

Foundation Paper 2 2002

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Graduate Bsc (Hons) MathsSci (Open) GIMA

1. Given that Erin's birthday is one week after the 28th August then his birthday must be on:

28th August → 29th August (1 day)
 29th August → 30th August (2 days)
 30th August → 31th August (3 days)
 31th August → 1th Septemeber (4 days)
 1st September → 2nd September (5 days)
 2nd September → 3rd September (6 days)
 4th September → (7 days)

Birthday is on 4th September.

2. (a) Given the pattern we can complete then the table by adding on 5 each time.

Pattern Number	1	2	3	4	5	6		11
Number of matchsticks	6	11	16	21	26	31		56

- (b) Steps for working out the rule:

1. Difference is 5
2. Part of rule is 5P
3. Correction factor, so that the rule works is, add on 1

$3 \times 5 + 1 = 16$

Full rule is: $M = 5P + 1$

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3. Given the washing machine usually costs £399. With a reduction of 15% gives a new price of:

Using the calculator we have

$$\frac{15}{100} \times £399 = £59.85 \text{ (divide by botttom number multiply by the top number)}$$

$$\begin{array}{r} \text{New cost} \quad 3^8 9^8 9.^9 0^1 0 \\ - \quad 5 \quad 9. \quad 8 \quad 5 \\ \hline \pounds 3 \quad 3 \quad 9. \quad 1 \quad 5 \end{array}$$

OR

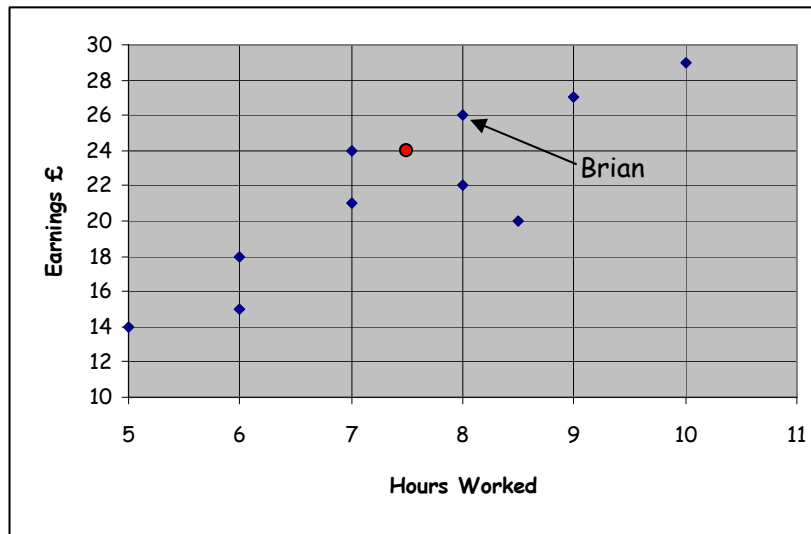
$$\begin{array}{r} 10\% \rightarrow \pounds 39.90 \\ 5\% \rightarrow \pounds 19.95 \\ \hline 15\% \rightarrow \pounds 59.85 \end{array} \text{ Discount } \pounds 59.85$$

$$\begin{array}{r} \text{New cost} \quad 3^8 9^8 9.^9 0^1 0 \\ - \quad 5 \quad 9. \quad 8 \quad 5 \\ \hline \pounds 3 \quad 3 \quad 9. \quad 1 \quad 5 \end{array}$$

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4. (a) From graph Brian works 8 hours and earnings £26.



- (b) Given Jade works:
 $7\frac{1}{2}$ hours and gets paid £3.20 per hour

Her total wage is

$$\begin{array}{r}
 3.20 \\
 \times 7 \\
 \hline
 22.40 \\
 1
 \end{array}$$

$$\begin{array}{r}
 22.40 \\
 + 1.60 \\
 \hline
 24.00 \\
 1
 \end{array}$$

Total wage is £24. See dot on graph.

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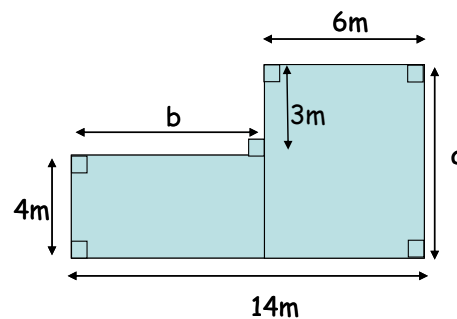
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5. Given the three different dice, a further possible 5 ways of getting 15 (there are more!!!) are:

Dice 1	Dice 2	Dice 3
6	6	3
6	5	4
5	6	4
5	5	5
5	4	6
4	5	6
4	6	5
3	6	6

6. Given the plan we have:

(a) $a = 4m + 3m = 7m$
 $b = 14m - 6m = 8m$



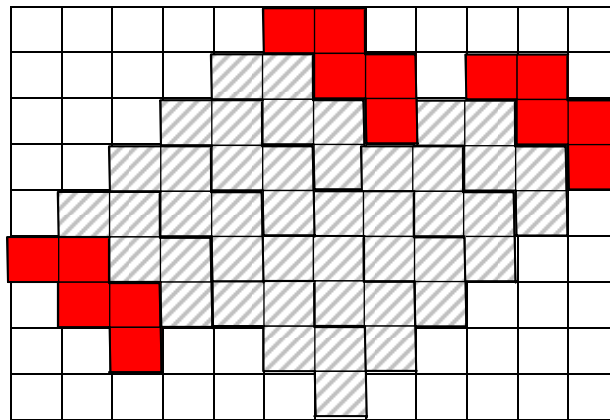
- (b) The perimeter is:

$$4m + 8m + 3m + 6m + 7m + 14m = 42m$$

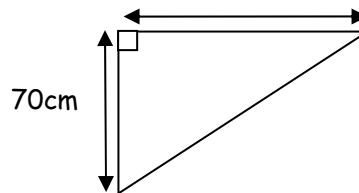
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7. Continuing the pattern we get:



8. Given the diagram of the shelf. 90cm



The area is:

$$\begin{aligned}
 \text{Area} &= \frac{1}{2} \times \text{base} \times \text{height} \\
 &= \frac{1}{2} \times 90 \times 70 \\
 &= 45 \times 70
 \end{aligned}$$

$$\begin{array}{r}
 450 \\
 \times 7 \\
 \hline
 3150 \\
 \hline
 3
 \end{array}
 \quad \text{Area is } 3150\text{cm}^2$$

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9. Given the numbers:

24, 25, 27, 29, 30, 30, 31

(a) The mode is the number that appears most often 30.

(b) The mean is:

(Add up all the numbers and divide by how many numbers there are)

24

25

27

29

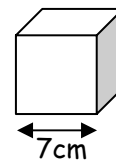
30

30

$$\begin{array}{r} +31 \\ \hline 196 \\ \hline 2 \end{array}$$

$7 \overline{)1956}$ $\frac{28}{}$ mean is 28

10. Given a cube with length 7cm.



Volume = length x breadth x height

$$= 7 \times 7 \times 7$$

$$= 49 \times 7$$

49

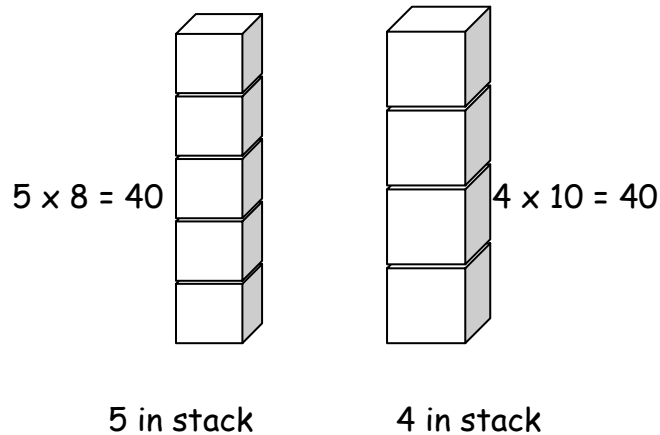
$$\begin{array}{r} \times 7 \\ \hline 343 \\ \hline 6 \end{array}$$

volume is 343cm³

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10. Given cubes of 8cm and cubes of 10cm. Both will be equal height when:



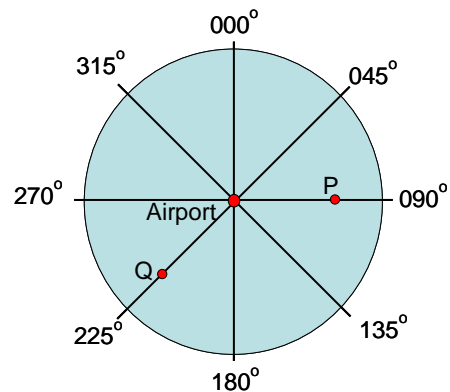
11. Given each cup holds 200ml of tea and we have 1.8litres of water we can make:

1.8 litres = 1800ml (multiply by a 1000)

$1800 \div 200 = 18 \div 2 = 2 \overline{)18}^9$ 9 cups of tea can be made.

12. Given diagram:

- (a) From diagram Q has a bearing of 225° from the airport.

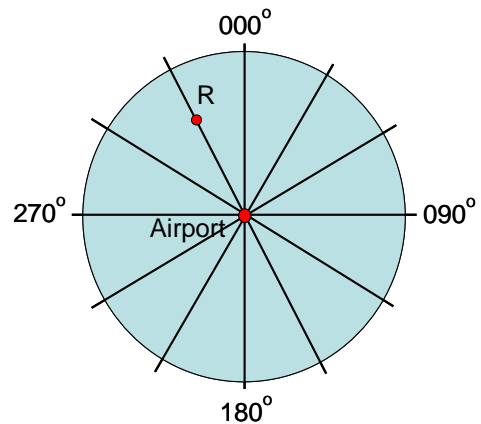


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12. (b) Given the diagram and the lines are equally spaced out, then R has a bearing of:

$$270^\circ + 30^\circ + 30^\circ = 330^\circ$$



13. Given sports ground is 12km away and lorry can deliver 30 bags. To deliver 100 bags and return to the yard the lorry has to travel a total of:

$$100 \div 30 = 10 \div 3 = 3 \overset{3.3}{\overline{)10.0}} \text{ has to do 4 complete trips}$$

Each trip is total of 24 km

Total distance is 24

$$\begin{array}{r} \times 4 \\ \hline 96 \\ \hline 1 \end{array} \quad \text{Total trip 96km}$$