

- 16 In September Sharon paid £565 for some books.
She sold all the books for a total of £780

In October Sharon bought and sold some more books.

The total profit she made in October was 13% greater than the total profit she made in September.

In November Sharon wants to pay a bill of £30

Sharon thinks that the 13% extra profit she made in October will be enough to pay this bill.

Is Sharon correct?

You must show all your working.

$$\text{September Profit} : 780 - 565 = \pounds 215$$

$$\text{October Profit} : 215 \times 1.13 = \pounds 242.95$$

$$\begin{array}{r} \text{Difference} : 242.95 \\ \quad \quad \quad 215 \\ \hline \quad \quad \quad 27.95 \end{array}$$

Sharon is incorrect she will
be £2.05 short

$$\text{Difference } 30 - 27.95 = 2.05$$

(Total for Question 16 is 3 marks)

17 Solve $5 = \frac{100}{x}$

$$5x = 100$$

$$x = \frac{100}{5} = 20$$

$$x = 20$$

(Total for Question 17 is 1 mark)

- 18 Write an integer in the box to make the statement true.

$$\frac{2}{7} > \frac{6}{\boxed{28}} \quad \times 3$$

Explain why the statement is true.

Since $\frac{2}{7} = \frac{6}{21}$ any integer > 21 would make the fraction smaller.

(Total for Question 18 is 2 marks)



- 19 A television has a normal price of £675
In a sale the price is reduced by 32%.

Work out the price of the television in the sale.

① $675 \times (1 - 0.32) = 459$

or

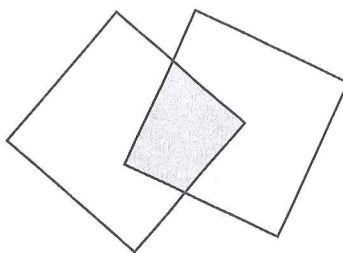
② $\frac{675}{100} \times 32 = 216$

$$\begin{array}{r} 675 \\ 216 - \\ \hline 459 \end{array}$$

£ 459

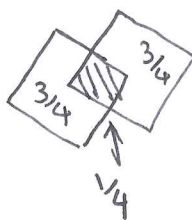
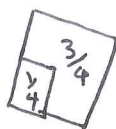
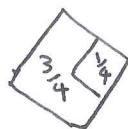
(Total for Question 19 is 3 marks)

- 20 The diagram shows a shape made by overlapping two identical squares.



The area of the shaded region is 25% of the area of each square.

Work out what fraction of the area of the whole shape is shaded.



$\frac{1}{4}$ out of $\frac{7}{4}$ is shaded

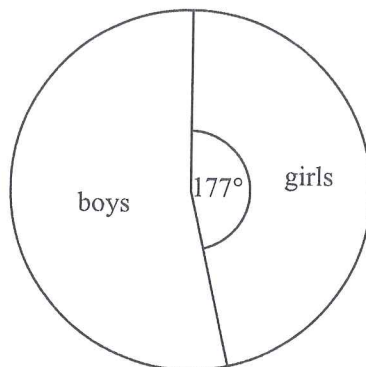
$$\frac{\frac{1}{4}}{\frac{7}{4}} = \frac{1}{4} \times \frac{4}{7} = \frac{1}{7}$$

(Total for Question 20 is 3 marks)



21 There are 240 students in Year 7 at a school.

The pie chart shows the proportion of boys and the proportion of girls in Year 7



There are 8 more girls in Year 8 than in Year 7
There are 32 fewer boys in Year 8 than in Year 7

Andy draws a pie chart to show the proportion of boys and the proportion of girls in Year 8

Work out the angle of the sector in Andy's pie chart that represents girls.

$$\text{Year 7 : Girls } \frac{177}{360} \times 240 = 118$$

$$\text{Boys } 240 - 118 = 122$$

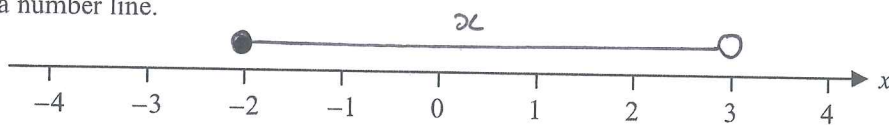
$$\begin{array}{rcl} \text{Year 8 : } & 118 + 8 = 126 & \text{Girls} \\ & 122 - 32 = 90 & \text{boys} \\ & \hline & 216 & \text{Total} \end{array}$$

$$\frac{126}{216} \times 360 = 210^\circ$$

(Total for Question 21 is 4 marks)



22 Here is a number line.



(a) On this number line, show the inequality $-2 \leq x < 3$

(2)

(b) Solve $5n + 3 > 27$

$$5n > 24$$

$$n > \frac{24}{5}$$

(2)

(Total for Question 22 is 4 marks)



S 5 2 6 2 5 A 0 1 5 2 4

23 There are 60 students at a college.

20 students study both French and Spanish.

13 students study French but not Spanish.

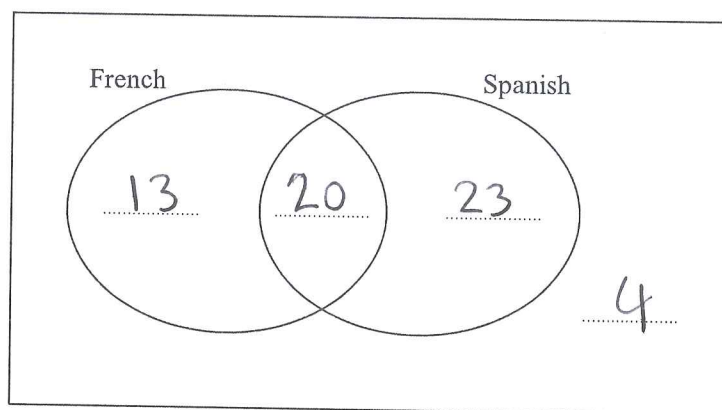
A total of 43 students study Spanish.

(a) Complete the Venn diagram for this information.

$$\begin{array}{r} 43 - \\ 20 \\ \hline 23 \end{array}$$

$$\begin{array}{r} 13 \\ 20 \\ 23 + \\ \hline 56 \end{array}$$

$$\begin{array}{r} 60 - \\ 56 \\ \hline 4 \end{array}$$



(3)

One of the students at the college is to be selected at random.

(b) Write down the probability that this student studies neither French nor Spanish.

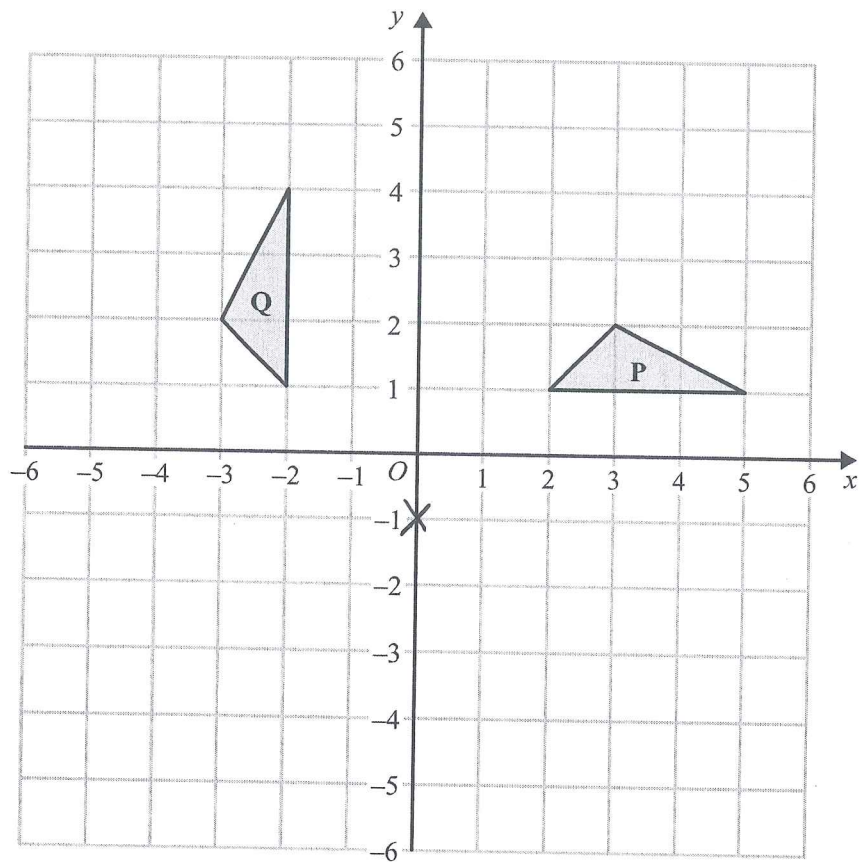
$$\frac{4}{60}$$

(1)

(Total for Question 23 is 4 marks)



24



Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

Rotation $\frac{1}{4}$ turn (90°) anti-clockwise, centre $(0, -1)$

(Total for Question 24 is 2 marks)



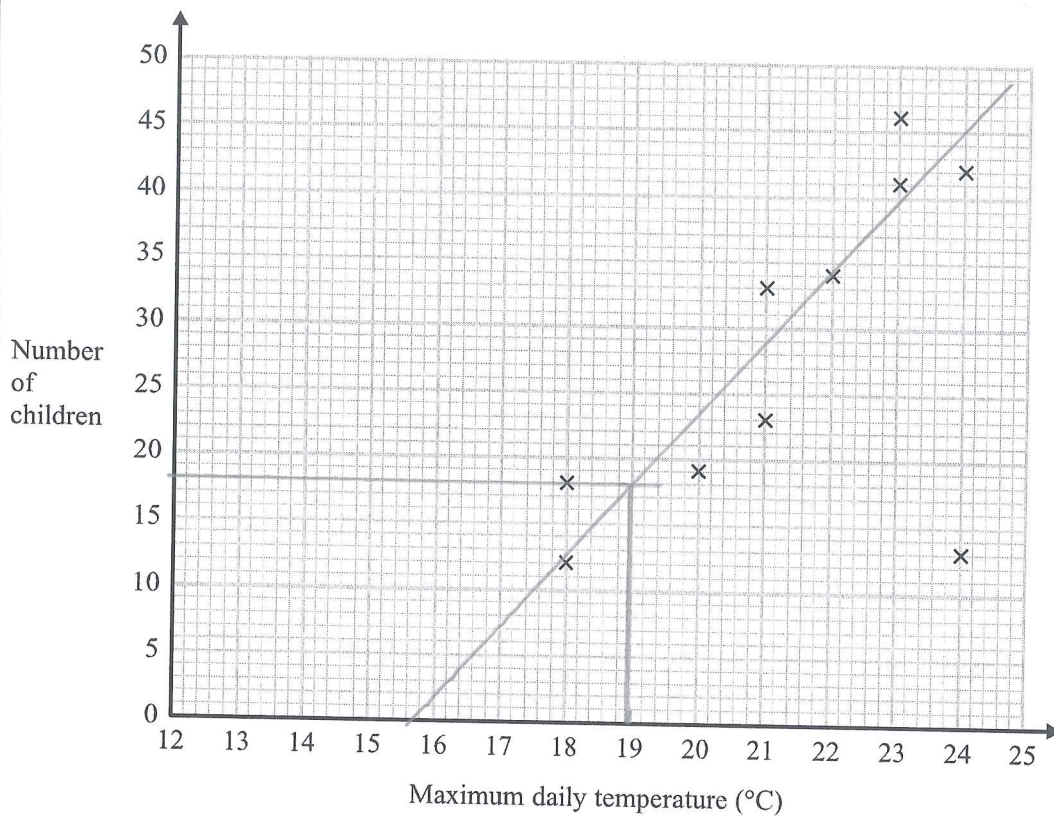
S 5 2 6 2 5 A 0 1 7 2 4

17

Turn over ►

- 25 Jean records the maximum daily temperature each day for 10 days.
She also records the number of children going to a paddling pool for each of these days.

She draws this scatter graph for her information.



Jean's information for one of these days is an outlier on the scatter graph.

- (a) Give a possible reason for this.

Children were busy doing their maths homework so did not go, it could have rained/thunderstorm etc

(1)

- (b) What type of correlation does the scatter graph show?

positive

(1)



On the 11th day, the maximum daily temperature was 19°C .

- (c) Write down an estimate for the number of children going to the paddling pool on the 11th day.

estimate from line of best fit

18 (15-25)

(1)

It would not be sensible to use the scatter graph to predict the number of children going to the paddling pool on a day when the maximum daily temperature was 13°C .

- (d) Give a reason why.

extrapolation is unreliable. The data is out of range of known values.

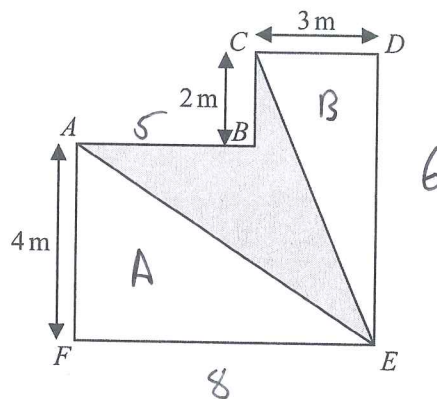
(1)

(Total for Question 25 is 4 marks)



S 5 2 6 2 5 A 0 1 9 2 4

26 The diagram shows a shape $ABCDEF$.



All the corners of the shape are right angles.
The perimeter of the shape is 28 m.

Work out the area of $ABCE$ shown shaded on the diagram.

Missing Lengths : $DE = 4 + 2 = 6$

$$4 + 6 + 2 + 3 = 15 \quad 28 - 15 = 13$$

$$13 + 3 = 16 \quad \text{so } AB + CD = 8 \quad \& \quad FE = 8$$

$$AB = 5$$

$$\text{Area } A = \frac{4 \times 8}{2} = 16 \quad \text{Area } B = \frac{3 \times 6}{2} = 9$$

$$\text{Total Area} = 4 \times 8 + 3 \times 2 = 38$$

$$\text{Area of Shaded region} = 38 - 9 - 16 = 13$$

$$13 \text{ m}^2$$

(Total for Question 26 is 5 marks)



27 Solve the simultaneous equations

$$4x + y = 10 \quad (1)$$

$$x - 5y = 13 \quad (2)$$

$$(1) \times 5 =$$

$$20x + 5y = 50$$

$$(1) + (2) =$$

$$21x = 63$$

$$x = 3$$

Sub x into (2)

$$3 - 5y = 13$$

$$5y = -10$$

$$y = -2$$

$$x = 3$$

$$y = -2$$

(Total for Question 27 is 3 marks)

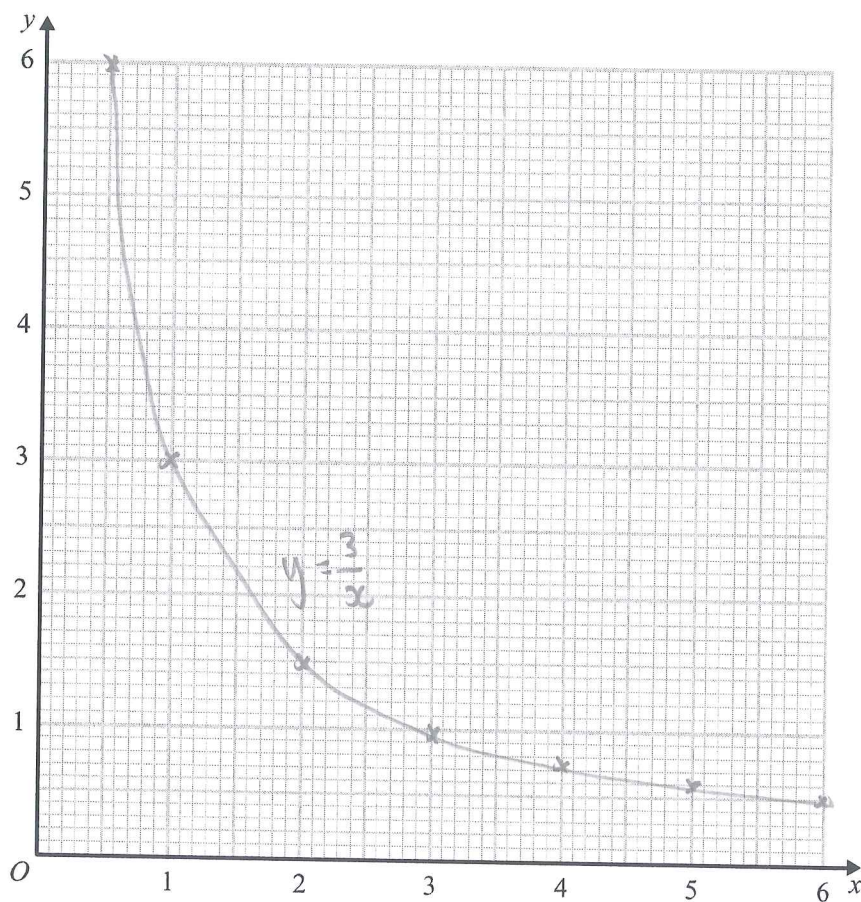


28 (a) Complete the table of values for $y = \frac{3}{x}$

x	0.5	1	2	3	4	5	6
y	6	3	1.5	1	0.75	0.6	0.5

(2)

(b) On the grid, draw the graph of $y = \frac{3}{x}$ for values of x from 0.5 to 6



(2)

(Total for Question 28 is 4 marks)



- 29 Samir invests £350 in a savings account.
He gets 2% per annum compound interest.

How much money will Samir have in the account at the end of 3 years?

$$350 \times 1.02^3 = 371.4228$$

£ 371.42

(Total for Question 29 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS



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