

General Paper 2 Exam Solutions 2005

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Graduate Bsc (Hons) MathsSci (Open) GIMA

1. Given the train leaves London 2321 and arrives at Edinburgh 0651.

- (a) The train journey takes:

2321 → 0000 39 mins

0000 → 0600 6 hrs

0600 → 0651 51 mins

Total Time = 7 hrs 30 mins

- (b) Given distance between London and Edinburgh is 644 km.
The average speed is:

$$S = \frac{D}{T} = \frac{644}{7.5} = 85.9 \text{ km/hr}$$

2. (a) Given the pupils maths results. Constructing a stem leaf diagram we have:

Maths Marks

1		1	7							
2		0	5	5	5	5	6	6	8	9
3		1	2	2	2	3	5			
4		1	2	3						

Key 4 | 1 means 41

- (b) The mode is the most frequently occurring number which is 25.

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3. Given 2 shops are selling the same computer.

(a) Big computer costs: $33\frac{1}{3}\%$ of £834

$$\begin{array}{r} 278 \\ 3 \overline{)834} \end{array}$$

$$\text{Sale price } 834 - 278 = \text{£}556$$

(b) Hire purchase price from Pete's Shop is:

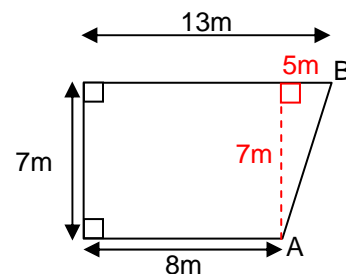
$$\text{Total cost} = (24 \times 23.33) + 55 = \text{£}614.92$$

Hence Big Computer Shop is cheaper by $\text{£}614.92 - \text{£}556 = \text{£}58.92$

4. Given the trapezium diagram:

The hedge length AB is given by:
Adding more information too the diagram.

Using Pythagoras



$$AB^2 = 7^2 + 5^2$$

$$AB = \sqrt{49 + 25}$$

$$AB = \sqrt{74}$$

$$AB = 8.6 \text{ m}$$

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5. (a) Removing brackets we get:

$$5 + 3(3x - 5)$$

$$5 + 9x - 15$$

$$9x - 10$$

- (b) Solving the inequality we get:

$$3x - 5 \geq 13$$

$$3x \geq 13 + 5$$

$$3x \geq 18$$

$$x \geq 18 \div 3$$

$$x \geq 6$$

6. Given the football league table and £900 000 has to be shared in the ratio of points gained. Then United will get:

United points = 3

Total league points = 18

$$\begin{aligned} \text{United share} &= \frac{3}{18} \times 900\,000 \\ &= \frac{1}{6} \times 900\,000 \\ &= \frac{150\,000}{6} \\ &= 6 \overline{)9^3 00000} \end{aligned}$$

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7. Given the electricity bill:

(a)	Box A	number of units equals	$6890 - 6487 = 403$ units
(b)	Cost of units:	$7.567p \times 403$	= £30.50
	Sub - Total:	$30.50 + 9.21$	= £39.71
	VAT @ 5%	0.05×39.71	= £1.99
	Total Charge	$39.71 + 1.99$	= £41.70

8. Given Winter Sun holidays income was £750 000 and it is 15% of the pie chart. Then eSun Tours made a total income of:

$$\begin{aligned}
 15\% &\rightarrow 750\,000 \\
 1\% &\rightarrow \frac{750\,000}{15} \\
 100\% &\rightarrow \frac{750\,000}{15} \times 100 = \text{£}5\,000\,000
 \end{aligned}$$

9. Given distance from Paris to Madrid 1280 km and the car's petrol tank holds 60 litres and travels 13km per litre. He will have to refuel:

$$\text{Full tank distance} = 13 \times 60 = 780 \text{ km}$$

Since $2 \times 780 = 1560$ km is greater than 1280 km

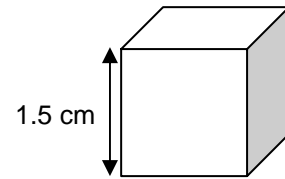
he will have to stop at least once.

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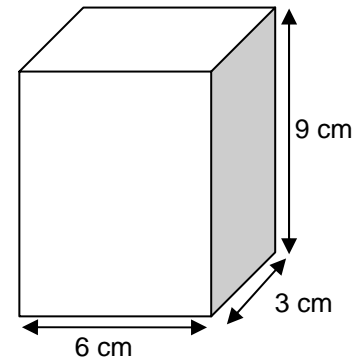
10. (a) Given that the length of a stock cube is 1.5cm. Its volume is:

$$\begin{aligned} \text{Volume} &= l^3 \\ &= (1.5)^3 = 3.375\text{cm}^3 \end{aligned}$$



- (b) Given the cuboid container. It can contain:

$$\begin{aligned} \text{Volume} &= l \times b \times h \\ &= 6 \times 3 \times 9 \\ &= 162 \text{ cm}^3 \end{aligned}$$



$$\text{No. of cubes} = 162 \div 3.375 = 48 \text{ cubes}$$

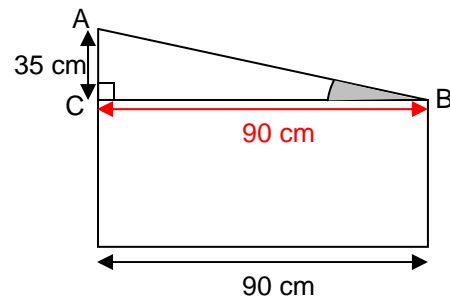
11. (a) Given the diagram of the rectangular shop sign the angle ABC is:

Using $S^{\circ}HC^{\wedge}HT^{\circ}A$

$$\tan(x^{\circ}) = \frac{35}{90}$$

$$x^{\circ} = \tan^{-1}\left(\frac{35}{90}\right)$$

$$x^{\circ} = 21.3^{\circ}$$

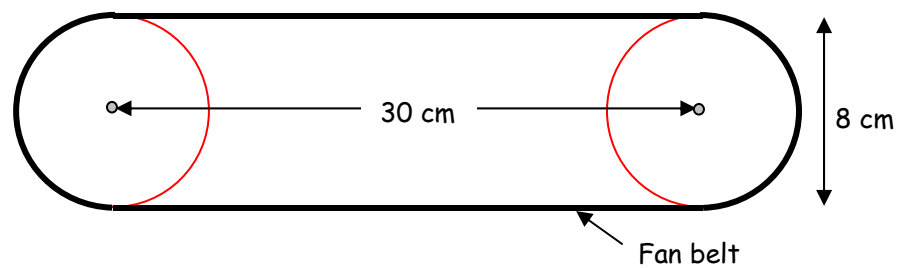


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12. Given the fan belt diagram the total length of the belt is:



$$\begin{aligned}
 \text{Fan Belt Length} &= \frac{1}{2} \pi D + 30 + 30 + \frac{1}{2} \pi D \\
 &= \pi D + 60 \\
 &= \pi 8 + 60 \\
 &= 85.13 \text{ cm}
 \end{aligned}$$