General Paper 2 Exam Solutions 2004

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1. Given the table, the size of the angle for the Carbohydrates if a Pie Chart is drawn would be:

Bread is 100g: $\frac{55}{100} \times 360^{o} = 198^{o}$

2. (a) Completing the table we get:

Number of tacks	Frequency	Number of tacks x Frequency
57	7	399
58	13	754
59	21	1239
60	24	1440
61	19	1159
62	12	744
63	4	252
Totals	100	5987

$$\text{mean} = \frac{5987}{100} = 59.87$$

(b) Claim of 60 tacks per box is not reasonable as mean is less than 60.

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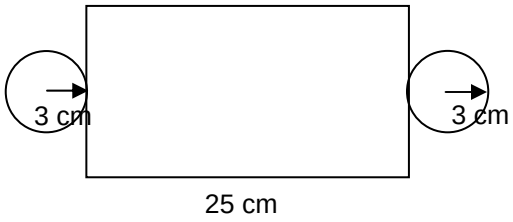
3. The net given is for a cylinder.



The cylinder volume is:

$$\text{volume} = \pi r^2 h = \pi \times (3^2) \times 25 = 225\pi = 707 cm^3$$

4. (a) Using the rule "change side change sign":

$$5x - 2 = 2x + 19$$
$$5x - 2x = 19 + 2$$
$$3x = 21$$
$$x = \frac{21}{3} = 7$$

(b) Factorising $12 + 8p$ we get:

4(3+2p)

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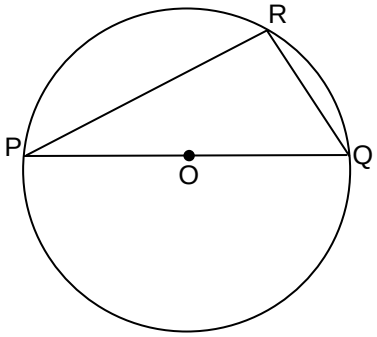
5. Given the circle diagram and:

- PQ is a diameter
- R is on the circumference
- PR is 12cm
- RQ is 5.5cm



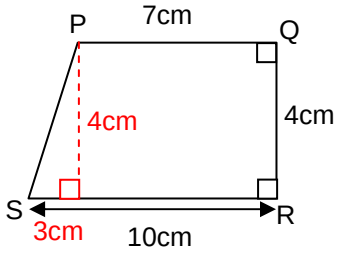
To find the length of the radius we have:

By Pythagoras PQ has length.

$$PQ = \sqrt{(12)^2 + (5.5)^2}$$
$$= \sqrt{144 + 30.25}$$
$$= 13.2\text{cm}$$

Radius is $\frac{1}{2}$ the diameter hence radius is 6.6cm

9. (a) Given the trapezium diagram:



Angle PSR is given by:
Adding to the diagram (red):
Using $S^OHC^AHT^OA$

$$\tan(x^o) = \frac{4}{3}$$
$$x^o = \tan^{-1}\left(\frac{4}{3}\right)$$
$$x^o = 53.1^o$$

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7. (a) Given the exchange rate is: £1 ⇨ 1.51€

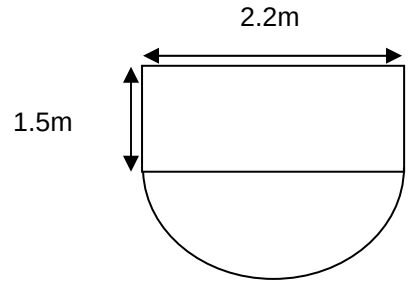
For £500 John will get: 1.51 x 500 = 755€

(b) Given the exchange rate is £1 ⇨ 2.33 Swiss Francs

For 100€ John will get: 1.51€ ⇨ 2.33 Swiss Francs

$$100€ \Rightarrow \frac{2.33 \times 100}{1.51} = 154.30 \text{ Swiss Francs}$$

8. Given the conservatory consists of a rectangle and half a circle we have:



Total Area = rectangle + half a circle

$$= l \times b + \frac{1}{2}\pi r^2$$

$$= 2.2 \times 1.5 + \frac{1}{2}\pi(1.1)^2$$

$$= 3.3 + 1.9$$

$$= 5.2 \text{ cm}^2$$

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9. Given the cable and installation package information:

After installation bill would be £98.25 - £75.00 = £23.25

Subtracting basic package price we have £23.25 - £8.75 = £14.50

They must have also taken the additional sports channel package.

10. Given the information about FloridaSun Hotel.

(a) Janice will have to pay £805 for 14 nights starting from 5th July.

(b) She will have to pay an extra 14 x £4.95 = £69.30 for a single room.

(c) If she gets a 20% discount for booking today her total discounted price will be:

Without discount total = £805 + 69.30 = £874.30

With discount total = 0.8 x 874.30 = £699.44

11. (a) Given mileage and per litre cost information her monthly bill will be:

No. of litres = 1850 ÷ 8.5 = 217.65 litres (to 2 d.p.)

Monthly cost will be = 217.65 x 76.9 = 16737p = £167.37

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11. (b) Monthly saving if converted to LPG Gas will be:

No. of litres = 1850 ÷ 7.8 = 237.18 litres (to 2 d.p.)

Monthly cost will be = 237.18 x 38.9 = 9226p = £92.26

Monthly saving is : £167.37 - £92.26 = £75.11

(d) To recover the cost of the conversion Mara will have to save for:

800 ÷ 75.11 = 10.65 Months (or 11 months to the nearest month)

12. Given the formula for current (C) and Power (P) and hairdryer has Power rating 850W. The fuse rating should be:

$$C = \frac{P}{240}$$

$$C = \frac{850}{240}$$

$$C = 3.54 \text{ Amps}$$

Since fuse rating should be just bigger than calculated current, fuse needed is 5 amp.

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13. Given the diagram and that Sofie must sail through the Buoys always being the same distance between them we have:

    Draw an isosceles triangle with the base equal to the diagonal distance between the buoys. Then draw in the line of symmetry for the triangle. This is the path Sofie should take to keep exactly the same distance between buoys.