 \end{aligned}$$

$$96 \text{ cm}^2$$

.....(4)

**24/6** A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



Point A has coordinates (6, 7)

Point B has coordinates (38, 36)

Point C is marked on the diagram.

Work out the coordinates of C.

$$1 \text{ square} = 32 \div 4 = 8$$

$$\text{Horizontally } 6 + 8 + 8 = 22$$

$$\text{Vertically } 36 - 8 - 8 = 20$$

(..... 22 , ..... 20 .....) (5)