Questions

Q1.

Express 56 as the product of its prime factors.

....

(Total for question = 2 marks)

Q2.

Here is a list of numbers.

5   15   30   50   60   90   100   125

From the numbers in the list, write down

(i) two different numbers that add up to an even number

....

(ii) a multiple of 20

....

(iii) a factor of 45

....

(iv) a cube number

....

(Total for Question is 4 marks)

Q3.

Find the Highest Common Factor (HCF) of 24 and 60

....

(Total for question = 2 marks)

Q4.

Find the highest common factor (HCF) of 32, 48 and 72

....

(Total for question = 2 marks)

Q5.

Tom and Amy set the alarms on their phones to sound at 6.45 am.

Both alarms sound together at 6.45 am.
Tom's alarm then sounds every 9 minutes.
Amy's alarm then sounds every 12 minutes.

At what time will both alarms next sound together?

....

(Total for question = 3 marks)

Q6.

$$m = \frac{1}{ps}$$

p = 5.37 correct to 2 decimal places.
s = 2.9 correct to 1 decimal place.

Calculate the upper bound for the value for m.
You must show your working.

....

(Total for question = 3 marks)

Q7.

Aisha recorded the heights, in centimetres, of some girls.
She used her results to work out the information in this table.

Least height	142 cm
Lower quartile	154 cm
Interquartile range	17 cm
Median	162 cm
Range	40 cm

Aisha drew this box plot for the information in the table.
The box plot is **not** fully correct.

Height (centimetres)
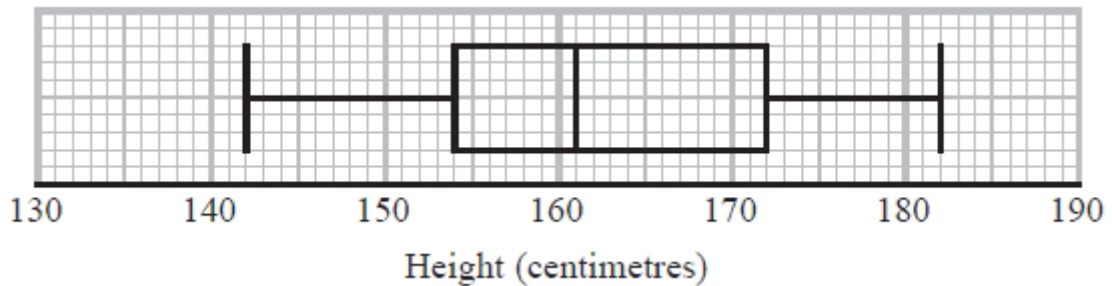
Write down the two things Aisha should do to make the box plot fully correct.

1 ....

....

....

2 ....

....

....

(Total for question = 2 marks)

Q8.

A number, *m*, is rounded to 1 decimal place.
The result is 9.4

Complete the error interval for *m*.

.... $\leqslant m <$ ....

(Total for question = 2 marks)

Q9.

A person's heart beats approximately 10^5 times each day.
A person lives for approximately 81 years.

(a) Work out an estimate for the number of times a person's heart beats in their lifetime.

Give your answer in standard form correct to 2 significant figures.

....

(2)

2×10^{12} red blood cells have a total mass of 90 grams.

(b) Work out the average mass of 1 red blood cell.

Give your answer in standard form.

.... grams

(2)

(Total for question = 4 marks)

Q10.

Work out $\dfrac{4 \times 10^9 + 3.2 \times 10^7}{1.6 \times 10^{-6}}$

Give your answer in standard form.

....

(Total for Question is 2 marks)

Q11.

Sasha drops a ball from a height of *d* metres onto the ground.

The time, *t* seconds, that the ball takes to reach the ground is given by

$$t = \sqrt{\frac{2d}{g}}$$

where *g* m/s^2 is the acceleration due to gravity.

d = 35.6 correct to 3 significant figures.
g = 9.8 correct to 2 significant figures.

(a) Write down the lower bound of *d.*

....

(1)

(b) Calculate the lower bound of *t.*
    You must show all your working.

....

(3)

(Total for Question is 4 marks)

Q12.

Franz invests £2500 for 2 years at $3\frac{1}{2}\%$ per annum compound interest.

Work out the value of his investment at the end of 2 years.

£ ....

(Total for question = 3 marks)

Q13.
Ben and Lago have some identical packets.

Ben has 20 of the packets.
The total weight of Ben's packets is 32 kg.

Lago has 25 of the packets.

Work out the total weight of Lago's packets.

.... kg

(**Total for question = 2 marks**)

Q14.
Ali invests £400 for 5 years in a savings account.
The account pays simple interest at a rate of 3.5% per year.

Work out the total amount of interest Ali gets.

£ ....

(**Total for question = 3 marks**)

Q15.
Martin and Janet are in an orienteering race.

Martin runs from checkpoint *A* to checkpoint *B*, on a bearing of 065°
Janet is going to run from checkpoint *B* to checkpoint *A*.

Work out the bearing of *A* from *B*.

....°

(**Total for question = 2 marks**)

Q16.
 Draw accurately an isosceles triangle with sides of length 8 cm, 6 cm and 6 cm.
One side of the triangle has been drawn for you.

8 cm
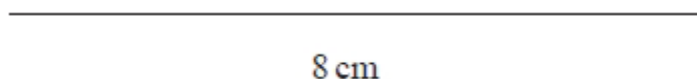
(Total for question = 2 marks)

Q17.
 Polly has a full 5 kg sack of rice.

She pours the rice from this sack into bags.
She fills as many bags as possible.

Each full bag contains 350 g of rice.

(a) How many bags did Polly fill from this sack of rice?

....

(3)

Polly assumes that the rice from two sacks will fill twice as many bags as the rice from one sack.

(b) Is Polly correct?

You must give a reason for your answer.

....

....

(1)

(Total for question = 4 marks)

Q18.

How many minutes are there in $3\frac{1}{2}$ hours?

.... minutes

(Total for question = 1 mark)

Q19.

Each exterior angle of a regular polygon is 15°

Work out the number of sides of the polygon.

....

(Total for question = 2 marks)

Q20.

Diagram **NOT** accurately drawn
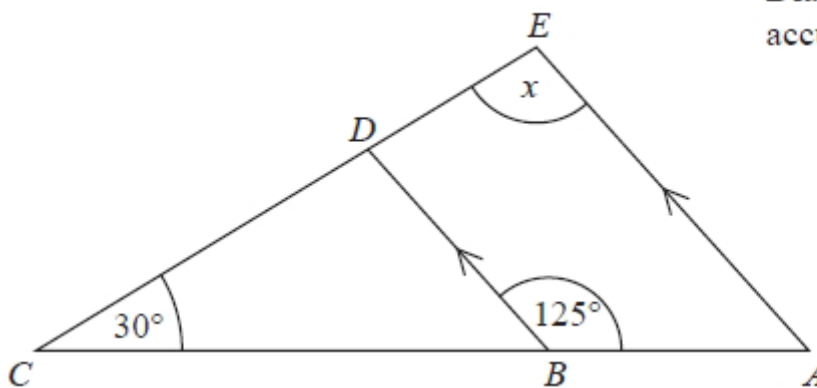
ABC and *EDC* are straight lines.
AE and *BD* are parallel.
Angle *ABD* = 125°
Angle *BCD* = 30°

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

(Total for question = 4 marks)

Q21.
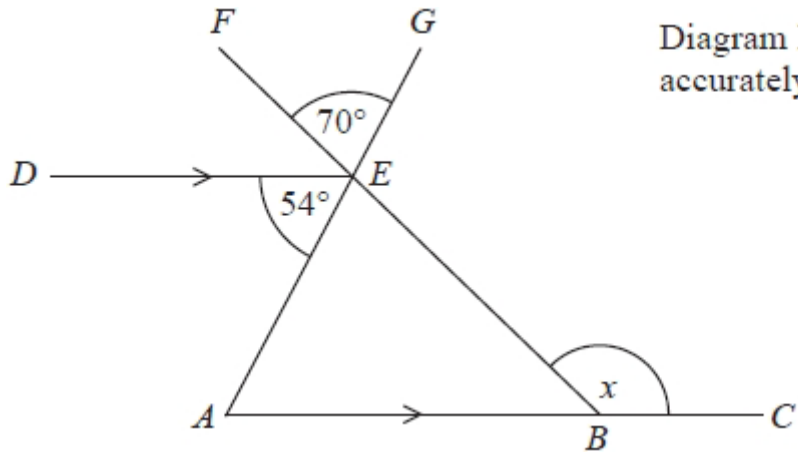
Diagram **NOT**
accurately drawn

ABC and *DE* are parallel lines.
AEG and *BEF* are straight lines.

Angle *AED* = 54°
Angle *FEG* = 70°

Work out the size of the angle marked *x*.
Give a reason for each stage of your working.
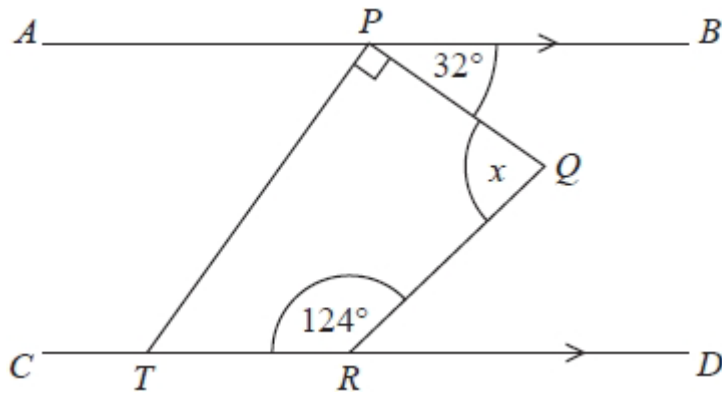
(Total for question = 4 marks)

Q22.

Diagram **NOT** accurately drawn

APB is parallel to *CTRD*.
PQRT is a quadrilateral.

Work out the size of the angle marked *x*.
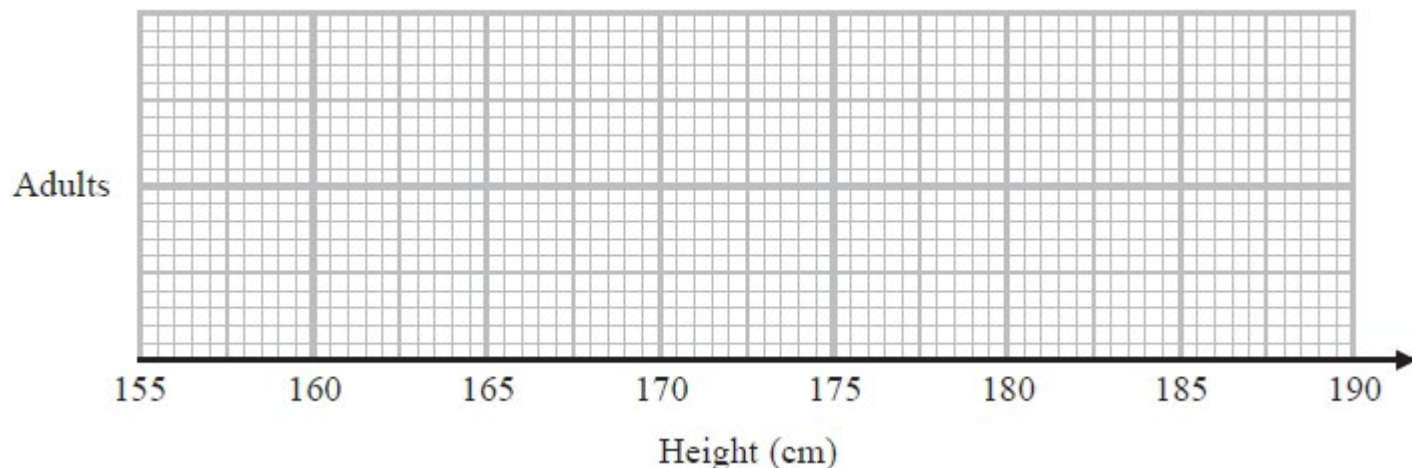You must show your working.

.... °

(Total for question = 4 marks)

Q23.

The table shows some information about the heights of a group of adults.
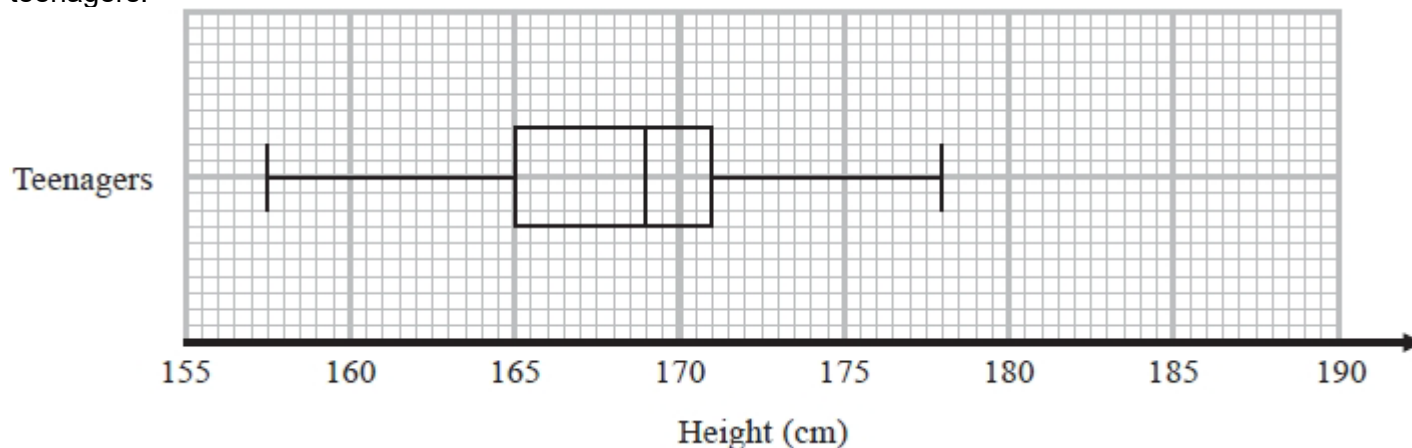
least height	169 cm
greatest height	186 cm
median	177 cm
lower quartile	174 cm
upper quartile	180 cm

(a) On the grid, draw a box plot for the information in the table.

Adults

155   160   165   170   175   180   185   190

Height (cm)

(3)

The box plot below shows the distribution of the heights of a group of teenagers.

Teenagers

155   160   165   170   175   180   185   190

Height (cm)

(b) Compare the distribution of the heights of the adults with the distribution of the heights of the teenagers.

....

....

....
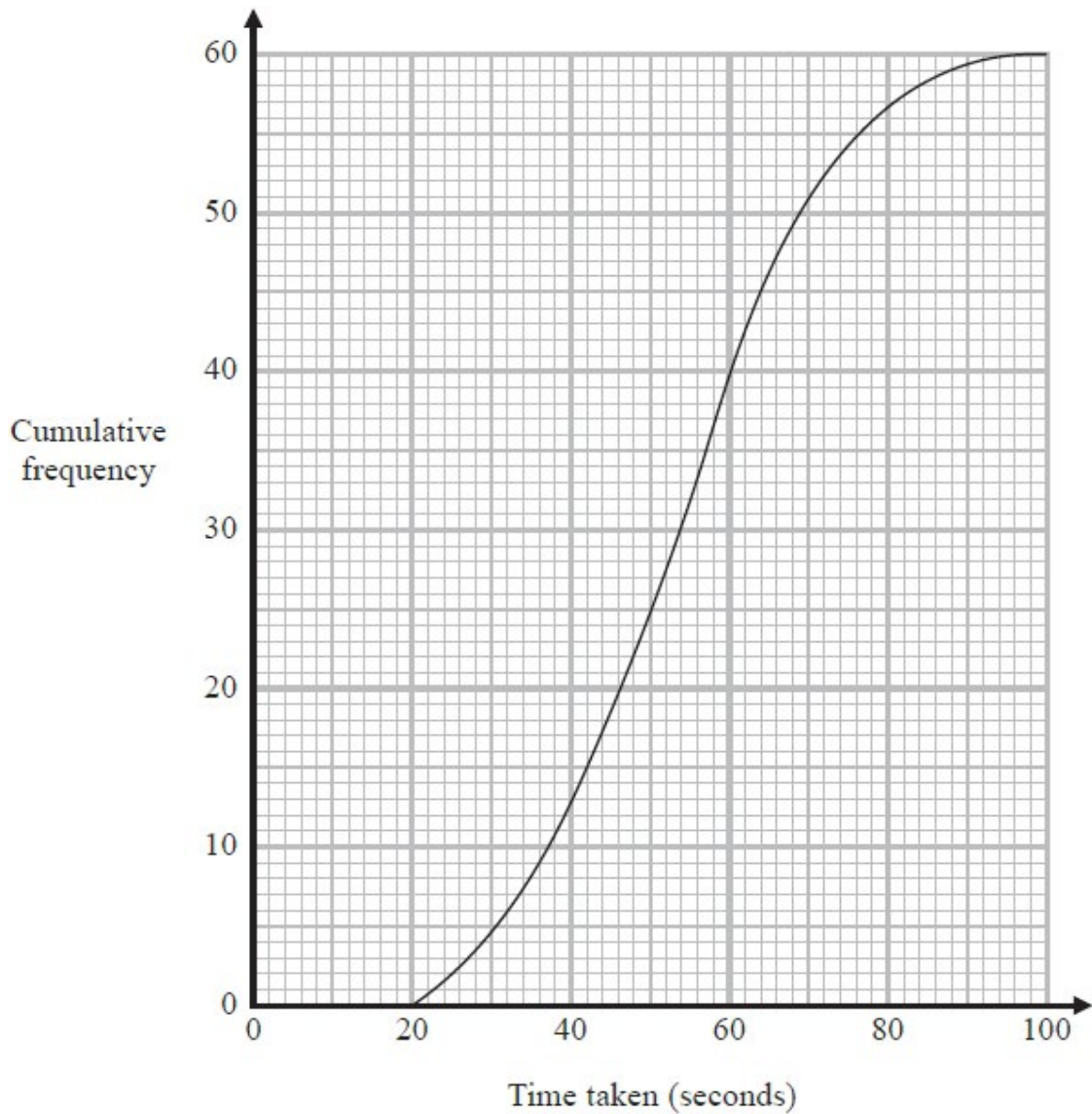
(2)

(Total for question = 5 marks)

Q24.

In an experiment, 60 students each completed a puzzle.

The cumulative frequency graph shows information about the times taken for the 60 students to complete the puzzle.
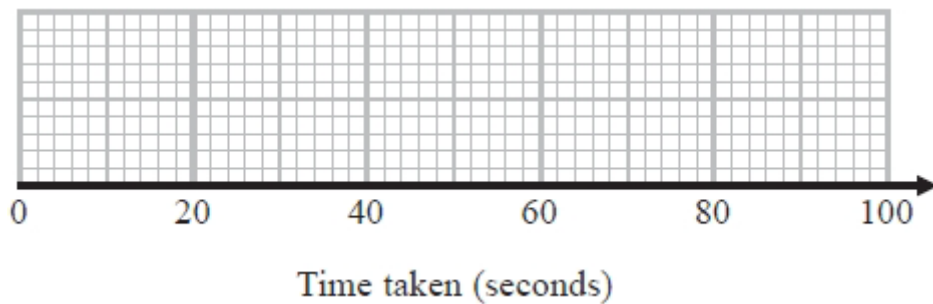

Cumulative frequency

Time taken (seconds)

For these 60 students,

the least time taken was 24 seconds
the greatest time taken was 96 seconds.

On the grid below, draw a box plot for the distribution of the times taken by the students.

Time taken (seconds)

(Total for question = 3 marks)

Q25.
The box plot shows information about the length of time, in minutes, some people waited to see a doctor at a hospital on Monday.

Waiting time (minutes)
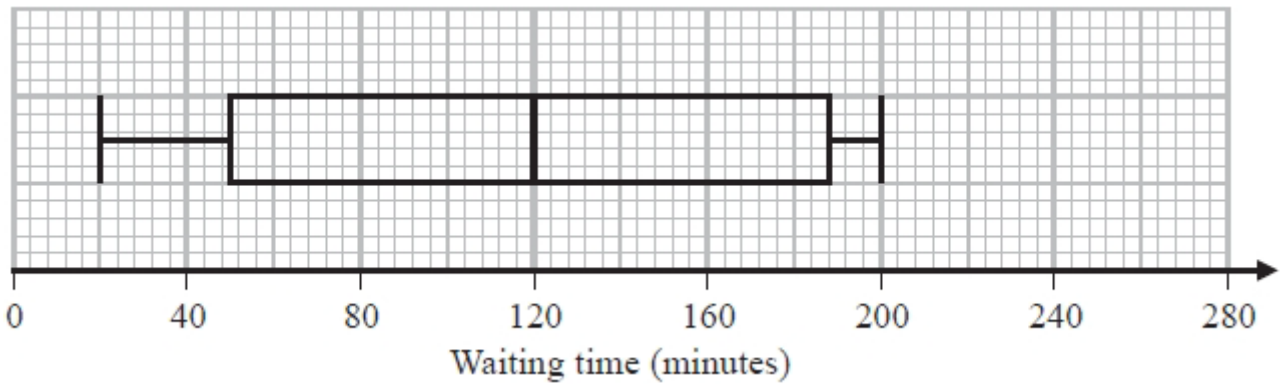
(a) Work out the interquartile range of the information in the box plot.

.... minutes

(2)

Becky says,

"50% of the people waited for at least 2 hours."

(b) Is Becky correct?

Explain why.

....

....

....

(1)

The table gives information about the length of time, in minutes, some people waited to see a doctor at the same hospital on Tuesday.

	Waiting time (minutes)
Shortest time	20
Lower quartile	50
Median	100
Upper quartile	140
Longest time	210

Becky was asked to compare the distribution of the lengths of times people waited on Monday with the distribution of the lengths of times people waited on Tuesday.

She wrote,

"People had to wait longer on Tuesday than on Monday."

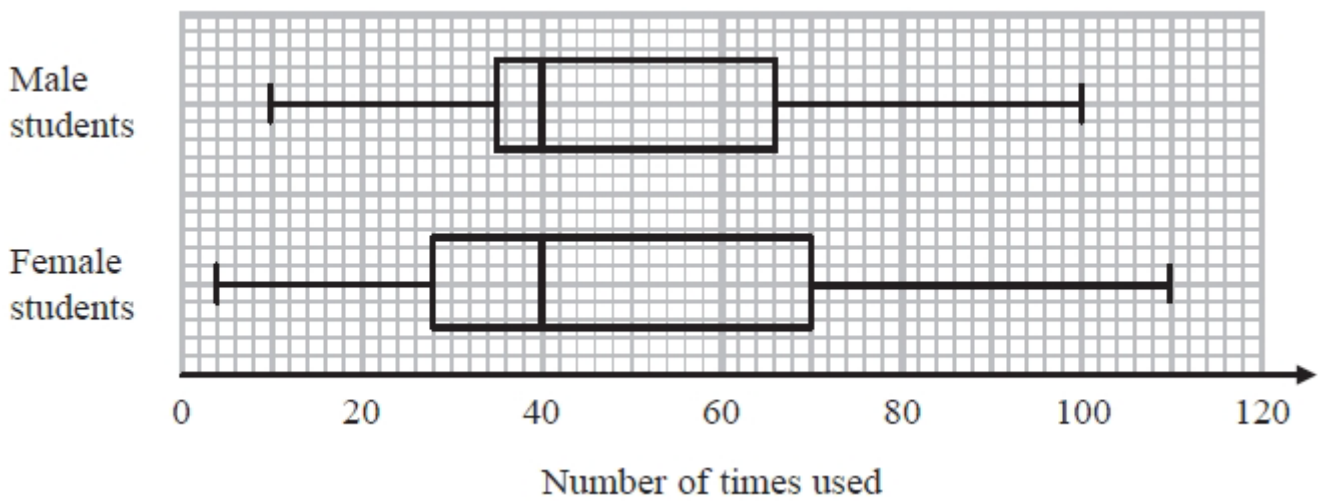(c) Give **one** reason why Becky may be wrong.

....

....

....

(1)

(Total for question = 4 marks)

Q26.
*Some students were asked how many times they each used their mobile phones last week.

The box plots give information about the male students' answers and about the female students' answers.

Number of times used

Compare the two distributions represented by the box plots.

....

....

....

....

(Total for question = 3 marks)

Q27.
A number, d, is rounded to 1 decimal place.
The result is 12.7

Complete the error interval for d.

.... ≤ d < ....

(Total for question = 2 marks)

Q28.

Last week, 73% of the tickets sold at a cinema were adult tickets.

(a) What percentage of the tickets sold were **not** adult tickets?

.... %

(1)

Some people watched a film at the cinema.

number of adults : number of children = 2 : 5

(b) What fraction of these people were adults?

....

(1)

On Friday,

500 people watched a film at the cinema.
70% of these people were children.

On Saturday,

720 people watched the film at the cinema.

$\dfrac{5}{8}$ of these people were children.

Kasim thinks more children watched the film on Friday than on Saturday.

(c) Is Kasim correct?

You must show how you get your answer.

(3)

(Total for question = 5 marks)

Q29.

Chris, Debbie and Errol share some money in the ratio 3 : 4 : 2
Debbie gets £120

Chris then gives some of his share to Debbie and some of his share to Errol.
The money that Chris, Debbie and Errol each have is now in the ratio 2 : 5 : 3

How much money did Chris give to Errol?

£ ....

(Total for question = 4 marks)

Q30.

(a) Write (9×10^4) : (4.5×10^6) in the form 1 : n where n is an integer.

....

(2)

(b) Write the following numbers in order of size.

Start with the smallest number.

$$5.625 \times 10^4 \qquad 5625 \qquad 56250 \times 10^{-3} \qquad 0.005625 \times 10^5$$

....

(2)

(Total for question = 4 marks)

Q31.

There are only red counters, blue counters and green counters in a bag.

number of red counters : number of blue counters : number of green counters = 2 : 16 : 7

What fraction of the counters in the bag are green counters?

....

(Total for question = 2 marks)