



GOING FOR GOLD

Problem Solving

Gold Paper 3

Q	Topic	My Mark	Maximum Marks
1	Ratio		4
2	Probability		5
3	Polygons		4
4	Area		4
5	Pythagoras		5
6	Forming and solving equations		5
7	Percentages		4
8	Circle		7
9	Exchange rates and proportion		4
10	Volume and surface area		4
			46

Question 1 - Ratio

Colin, Dave and Emma share some money.

Colin gets $\frac{3}{10}$ of the money.

Emma and Dave share the rest of the money in the ratio 3 : 2.

What is Dave's share of the money?

Give your answer as a percentage.

(4 marks)

Question 2 - Probability

Rhiana plays a game of bingo on the internet.

The probability that she will lose the game is 0.9.

The probability that she will win the game and share the prize is 0.05.

The probability that she will win the game and the total prize is 0.095.

Each game costs 50p.

If she wins a games she banks £3.00.

If she shares a prize she gets 2 free games.

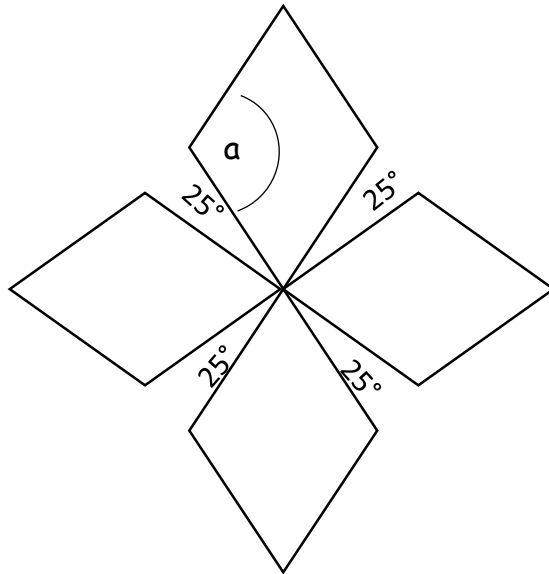
Rhiana is going to play the game 200 times.

Work out an estimate for profit or loss that Rhiana will have made in 200 games.

(5 marks)

Question 3 - Polygons

The diagram shows a pattern using four identical rhombuses.



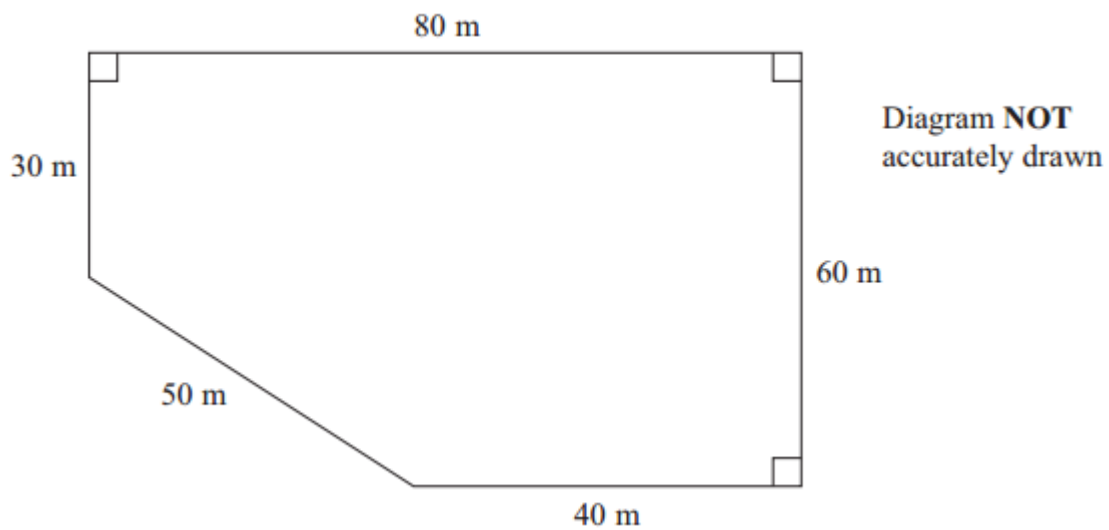
Work out the size of angle marked a .

You must show your working

(4 marks)

Question 4 - Area

The diagram shows the plan of a playground.



Bill is going to cover the playground with tarmac.

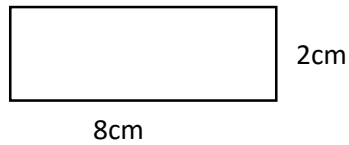
It costs £2.56 to cover each square metre with tarmac.

Work out the total cost of the tarmac Bill needs.

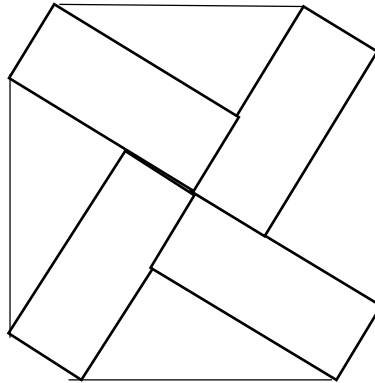
(4 marks)

Question 5 - Pythagoras

Here is a rectangle.



The 8 sided-shape below is made from 4 of these rectangles and 4 congruent right-angled triangles.



Work out the perimeter of the 8-sided shape.

You must show all your working.

(5 marks)

Question 6 - Forming and solving equations

The diagram shows a trapezium.

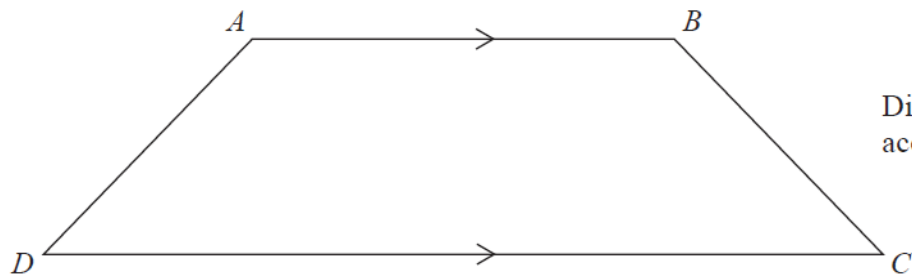


Diagram **NOT**
accurately drawn

$AD = x$ cm.

BC is the same length as AD .

AB is twice the length of AD .

DC is 4 cm longer than AB .

The perimeter of the trapezium is 38 cm.

Work out the length of AD .

(5 marks)

Question 7 - Percentages

Railtickets and Cheaptrains are two websites selling train tickets.

Each of the websites adds a credit card charge and a booking fee to the ticket price.

Railtickets
Credit card charge: 2.25% of ticket price
Booking fee: 80 pence

Cheaptrains
Credit card charge: 1.5% of ticket price
Booking fee: £1.90

Nadia wants to buy a train ticket.

The ticket price is £60 on each website.

Nadia will pay by credit card.

Will it be cheaper for Nadia to buy the train ticket from Railtickets or from Cheaptrains?

(4 marks)

Question 8 - Circle

Eliza makes this sketch of a pond.

The shortest distance across the pond is 6m.

The longest distance across the pond is 20m.

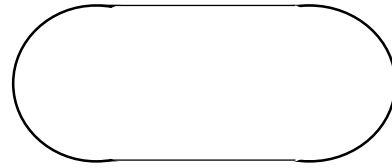


Diagram not to scale

Eliza estimates that the surface area of the pond is 120m^2 .

a) Explain how Eliza arrived at her estimate

(2 marks)

b) Calculate an estimate for the surface area of the pond that would be more accurate than Eliza's estimate.

Explain how you decided to calculate your estimate.

You must justify your decision.

Show all your working.

(5 marks)

Question 9 - Exchange rates and proportion

All tickets for a concert are the same price.

Amy and Dan pay £63 altogether for some tickets.

Amy pays £24.50 for 7 tickets.

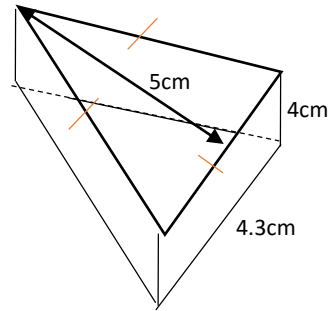
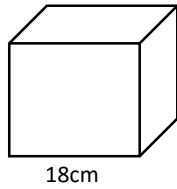
How many tickets does Dan buy?

(4 marks)

Question 10 - Volume and surface area

Alex pours melted wax into moulds like this to make candles.

He melts this cube of wax.



How many candles can he make with this wax?