

GCSE Mathematics

Practice Tests: Set 4

Paper 2F (Calculator)

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

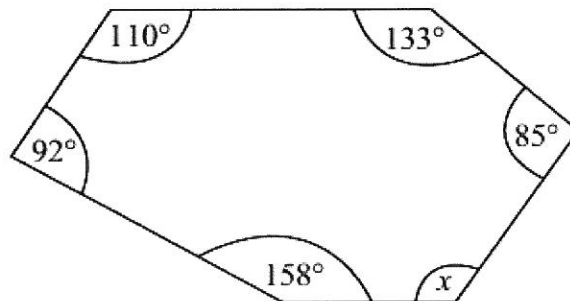
You must write down all the stages in your working.

1. Simplify $3 \times a \times 5 \times b$

.....
 $15ab$

(Total 1 mark)

2. Here is a hexagon.



The angles of a hexagon add up to 720° .

Work out the size of the angle marked x .

$$110 + 133 + 85 + 158 + 92 = 578$$

$$720 - 578 = 142$$

.....
 142 °

(Total 2 marks)

3. The table shows the names of five of Janette's friends.

Boys	Girls
Dodi	Anna
James	Michelle
William	

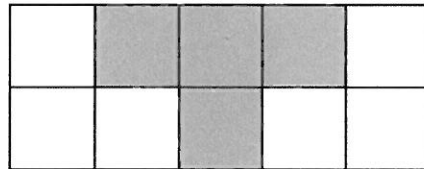
Janette is going to play a team game.
She chooses one of the boys and one of the girls to be in her team.

Write down all the possible combinations Janette can choose.

DA DM
.....
JA JM
.....
WA WM
.....

(Total 2 marks)

- 4.



- (i) What percentage of this shape is shaded?

$$\frac{4}{10}$$

..... 40 %

- (ii) Write your answer to part (i) as a decimal.

..... 0.4

(Total 2 marks)

5. Here are some words that can be used to describe the probability that an event will happen.

certain impossible likely unlikely evens

(a) Write down the word that best describes the probability

(i) that you will win a raffle when 400 tickets are sold and you have 10 of the tickets,

..... UNLIKELY

(ii) that you get a 10 when you roll an ordinary dice.

..... IMPOSSIBLE

(2)

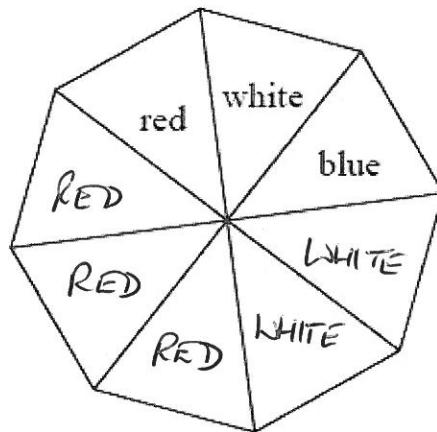
Ayesha is making a fair 8-sided spinner.

The spinner already has the colours red, white and blue written on it.

The probability that the spinner lands on red will be $\frac{1}{2}$

The probability that the spinner lands on blue will be less than the probability that the spinner lands on white.

(b) Complete the spinner by writing on it the colours that are missing.



(2)

(Total 4 marks)

6. There are 400 counters in a bag.

36% of the counters are yellow.

$$\frac{36}{100} \times 400 = 144$$

$\frac{2}{5}$ of the counters are blue.

$$\frac{2}{5} \times 400 = 160$$

The rest of the counters are green.

$$\begin{array}{r} 144 \\ + 160 \\ \hline 304 \end{array}$$

Work out how many counters are green.

$$400 - 304 = 96$$

96

.....
(Total 4 marks)

7. The length of a bus is 10 metres.

Gurjeet makes a model of the bus.
He uses a scale of 1 cm to 40 cm.

Work out the length of the model of the bus.
Give your answer in centimetres.

$$1 \text{ m} = 100 \text{ cm}$$

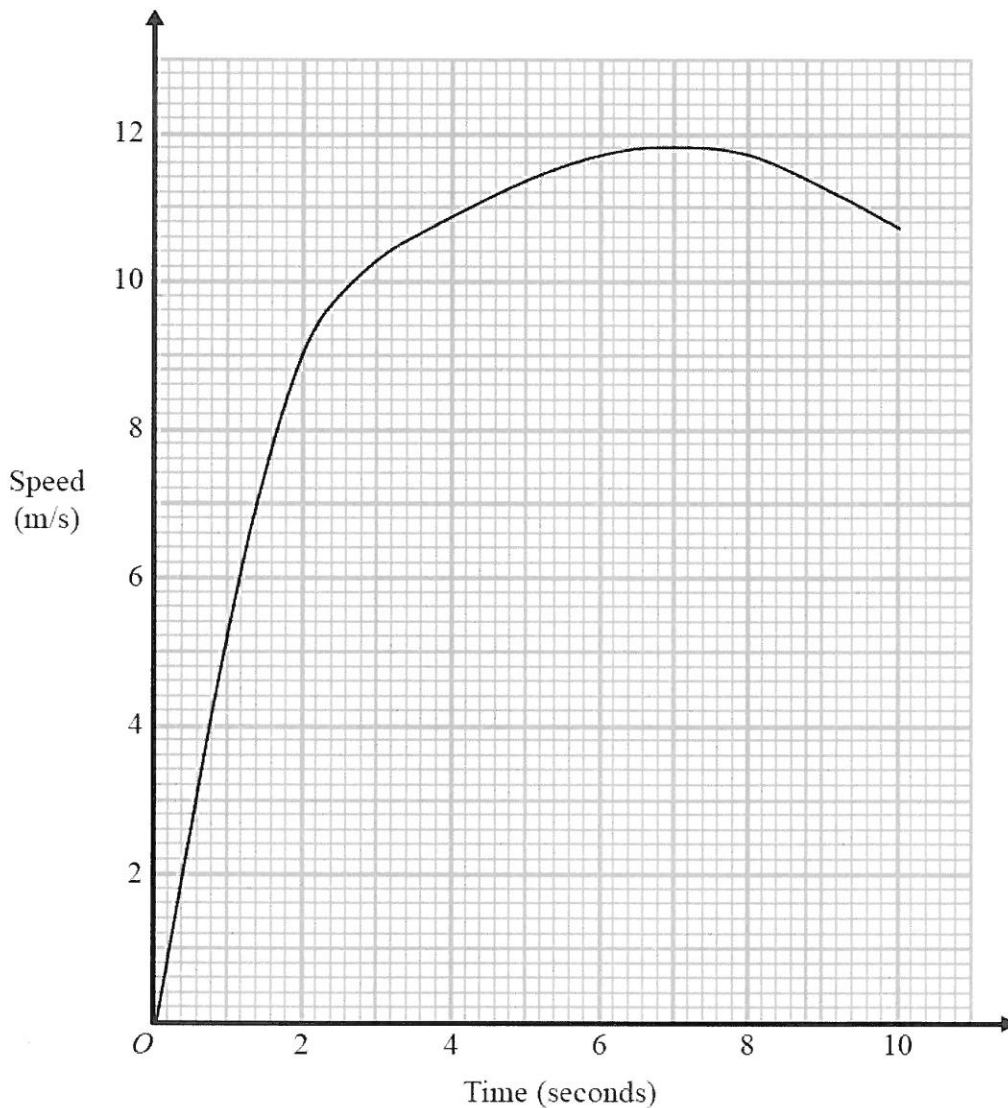
$$\therefore 10 \text{ m} = 1000 \text{ cm}$$

$$\begin{array}{l} 1 : 40 \\ \times 25 \downarrow \quad \quad \quad \downarrow \times 25 \\ 25 \quad \quad \quad 1000 \end{array}$$

..... 25 cm

(Total 2 marks)

8. Usain runs in a race.
The graph shows his speed, in metres per second (m/s), during the first 10 seconds of the race.



(a) Write down Usain's speed at 2 seconds.

.....⁹..... m/s
(a-a.1) (1)

(b) Write down Usain's greatest speed.

.....^{11.8}..... m/s
(1)

(c) Write down the time at which Usain's speed was 7 m/s.

.....^{1.4}..... seconds
(1)

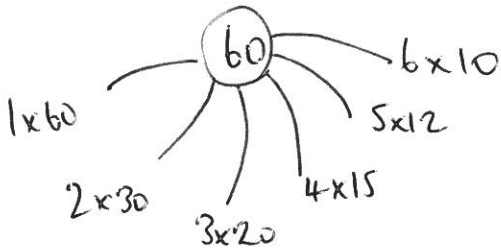
(Total 3 marks)

9. Michael writes down 4 different factors of 60

He adds the 4 factors together.

He gets a number greater than 20 but less than 35

What 4 factors could Michael have written down?

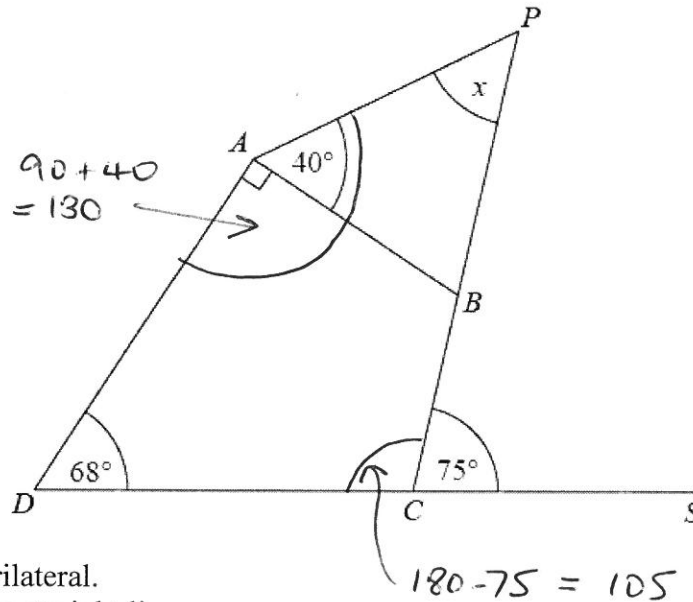


..... 5 6 10 12

(OTHERS POSSIBLE)

(Total 3 marks)

10.



$ABCD$ is a quadrilateral.
 DCS and PAB are straight lines.

- Angle $BAD = 90^\circ$
- Angle $ADC = 68^\circ$
- Angle $PAB = 40^\circ$
- Angle $PCS = 75^\circ$

ANGLES ON A STRAIGHT LINE
ADD UP TO 180°

Work out the size of the angle marked x .
Give reasons for your answer.

ANGLES IN A QUADRILATERAL ADD UP TO 360

$$68 + 130 + 105 + x = 360$$
$$303 + x = 360$$
$$x = 57^\circ$$

(Total 4 marks)

11. Mr Smith kept a record of the number of absences for each student in his class for one term. Here are his results.

0 0 0 8 4 5 5 3 2 1

- (a) Write down the mode.

.....0.....
(1)

- (b) Work out the mean.

$$0 + 0 + 0 + 8 + 4 + 5 + 5 + 3 + 2 + 1 = 28$$

$$28 \div 10 = 2.8$$

.....2.8.....
(2)

(Total 3 marks)

12. You can use this rule to work out the total cost, in pounds, of hiring a pressure washer.

Multiply the number of days by 5.4 and then add 15

Ali hires a pressure washer.
The total cost is £52.80

- (a) Work out how many days Ali hires the pressure washer for.

$$\begin{aligned} 52.80 &= \text{NUMBER OF DAYS} \times 5.4 + 15 \\ \therefore \text{NUMBER OF DAYS} \times 5.4 &= 52.80 - 15 = 37.8 \\ \therefore \text{NUMBER OF DAYS} &= \frac{37.8}{5.4} \end{aligned}$$

.....7.....days
(2)

Ben hires a pressure washer for y days.
The total cost is £ C .

- (b) Write down a formula for C in terms of y .

$$C = 5.4y + 15$$

(2)

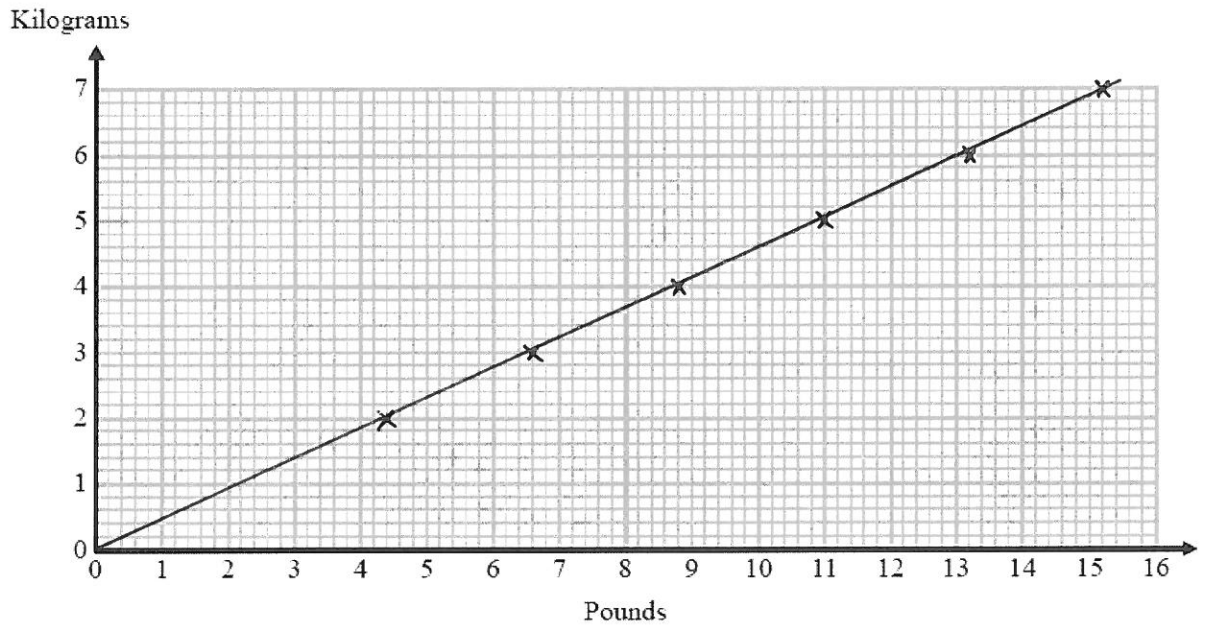
(Total 4 marks)

13. Mary works in a maternity unit.
She weighs the babies.

The table shows some weights in both pounds and kilograms.

pounds	4.4	6.6	8.8	11	13.2	15.4
kilograms	2	3	4	5	6	7

- (a) Use this table to draw a conversion graph to change between pounds and kilograms.



(2)

- (b) Change 10 pounds to kilograms.

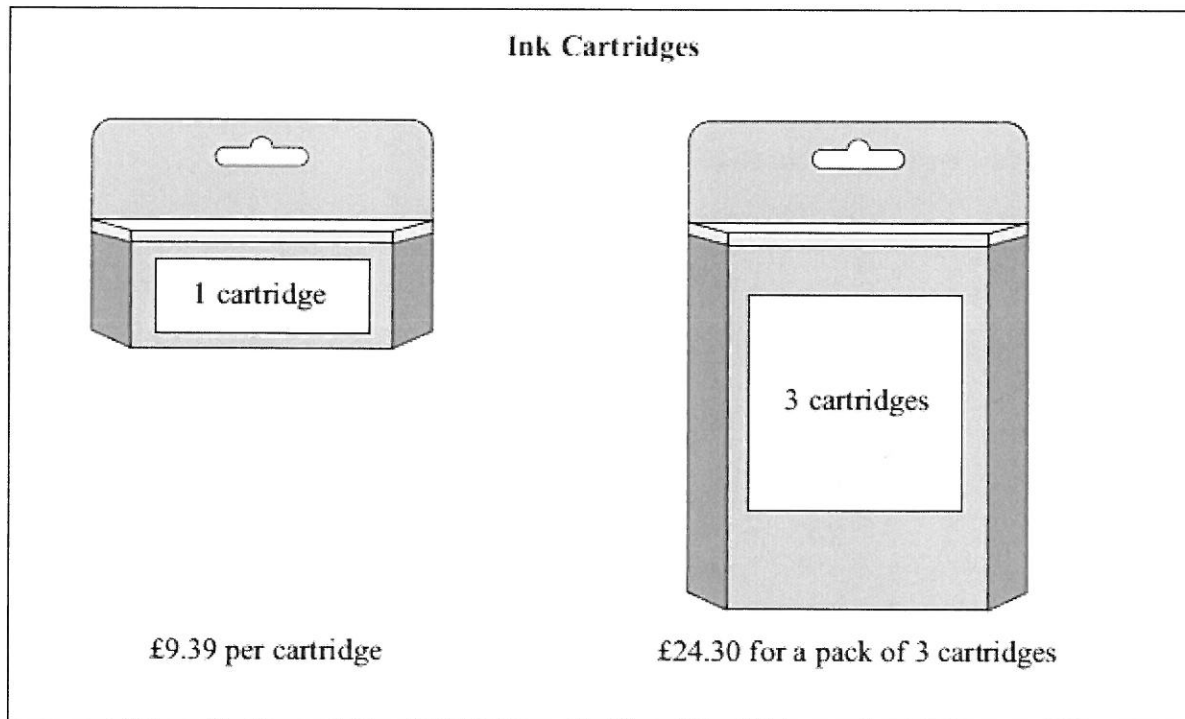
$$\begin{array}{r} \dots\dots\dots 4.6 \dots\dots\dots \text{kilograms} \\ (4.4 - 4.6) \end{array} \quad (1)$$

- (c) Change 6.5 kilograms to pounds.

$$\begin{array}{r} \dots\dots\dots 14.2 \dots\dots\dots \text{pounds} \\ (4.2 - 14.4) \end{array} \quad (1)$$

(Total 4 marks)

14. George is going to buy exactly 10 ink cartridges.



Find the difference in cost between the cheapest way and the most expensive way to buy the 10 ink cartridges.

MOST EXPENSIVE : $10 \times \pounds 9.39 = \pounds 93.90$

CHEAPEST : $3 \times \pounds 24.30 + 9.39 = \pounds 82.29$

DIFFERENCE = $93.90 - 82.29 = \pounds 11.61$

..... $\pounds 11.61$

(Total 5 marks)

15. Henri and Ray buy some flowers for their mother.

They buy

3 bunches of roses for £6.99

1 bunch of roses and 2 bunches of tulips for £4.45

(a) Work out the cost of one bunch of tulips.

$$1 \text{ BUNCH OF ROSES} = \frac{6.99}{3} = \text{£}2.33$$

$$\therefore 2 \text{ BUNCHES OF TULIPS} = 4.45 - 2.33 = \text{£}2.12$$

$$\therefore 1 \text{ BUNCH OF TULIPS} = \frac{2.12}{2} = \text{£}1.06$$

£1.06.....
(3)

Henri and Ray share the total cost of £11.44 in the ratio 5:3

(b) Work out how much Henri pays and how much Ray pays.

$$\begin{array}{ccc} 5 & : & 3 \\ \times 1.43 & \left(& \right. \\ 7.15 & & 4.29 \\ & & 11.44 \end{array} \quad \begin{array}{c} 8 \\ \downarrow \\ 11.44 \div 8 \\ = 1.43 \end{array}$$

Henri £7.15.....

Ray £4.29.....

(3)

(Total 6 marks)

16. Brian wants to go on holiday.
He is going to take out a loan of £500 to help pay for the holiday.

Brian will have to pay back the £500 plus 20% interest over 12 months.
He will pay back the same amount of money each month.

How much money will he need to pay back each month?

$$20\% \text{ OF } 500 = \pounds 100.$$

$$\therefore \text{ HAS TO PAY BACK } 500 + 100 = \pounds 600.$$

$$\text{EACH MONTH } \frac{600}{12} = \pounds 50.$$

£ 50

(Total 4 marks)

17.

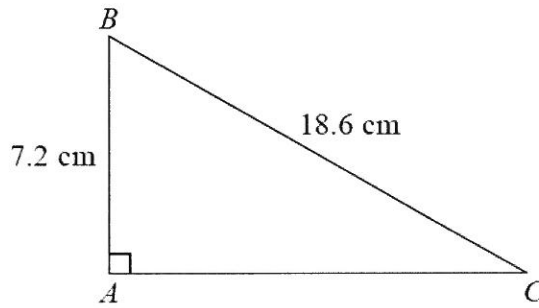


Diagram **NOT**
accurately drawn

Calculate the length of AC .
Give your answer correct to 3 significant figures.

$$\begin{aligned} AC^2 &= 18.6^2 - 7.2^2 \\ &= 294.12 \end{aligned}$$

$$\begin{aligned} \therefore AC &= \sqrt{294.12} \\ &= 17.1 \end{aligned}$$

.....17.1..... cm

(Total 3 marks)

18. Chris has two children, Beth and Amy.
Beth is 10 years older than Amy.

Chris says,

“I am twice as old as the sum of Beth’s age and Amy’s age.”

Chris is 40 years old.

How old is Amy?

AMY A

BETH A + 10

AMY + BETH 2A + 10

$$\therefore \text{CHRIS} \quad 2(2A + 10) = 4A + 20 = 40$$

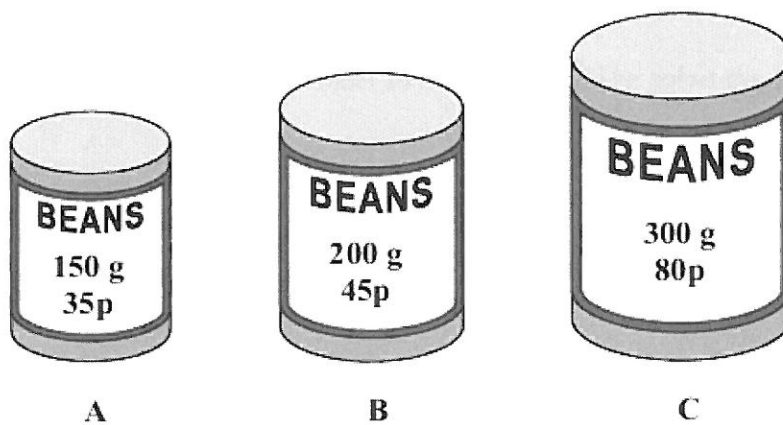
$$\therefore 4A = 20$$

$$\therefore A = 5$$

.....⁵.....years old

(Total 4 marks)

19. A shop sells tins of beans in three different sizes.



Kathy wants to buy exactly 750 g of beans.
She wants to buy the beans at the cheapest possible cost.

Work out the cheapest cost.
You must show all your working.

$$A : \frac{150}{35} = 4.29 \text{ g per pence}$$

$$B : \frac{200}{45} = 4.44 \text{ g per pence} \quad \leftarrow \text{MOST g per pence} \\ \therefore \text{CHEAPEST}$$

$$C : \frac{300}{80} = 3.75 \text{ g per pence} \quad \text{--- LEAST g per pence} \\ \therefore \text{MOST EXPENSIVE}$$

CHEAPEST WILL BE TO BUY ³ ~~2~~ ² 300g TINS + 1 150g TIN

$$\frac{3 \times 45}{\cancel{2 \times 80}} + 35 = \cancel{1.75} \text{ £1.70}$$

(Total 4 marks)

20. Joe and Ann buy some fruit from the same shop.

Joe buys 4 apples and 3 bananas for £2.50

Ann buys 3 apples and 4 bananas for £2.40

Work out the cost of

(i) one apple,

(ii) one banana.

$$4A + 3B = 250$$

$$3A + 4B = 240$$

$$16A + 12B = 1000$$

$$9A + 12B = 720$$

$$7A = 280$$

$$A = 40$$

$$4 \times 40 + 3B = 250$$

$$160 + 3B = 250$$

$$3B = 90$$

$$B = 30$$

(i) one apple 40 p

(ii) one banana 30 p

(Total 5 marks)

21. $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{even numbers}\}$

$B = \{\text{multiples of 3}\}$

(a) List the members of set B .

3, 6, 9

(1)

(b) Find $A \cup B$

2, 3, 4, 6, 8, 9, 10

(1)

(c) Find $A \cap B$

6

(1)

x is a member of \mathcal{E}

$x \in B$

$x \notin A$

(d) What are the possible values of x ?

3, 9

(2)

(Total 5 marks)

22. Neville saw this car for sale.

He got a discount of 25% off the price of the car.
He paid £7200 for the car.

Work out the price of the car before the discount.



25% off original price
Now £7200

$$\text{PAYS } 75\% = \text{£}7200$$

$$\therefore \text{PRICE BEFORE DISCOUNT} = \frac{7200}{0.75} = \text{£}9600$$

£ 9600

(Total 3 marks)

23. Keith, Ben and Liz tested a coin to find out if it was biased. They each threw the coin a number of times. They counted the number of heads and the number of tails they each got.

The table gives information about their results.

	Keith	Ben	Liz
Number of heads	12	34	57
Number of tails	28	66	243

40 100 300

- (a) Which person, Keith, Ben or Liz, will have the best estimate for the probability of getting a head on this coin? Explain your answer.

LIZ - HAS THROWN THE COIN MORE THAN THE OTHERS

.....

.....

.....

(1)

- (b) Using all the results in the table, work out an estimate for the probability that the next throw of the coin will be a head.

TOTAL NUMBER OF HEADS = 103

TOTAL THROWS = 440

∴ PROBABILITY = $\frac{103}{440}$ (= 23.4%)

$\frac{103}{440}$

.....

(2)

(Total 3 marks)

TOTAL FOR PAPER IS 80 MARKS