



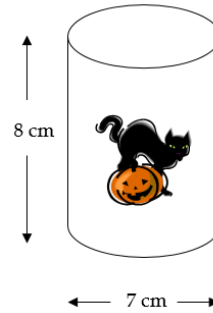
FA Problem Solving Questions - Set 4a

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

The tin is in the shape of a cylinder.

The height of the tin is 8 cm.

The diameter of the tin is 7 cm.



The tins have to be packed into boxes.

- (a) Design a box that has one layer and could be used to pack exactly 72 tins.
Give the dimensions of the box.

(3)

In a warehouse there are 140 of these boxes.

Each box is full with tins of cat food.

- (b) Work out how many tins are in the warehouse.

(3)

32a. 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 rectangular loft is 12 meters long and 3.5 meters wide.

- (i) Work out the floor area of this loft.
(ii) Write down the number of rolls of insulation material needed for this loft.

(3 marks)

33a. Ann and Bob shared £240 in the ratio 3 : 5

Ann gave a **half** of her share to Colin.

Bob gave a **tenth** of his share to Colin.

What fraction of the £240 did Colin receive?

(4 marks)

- 34a.** Georgina needs 94 carpet tiles to carpet her bedroom floor.
Carpet tiles are sold in boxes of 8 at £16.95 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)

- 35a.** Angela earns £35 240 a year.
She has to pay income tax.

She is allowed to earn £11,500 before paying tax.
She pays 20% tax on the rest.

Her employer deducts the income tax each month.

Work out how much income tax Angela gets deducted each month.

(4 marks)

- 36a.** 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 50 match boxes, she places a 10p coin.
In 20 match boxes, she places a 20p coin.
In 15 match boxes, she places a 50p coin.
In 10 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) How much money will go to charity?

(3)

Finlay buys a match box for £1

- (b) (i) Work out the probability that the match box will contain a 20p coin in it.
Give your answer in its simplest form.
(ii) Work out the probability that Finlay will find more than £1 in his match box.
Give your answer in its simplest form.

(4)

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

She gives $\frac{1}{3}$ of the marbles to Jessica.

She gives $\frac{2}{9}$ of the marbles to Samantha

She has 32 marbles left.

How many marbles did she have at the start?

(4 marks)

38a. Mr and Mrs Ledger took their grandson Harry 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			

Mr Ledger started with soup.
He had steak and chips for his main course and ice cream for desert.

Mrs Ledger started with a prawn cocktail and a main course of fish and chips.
She did not have a desert.

Harry didn't have a starter.
He had a main course of fish and chips and ice cream for desert.

Mr and Mrs Ledger shared a bottle of red wine.
Harry had a glass of fruit juice.
(a) Work out the total bill including the service charge.

(4)


Chic has now increased all of his prices by 6%.


(b) Work out the new price of fish and chips.

(3)

39a. T-shirts normally cost £12 each.

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

	<h3>T-Shirts-R-Us</h3> <div style="border: 1px solid black; padding: 5px; text-align: center;">Special offer Pay for two T-shirts and get one free. Pay for five T-shirts and get three free</div>
---	---

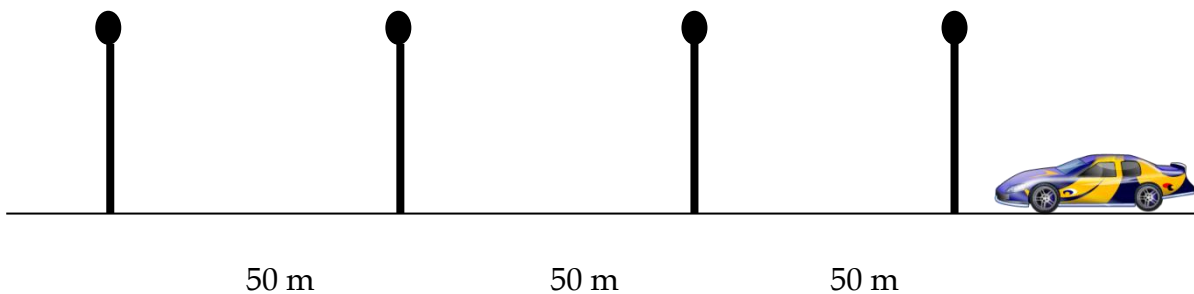
	<h3>Budget Shirt Company</h3> <div style="border: 1px solid black; padding: 5px; text-align: center;">Special offer 1/3 off normal price</div>
---	---

Stephen wants to buy 30 T-shirts.

Work out at which shop, Stephen will get the better deal.
You must show clearly how you got your answer.

(5 marks)

40a. 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 10 seconds to go between the four lampposts.
[1 mile = 1.6km]

Is this car breaking the speed limit?
You must show all of your working.

(5 marks)