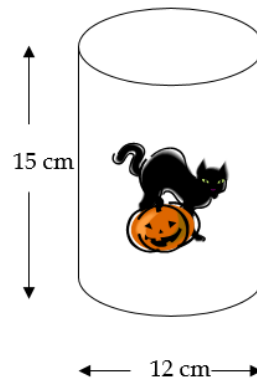




FA Problem Solving Questions - Set 4c

31c. The diagram shows a tin of cat food.



The tin is in the shape of a cylinder.
The height of the tin is 15 cm.
The diameter of the tin is 12 cm.

The tins have to be packed into boxes.

(a) Design a box that could be used to pack just 72 tins.
Give the dimensions and volume of the box.

(3)

(b) What percentage of the box is taken up by the cat food?

(3)

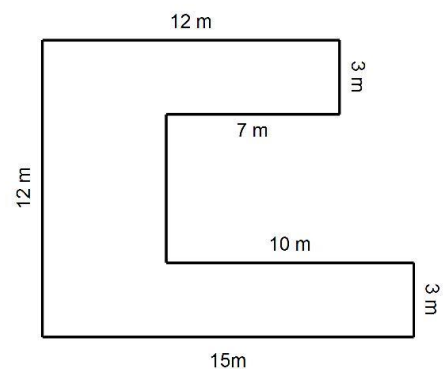
(6 marks)

32c. This table is used to find numbers of rolls of insulation material needed for lofts of different floor areas.

Floor area of loft (square metres)	Number of rolls
30	6
35	7
40	8
45	9
50	10
55	11

The floor of a loft is drawn to the right.

(i) Work out the floor area of this loft.



(ii) Each roll of insulation material costs £4.50
Work out the cost of the insulation material.

(3 marks)

33c. Ann, Bob and Colin shared £360 in the ratio 3 : 5 : 4

David was given 40% of the money by Ann, Bob and Colin

Ann gave a $\frac{1}{3}$ of her share to David.

Bob gave a $\frac{4}{15}$ of his share to David.

What fraction of his share did Colin give to David?

(4 marks)

34c. Georgina needs 132 carpet tiles to carpet her bedroom floor.

Carpet tiles are sold in boxes of 9 at £17.95 per box.

A single carpet tile can be bought for £2.99

Georgina bought the carpet tiles for her bedroom spending the least amount of money.

Show how Georgina did this.

(5 marks)

35c. Angela works in a hospital as a nurse.

She has to pay income tax.

She is allowed to earn £10,780 before paying tax.

She pays 20% tax on the rest.

Her employer deducts the income tax each month.

Angela gets £481 income tax deducted each month.

Work out how much Angela earns per year before any tax is deducted.

(4 marks)

36c. Wendy is running a Lucky Dip at the village fair.

She has 100 empty match boxes.

In each match box, she places either a coin or a note.

In 45 match boxes, she places a 10p coin.

In 23 match boxes, she places a 20p coin.

In 15 match boxes, she places a 50p coin.

In 12 match boxes, she places a £1 coin.

In 4 match boxes, she places a £5 note.

In 1 match box, she places a £10 note.



Each match box in the Lucky Dip is sold for £1 and all monies made will go to charity.

Wendy sells all of the match boxes.

(a) What is the average amount of money in each box?

(b) How much money will go to charity?

(4)

37c. Melissa has a bag of marbles.
She shares them with her friends.

She gives $\frac{3}{7}$ of the marbles to Jessica.

She gives $\frac{2}{5}$ of the marbles to Samantha

She has 66 marbles left.

How many marbles did she give to Jessica?

(4 marks)

38c. Mr and Mrs Ledger and their 3 friends went to Chic's Diner.

Chic's Diner			
Menu			
Starters		Deserts	
Prawn Cocktail	£4.50	Ice cream	£2.80
Pate and toast	£4.95	Apple pie	£3.20
Soup of the day	£3.50	Cheesecake	£3.50
Melon	£2.90		
Main course		Drinks	
Fish and chips	£7.85	White wine	£11.50 per bottle
Steak and chips	£12.25	Red wine	£12.25 per bottle
Gammon and chips	£9.75	Fruit juices	£2.10 per glass
Add 10% service charge			

Three people had a starter, main and desert

One person had a starter and main only

One person had a main and desert only

What is the cheapest the meal could have been?

What is the most expensive?


(4)


If Mrs Ledger has £85 to pay for the meal and buys the cheapest meals can she afford to buy any bottles of wine and if so, how many?

(3)

39c. T-shirts normally cost £15 each.

Two shops have a special offer on these T-shirts.

	<h3>T-Shirts-R-Us</h3> <p>Special offer Pay for three T-shirts and get one free. Pay for seven T-shirts and get three free</p>
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	<h3>Budget Shirt Company</h3> <p>Special offer Pay for 5 and get 15% discount</p>
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Stephen wants to buy 48 T-shirts.

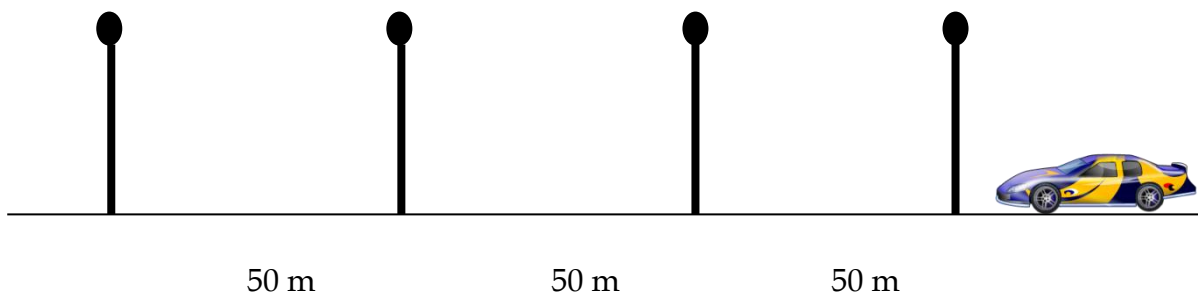
Work out at which shop, Stephen will get the better deal.

You must show clearly how you got your answer.

(5 marks)

40c. Roger lives in the village of Hawkshaw.

He wants to find out if cars break the speed limit through the village.



Roger times each car as it goes between four lampposts.

The distance between each lamppost is 50 m.

The speed limit through the village is 30 mph.

The first car Roger times takes 5 seconds to go between the first two lampposts.

[1 mile = 1.6km]

(a) How long should it take to travel the remain 100m if it isn't recorded as breaking the speed limit?

(b) Does this prove the driver was not breaking the 30mph speed limit?

You must show all of your working.

(5 marks)