Number
Difficulty: Medium

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 1

Time allowed: **75 minutes**

Score: **/64**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980) ~~Assembled by A*S~~

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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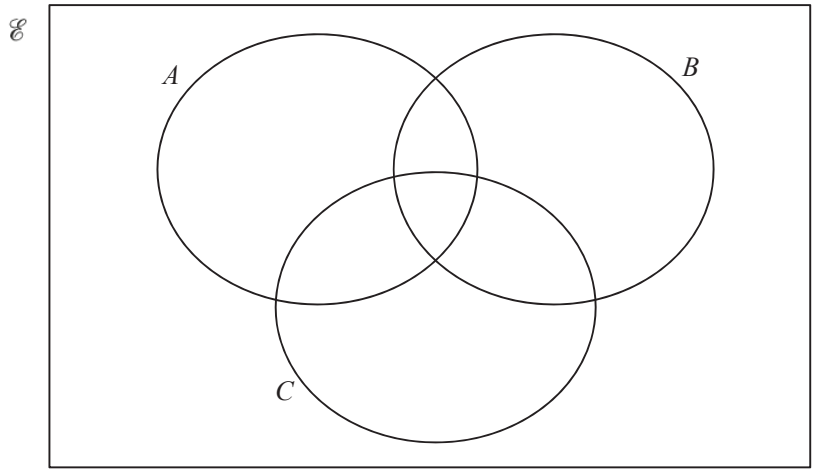
$\mathscr{E} = \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30\}$
$A = \{ x : x \text{ is a multiple of } 3\}$
$B = \{ x : x \text{ is prime}\}$
$C = \{ x : x \text{ G } 25\}$

(a) Complete the Venn diagram.



[4]

(b) Use set notation to complete the statements.

(i) 26 ..... B [1]

(ii) $A \cap B =$ ..... [1]

(c) List the elements of $B \cup (C \cap A)$. [2]

(d) Find

(i) n(C), [1]

(ii) n (B ' $\cup$ ($B \cap C$)) [1]

(e) $A \cap C$ is a subset of $A \cup C$.

Complete this statement using set notation. [1]

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(a) (i) Divide \$105 in the ratio 4 : 3. [2]

(ii) Increase \$105 by 12%. [2]

(iii) In a sale the original price of a jacket is reduced by 16% to \$105.

Calculate the original price of the jacket. [3]

(b) Jakob invests \$500 at a rate of 2% per year compound interest.
Claudia invests \$500 at a rate of 2.5% per year simple interest.

Calculate the difference between these two investments after 30 years.
Give your answer in dollars correct to the nearest cent. [6]

(c) Michel invests $\$P$ at a rate of 3.8% per year compound interest.
After 30 years the value of this investment is \$1469.

Calculate the value of P. [3]

(d) The population of a city increases exponentially at a rate of x% **every 5 years**.
In 1960 the population was 60 100.
In 2015 the population was 120 150.

Calculate the value of x. [3]

Question 3

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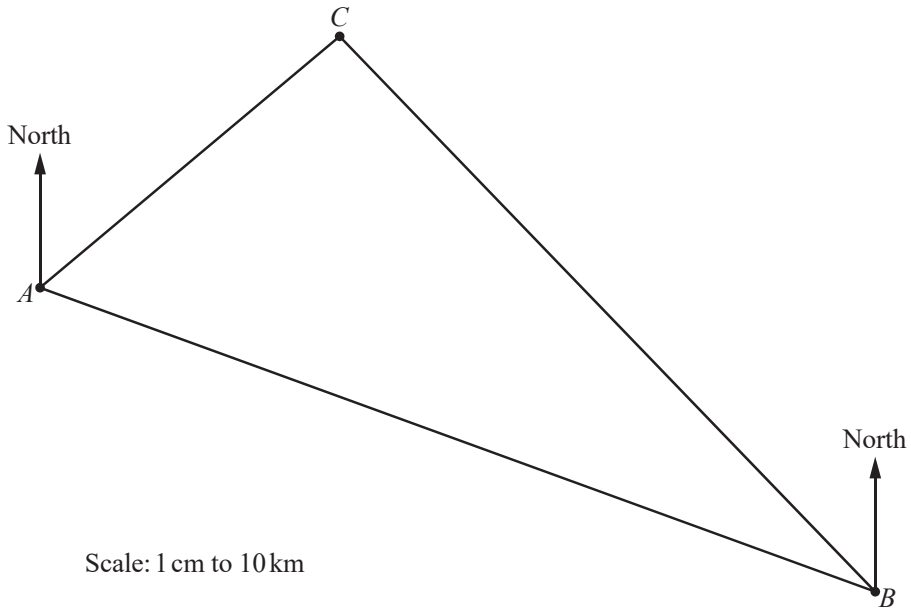
The scale drawing shows the positions of three towns A, B and C on a map.
The scale of the map is 1 centimetre represents 10 kilometres.



(a) Find the actual distance AB. [1]

(b) Measure the bearing of A from B. [1]

(c) Write the scale 1 cm to 10 km in the form $1 : n$. [1]

(d) On the scale drawing, a lake inside the national park has area $0.4\,\text{cm}^2$.

Calculate the actual area of the lake. [2]

Question 4

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(a) Kolyan buys water for $2.60 .
He also buys biscuits.

(i) The ratio cost of biscuits : cost of water = 3 : 2.

Find the cost of the biscuits. [2]

(ii) Kolyan has $9 to spend.

Work out the total amount Kolyan spends on water and biscuits as a fraction of the $9.
Give your answer in its lowest terms. [2]

(iii) The $9 is 62.5% less than the amount Kolyan had to spend last week.

Calculate the amount Kolyan had to spend last week. [3]

(b) Priya buys a bicycle for $250.
Each year the value of the bicycle decreases by 8% of its value at the beginning of that year.

Calculate the value of Priya's bicycle after 10 years.
Give your answer correct to the nearest dollar. [3]

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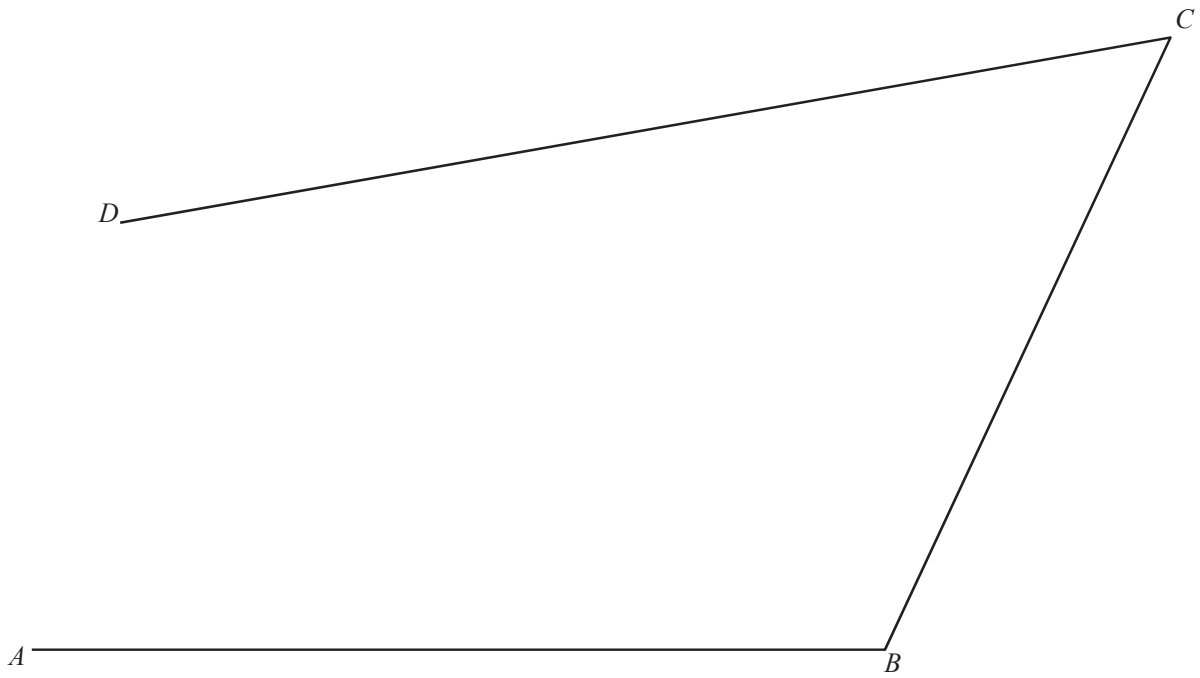
The diagram is a scale drawing of three straight roads, AB, BC and CD.
The scale is 1 : 5000.



Scale 1 : 5000

Find the actual length of the road BC.
Give your answer in metres. [2]

Question 6

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(a) (i) Eduardo invests $640 at a rate of 2% per year compound interest.

Show that, at the end of 6 years, Eduardo has $721, correct to the nearest dollar. [2]

(ii) Manuela also invests $640.
At the end of 4 years, Manuela has $721.

Find the yearly compound interest rate.

[4]

(b) Carlos buys a motor scooter for $1200.
Each year the value of the scooter decreases by 10% of its value at the beginning of that year.

Find the value of the scooter after 3 years. [2]

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(a) x is an integer.

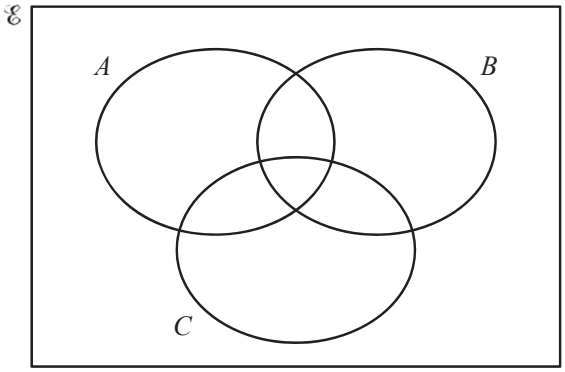
$\mathscr{E} = \{x: 1 \leqslant x \leqslant 10\}$

$A = \{x: x \text{ is a factor of } 12\}$

$B = \{x: x \text{ is an odd number}\}$

$C = \{x: x \text{ is a prime number}\}$

(i) Complete the Venn diagram to show this information.



[3]

(ii) Use set notation to complete each statement.

6 ..... A

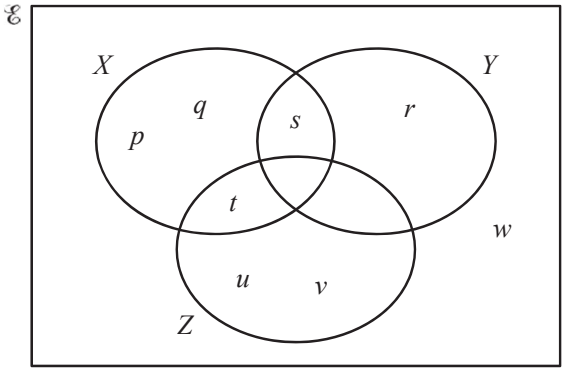
$A \cap B \cap C =$ .....

$A \cap A' =$ .....

[3]

(iii) Find n(B). [1]

(b)



(i) Use set notation to complete the statement.

$\{u, v\}$ ..... Z [1]

(ii) Shade $X \cap (Z \cup Y)'$. [1]

Number
Difficulty: Medium

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 2

Time allowed: **93 minutes**

Score: **/81**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
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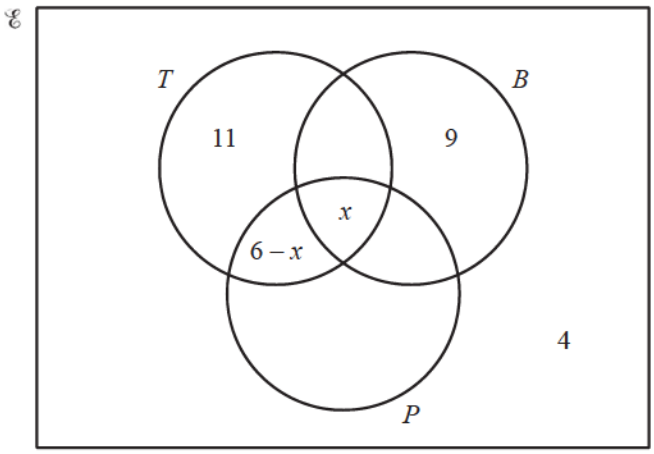


In the Venn diagram, $\mathscr{E}$ = {children in a nursery}

B = {children who received a book for their birthday}
T = {children who received a toy for their birthday}
P = {children who received a puzzle for their birthday}

x children received a book and a toy and a puzzle.
6 children received a toy and a puzzle.

(a) 4 children received a book and a toy.
5 children received a book and a puzzle.
7 children received a puzzle but not a book and not a toy.

Complete the Venn diagram above. [3]

(b) There are 40 children in the nursery.

Using the Venn diagram, write down and solve an equation in x. [3]

(c) Work out

(i) the probability that a child, chosen at random, received a book but not a toy and not a puzzle, [1]

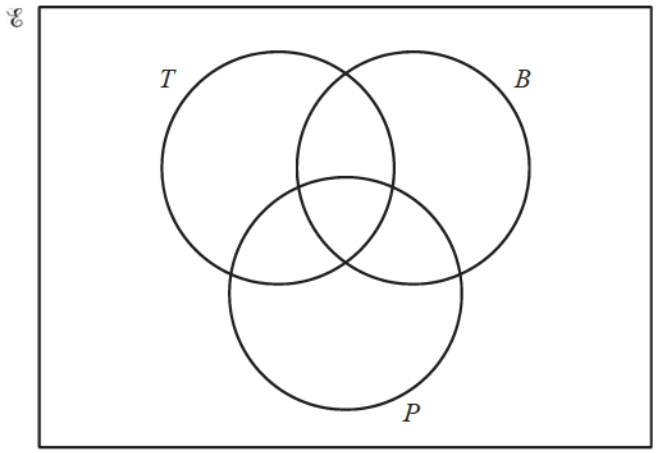
(ii) the number of children who received a book and a puzzle but not a toy, [1]

(iii) $n(B)$, [1]

(iv) $n(B \cup P)$, [1]

(v) $n(B \cup T \cup P)'$. [1]

(d)



Shade the region $B \cap (T \cup P)'$. [1]

Question 2

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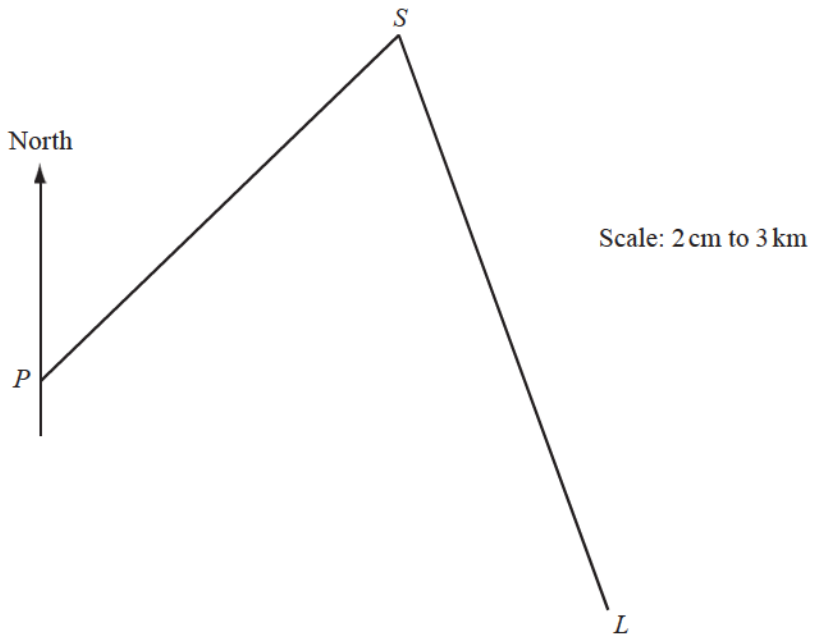

In the scale drawing, P is a port, L is a lighthouse and S is a ship.
The scale is 2 centimetres represents 3 kilometres.

(a) Measure the bearing of S from P. [1]

(b) Find the actual distance of S from L. [2]

(c) The bearing of L from S is 160°.

Calculate the bearing of S from L. [1]

(d) Work out the scale of the map in the form $1 : n$. [2]

(e) The lighthouse stands on an island of area $1.5\,\text{cm}^2$ on the scale drawing.

Work out the actual area of the island. [2]

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Jane and Kate share \$240 in the ratio 5 : 7 .

(a) Show that Kate receives \$140. [2]

(b) Jane and Kate each spend \$20.

Find the new ratio Jane's remaining money : Kate's remaining money.
Give your answer in its simplest form. [2]

(c) Kate invests \$120 for 5 years at 4% per year simple interest.

Calculate the total amount Kate has after 5 years. [3]

(d) Jane invests \$80 for 3 years at 4% per year compound interest.

Calculate the total amount Jane has after 3 years.
Give your answer correct to the nearest cent. [3]

(e) An investment of \$200 for 2 years at 4% per year compound interest is the same as an investment of \$200 for 2 years at r % per year simple interest.

Find the value of r. [3]

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In July, a supermarket sold 45 981 bottles of fruit juice.

(a) The cost of a bottle of fruit juice was \$1.35 .

Calculate the amount received from the sale of the 45981 bottles.
Give your answer correct to the nearest hundred dollars. [2]

(b) The number of bottles sold in July was 17% more than the number sold in January.

Calculate the number of bottles sold in January. [3]

(c) There were 3 different flavours of fruit juice.
The number of bottles sold in each flavour was in the ratio apple: orange : cherry = 3 : 4 : 2.
The total number of bottles sold was 45 981.

Calculate the number of bottles of orange juice sold. [2]

(d) One bottle contains 1.5 litres of fruit juice.

Calculate the number of 330 ml glasses that can be filled completely from one bottle. [3]

(e) $\frac{5}{9}$ of the 45981 bottles are recycled.

Calculate the number of bottles that are recycled. [2]

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David sells fruit at the market.

(a) In one week, David sells 120 kg of tomatoes and 80 kg of grapes.

(i) Write 80 kg as a fraction of the total mass of tomatoes and grapes.
Give your answer in its lowest terms. [1]

(ii) Write down the ratio mass of tomatoes: mass of grapes.
Give your answer in its simplest form. [1]

(b) (i) One day he sells 28 kg of oranges at \$1.56 per kilogram.
He also sells 35 kg of apples.
The total he receives from selling the oranges and the apples is \$86.38 .

Calculate the price of 1 kilogram of apples. [2]

(ii) The price of 1 kilogram of oranges is \$1.56 .
This is 20% more than the price two weeks ago.

Calculate the price two weeks ago. [3]

(c) On another day, David received a total of \$667 from all the fruit he sold.
The cost of the fruit was \$314.20 .
David worked for $10\frac{1}{2}$ hours on this day.

Calculate David's rate of profit in dollars per hour. [2]

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(a) One day, Maria took 27 minutes to walk 1.8 km to school.
She left home at 07 48.

(i) Write down the time Maria arrived at school. [1]

(ii) Show that Maria's average walking speed was 4 km/h. [2]

(b) Another day, Maria cycled the 1.8 km to school at an average speed of 15 km/h.

(i) Calculate the percentage **increase** that 15 km/h is on Maria's walking speed of 4 km/h. [3]

(ii) Calculate the percentage **decrease** that Maria's cycling time is on her walking time of 27 minutes. [3]

(iii) After school, Maria cycled to her friend's home.
This took 9 minutes, which was 36% of the time Maria takes to walk to her friend's home.

Calculate the time Maria takes to walk to her friend's home. [2]

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A tennis club has 560 members.

(a) The ratio men : women : children = 5 : 6 : 3.

(i) Show that the club has 240 women members. [2]

(ii) How many members are children? [1]

(b) $\frac{5}{8}$ of the 240 women members play in a tournament.

How many women members do **not** play in the tournament? [2]

(c) The annual membership fee in 2013 is \$198 for each adult and \$75 for each child.

(i) Calculate the total amount the 560 members pay in 2013. [2]

(ii) The adult fee of \$198 in 2013 is 5.6% more than the fee in 2012.

Calculate the adult fee in 2012. [3]

(d) The club buys 36 tennis balls for \$9.50 and sells them to members for \$0.75 each.

Calculate the percentage profit the club makes. [3]

(e) A tennis court is a rectangle with length 23.7 m and width 10.9 m, each correct to 1 decimal place.

Calculate the upper and lower bounds of the perimeter of the court. [3]

Number
Difficulty: Medium

Question Paper 3

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 3

Time allowed: **102 minutes**

Score: **/89**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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(a) Ali and Ben receive a sum of money.
They share it in the ratio 5 : 1.
Ali receives $2345.

Calculate the total amount. [2]

(b) Ali uses 11% of his $2345 to buy a television.

Calculate the cost of the television. [2]

(c) A different television costs $330.

(i) Ben buys one in a sale when this cost is reduced by 15%.

How much does Ben pay? [2]

(ii) $330 is 12% less than the cost last year.

Calculate the cost last year. [3]

(d) Ali invests \$1500 of his share in a bank account.
The account pays compound interest at a rate of 2.3% per year.

Calculate the total amount in the account at the end of 3 years. [3]

(e) Ali also buys a computer for \$325. He later sells this computer for \$250.

Calculate Ali's percentage loss. [3]

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Anna, Bobby and Carl receive a sum of money.
They share it in the ratio 12 : 7 : 8.
Anna receives $504.

(a) Calculate the **total** amount. [3]

(b) (i) Anna uses 7% of her $504 to pay a bill.
Calculate how much she has left. [3]

(ii) She buys a coat in a sale for $64.68.
This was 23% less than the original price.
Calculate the original price of the coat. [3]

(c) Bobby uses $250 of his share to open a bank account.
This account pays compound interest at a rate of 1.6% per year.
Calculate the amount in the bank account after 3 years.
Give your answer correct to 2 decimal places. [3]

(d) Carl buys a computer for $288 and sells it for $324.
Calculate his percentage profit. [3]

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$\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

$E = \{x : x \text{ is an even number}\}$

$F = \{2, 5, 7\}$

$G = \{x : x^2 - 13x + 36 = 0\}$

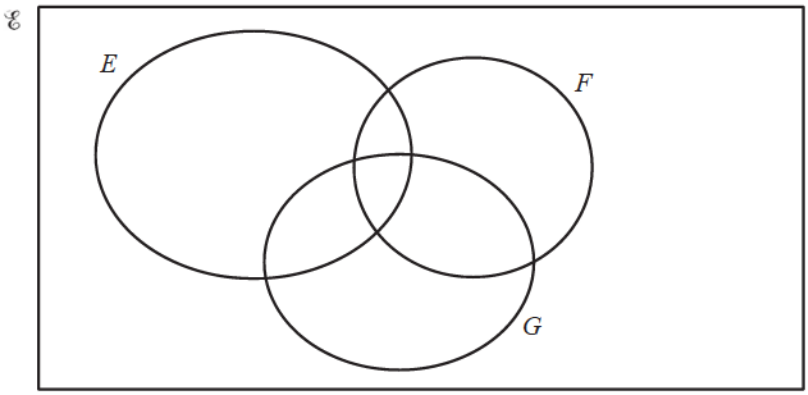
(a) List the elements of set E. [1]

(b) Write down n(F). [1]

(c) (i) Factorise $x^2 - 13x + 36$. [2]

(ii) Using your answer to **part (c)(i),** solve $x^2 - 13x + 36 = 0$ to find the two elements of G. [1]

(d) Write all the elements of $\mathscr{E}$ in their correct place in the Venn diagram.



[2]

(e) Use set notation to complete the following statements.

(i) $F \cap G =$ ..... [1]

(ii) 7 .... E [1]

(iii) n(E ..... F) = 6 [1]

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(a) In a sale, Jen buys a laptop for $351.55.
This price is 21% less than the price before the sale.

Calculate the price before the sale. [3]

(b) Alex invests $4000 at a rate of 8% per year simple interest for 2 years.
Bob invests $4000 at a rate of 7.5% per year compound interest for 2 years.

Who receives more interest and by how much? [6]

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Children go to camp on holiday.

(a) Fatima buys bananas and apples for the camp.

(i) Bananas cost \$0.85 per kilogram.

Fatima buys 20kg of bananas and receives a discount of 14%.

How much does she spend on bananas? [3]

(ii) Fatima spends \$16.40 on apples after a discount of 18%.

Calculate the original price of the apples. [3]

(iii) The ratio number of bananas: number of apples = 4 : 5.

There are 108 bananas.

Calculate the number of apples. [2]

(b) The cost to hire a tent consists of two parts.

$c	+	$d per day

The total cost for 4 days is $27.10 and for 7 days is $34.30.

Write down two equations in c and d and solve them. [4]

(c) The children travel 270 km to the camp, leaving at 07 43 and arriving at 15 13.

Calculate their average speed in km/h. [3]

(d) Two years ago $540 was put in a savings account to pay for the holiday.

The account paid **compound** interest at a rate of 6% per year.

How much is in the account now? [2]

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(a) Work out the following.

(i) $\frac{1}{0.2^2}$ [1]

(ii) $\sqrt{5.1^2 + 4 \times 7.3^2}$ [1]

(iii) $25^{\frac{1}{2}} \times 1000^{-\frac{2}{3}}$ [2]

(b) Mia invests \$7500 at 3.5% per year **simple** interest.
Calculate the total amount she has after 5 years. [3]

(c) Written as the product of prime factors $48 = 2^4 \times 3$.

(i) Write 60 as the product of prime factors. [2]

(ii) Work out the highest common factor (HCF) of 48 and 60. [2]

(iii) Work out the lowest common multiple (LCM) of 48 and 60. [2]

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Lucy works in a clothes shop.

(a) In one week she earned \$277.20.

(i) She spent $\frac{1}{8}$ of this on food.

Calculate how much she spent on food. [1]

(ii) She paid 15% of the \$277.20 in taxes.
Calculate how much she paid in taxes. [2]

(iii) The \$277.20 was 5% more than Lucy earned in the previous week.
Calculate how much Lucy earned in the previous week. [3]

(b) The shop sells clothes for men, women and children.

(i) In one day Lucy sold clothes with a total value of \$2200 in the ratio

men : women : children = 2 : 5 : 4.

Calculate the value of the women's clothes she sold. [2]

(ii) The \$2200 was $\frac{44}{73}$ of the total value of the clothes sold in the shop on this day.

Calculate the total value of the clothes sold in the shop on this day. [2]

Number
Difficulty: Medium

Question Paper 4

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 4

Time allowed: **86 minutes**

Score: **/75**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
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CIE IGCSE Maths (0980)

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(a) In 2008 the total number of tickets sold for an athletics meeting was 3136.
The ratio child tickets sold : adult tickets sold = 17 : 32.

(i) How many child tickets were sold? [2]

(ii) Child tickets cost \$2 each and adult tickets cost \$4.50 each.

Show that the total amount received from the sale of the tickets in 2008 was \$11 392. [2]

(b) In 2009 the amount received from the sale of tickets for the athletics meeting was \$12 748.

Calculate the percentage increase in the amount received from 2008 to 2009. [3]

(c) In 2008 the amount of \$11 392 was 28% more than the amount received in 2007.

Calculate how much was received in 2007. [3]

Question 2

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(a) Hansi and Megan go on holiday.

The costs of their holidays are in the ratio Hansi : Megan = 7 : 4.
Hansi's holiday costs $756.
Find the cost of Megan's holiday. [2]

(b) In 2008, Hansi earned $7800.

(i) He earned 15% more in 2009.
Calculate how much he earned in 2009. [2]

(ii) In 2010, he earns 10% more than in 2009.
Calculate the percentage increase in his earnings from 2008 to 2010. [3]

(c) Megan earned $9720 in 2009. This was 20% more than she earned in 2008.
How much did she earn in 2008? [3]

(d) Hansi invested $500 at a rate of 4% per year **compound** interest.
Calculate the final amount he had after three years. [3]

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Thomas, Ursula and Vanessa share \$200 in the ratio

Thomas : Ursula : Vanessa = 3 : 2 : 5.

(a) Show that Thomas receives \$60 and Ursula receives \$40. [2]

(b) Thomas buys a book for \$21.
What percentage of his \$60 does Thomas have left? [2]

(c) Ursula buys a computer game for \$36.80 in a sale.
The sale price is 20% less than the original price.
Calculate the original price of the computer game. [3]

(d) Vanessa buys some books and some pencils.
Each book costs \$12 **more** than each pencil.
The total cost of 5 books and 2 pencils is \$64.20.
Find the cost of one pencil. [3]

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Alberto and Maria share \$240 in the ratio 3 : 5.

(a) Show that Alberto receives \$90 and Maria receives \$150. [1]

(b) (i) Alberto invests his \$90 for 2 years at r % per year **simple** interest.
At the end of 2 years the amount of money he has is \$99.
Calculate the value of r. [2]

(ii) The \$99 is 60% of the cost of a holiday.
Calculate the cost of the holiday. [2]

(c) Maria invests her \$150 for 2 years at 4% per year **compound** interest.
Calculate the exact amount Maria has at the end of 2 years. [2]

(d) Maria continues to invest her money at 4% per year **compound** interest.
After 20 years she has \$328.67.

(i) Calculate exactly how much more this is than \$150 invested for 20 years at 4% per year **simple** interest. [3]

(ii) Calculate \$328.67 as a percentage of \$150. [2]

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Daniella is 8 years old and Edward is 12 years old.

(a) Their parents give them some money in the ratio of their ages.

(i) Write the ratio Daniella's age : Edward's age in its simplest form. [1]

:

(ii) Daniella receives $30.
Show that Edward receives $45. [1]

(iii) What percentage of the total amount of money given by their parents does Edward receive? [2]

(b) Daniella invests her $30 at 3% per year, **compound** interest.
Calculate the amount Daniella has after 2 years.
Give your answer correct to 2 decimal places. [3]

(c) Edward also invests $30.
He invests this money at a rate of r % per year, **simple** interest.
After 5 years he has a total amount of $32.25.
Calculate the value of r. [2]

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Marcus receives \$800 from his grandmother.

(a) He decides to spend \$150 and to divide the remaining \$650 in the ratio

$$\text{savings} : \text{holiday} = 9 : 4.$$

Calculate the amount of his savings. [2]

(b) (i) He uses 80% of the \$150 to buy some clothes.

Calculate the cost of the clothes. [2]

(ii) The money remaining from the \$150 is $37\frac{1}{2}$% of the cost of a day trip to Cairo.

Calculate the cost of the trip. [2]

(c) (i) Marcus invests \$400 of his savings for 2 years at 5 % per year **compound** interest.

Calculate the amount he has at the end of the 2 years. [2]

(ii) Marcus's sister also invests \$400, at r % per year **simple** interest.
At the end of 2 years she has exactly the same amount as Marcus.

Calculate the value of r. [3]

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Beatrice has an income of $40 000 in one year.

(a) She pays:

no tax on the first $10 000 of her income;

10 % tax on the next $10 000 of her income;

25 % tax on the rest of her income.

Calculate

(i) the total amount of tax Beatrice pays, [2]

(ii) the total amount of tax as a percentage of the $40000. [2]

(b) Beatrice pays a yearly rent of $10 800.

After she has paid her tax, rent and bills, she has $12 000.

Calculate how much Beatrice spends on bills. [1]

(c) Beatrice divides the $12 000 between shopping and saving in the ratio

shopping : saving = 5 : 3.

(i) Calculate how much Beatrice spends on shopping in one year. [2]

(ii) What fraction of the original $40000 does Beatrice **save**?

Give your answer in its lowest terms. [1]

(d) The rent of $10800 is an increase of 25 % on her previous rent.

Calculate her previous rent. [2]

Number
Difficulty: Medium

Question Paper 5

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 5

Time allowed: **77 minutes**

Score: **/67**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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Each year a school organises a concert.

(a) (i) In 2004 the cost of organising the concert was $ 385.

In 2005 the cost was 10% less than in 2004.

Calculate the cost in 2005. [2]

(ii) The cost of $ 385 in 2004 was 10% more than the cost in 2003.

Calculate the cost in 2003. [2]

(b) (i) In 2006 the number of tickets sold was 210.

The ratio

Number of adult tickets : Number of student tickets was 23 : 19.

How many adult tickets were sold? [2]

(ii) Adult tickets were $ 2.50 each and student tickets were $ 1.50 each.

Calculate the **total** amount **received** from selling the tickets. [2]

(iii) In 2006 the cost of organising the concert was $ 410.

Calculate the percentage profit in 2006. [2]

(c) In 2007, the number of tickets sold was again 210.

Adult tickets were $ 2.60 each and student tickets were $ 1.40 each.

The total amount received from selling the 210 tickets was $ 480.

How many student tickets were sold? [4]

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Maria, Carolina and Pedro receive $800 from their grandmother in the ratio

Maria: Carolina: Pedro = 7:5:4.

(a) Calculate how much money each receives. [3]

(b) Maria spends $\frac{2}{7}$ of her money and then invests the rest for two years at 5% per year simple interest.
How much money does Maria have at the end of the two years? [3]

(c) Carolina spends all of her money on a hi-fi set and two years later sells it at a loss of 20%.
How much money does Carolina have at the end of the two years? [2]

(d) Pedro spends some of his money and at the end of the two years he has $100.
Write down and simplify the ratio of the amounts of money Maria, Carolina and Pedro have at the end of the two years. [2]

(e) Pedro invests his $100 for two years at a rate of 5% per year **compound interest**.
Calculate how much money he has at the end of these two years. [2]

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A Spanish family went to Scotland for a holiday.

(a) The family bought 800 pounds (£) at a rate of £1 = 1.52 euros (€).
How much did this cost in euros? [1]

(b) The family returned home with £118 and changed this back into euros.
They received €173.46.
Calculate how many euros they received for each pound. [1]

(c) A toy which costs €11.50 in Spain costs only €9.75 in Scotland.
Calculate, as a percentage of the cost in Spain, how much less it costs in Scotland. [2]

(d) The total cost of the holiday was €4347.00.
In the family there were 2 adults and 3 children.
The cost for one adult was double the cost for one child.
Calculate the cost for one child. [2]

(e) The **original** cost of the holiday was **reduced** by 10% to €4347.00.
Calculate the original cost. [2]

(f) The plane took 3 hours 15 minutes to return to Spain.
The length of this journey was 2350 km.
Calculate the average speed of the plane in

(i) kilometres per hour, [2]

(ii) metres per second. [1]

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The population of Newtown is 45 000.
The population of Villeneuve is 39 000.

(a) Calculate the ratio of these populations in its simplest form. [1]

(b) In Newtown, 28% of the population are below the age of twenty.
Calculate how many people in Newtown are below the age of twenty. [2]

(c) In Villeneuve, 16 000 people are below the age of twenty.
Calculate the percentage of people in Villeneuve below the age of twenty. [2]

(d) The population of Newtown is 125% **greater** than it was fifty years ago.
Calculate the population of Newtown fifty years ago. [2]

(e) The two towns are combined and made into one city called Monocity.
In Monocity the ratio of
men : women :children is 12 : 13 : 5.
Calculate the number of children in Monocity. [2]

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(a) The technical data of a car includes the following information.

Type of road	Petrol used per 100 km
Main roads	9.2 litres
Other roads	8.0 litres

(i) How much petrol is used on a journey of 350 km on a main road? [1]

(ii) On other roads, how far can the car travel on 44 litres of petrol? [1]

(iii) A journey consists of 200 km on a main road and 160 km on other roads.

(a) How much petrol is used? [2]

(b) Work out the amount of petrol used per 100 km of this journey. [1]

(b) A model of a car has a scale of 1 : 25.

(i) The length of the car is 3.95 m.
Calculate the length of the model.
Give your answer in centimetres. [3]

(ii) The painted surface area of the model is 128 cm^2.
Calculate the painted surface area of the car, giving your answer in square centimetres. [2]

(iii) The size of the luggage space of the car is 250 litres.
Calculate the size of the luggage space of the model, giving your answer in millilitres. [3]

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(a) At an athletics meeting, Ben's time for the 10 000 metres race was 33 minutes exactly and he finished at 15 17.

(i) At what time did the race start? [1]

(ii) What was Ben's average speed for the race? Give your answer in kilometres per hour. [2]

(iii) The winner finished 51.2 seconds ahead of Ben.
How long did the winner take to run the 10 000 metres? [1]

(b) The winning distance in the javelin competition was 80 metres.
Otto's throw was 95% of the winning distance.
Calculate the distance of Otto's throw. [2]

(c) Pamela won the long jump competition with a jump of 6.16 metres.
This was 10% further than Mona's jump.
How far did Mona jump? [2]

Number
Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **114 minutes**

Score: **/99**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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(a) A library has a total of 10 494 fiction and non-fiction books.
The ratio fiction books : non-fiction books = 13 : 5.

Find the number of non-fiction books the library has. [2]

(b) The library has DVDs on crime, adventure and science fiction.
The ratio crime : adventure : science fiction = 11 : 6 : 10.
The library has 384 **more** science fiction DVDs than adventure DVDs.

Calculate the number of crime DVDs the library has. [2]

(c) Every Monday, Sima travels by car to the library.
The distance is 20 km and the journey takes 23 minutes.

(i) Calculate the average speed for the journey in kilometres per hour. [2]

(ii) One Monday, she is delayed and her average speed is reduced to 32 km/h.

Calculate the percentage increase in the journey time. [5]

(d) In Spain, the price of a book is 11.99 euros.
In the USA, the price of the same book is $12.99 .
The exchange rate is $1 = 0.9276 euros.

Calculate the difference between these prices.
Give your answer in dollars, correct to the nearest cent. [3]

(e) 7605 books were borrowed from the library in 2016.
This was 22% less than in 2015.

Calculate the number of books borrowed in 2015. [3]

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(a) Alex has \$20 and Bobbie has \$25.

(i) Write down the ratio Alex's money : Bobbie's money in its simplest form. [1]

(ii) Alex and Bobbie each spend $\frac{1}{5}$ of their money.

Find the ratio Alex's remaining money : Bobbie's remaining money in its simplest form. [1]

(iii) Alex and Bobbie **then** each spend \$4.

Find the new ratio Alex's remaining money : Bobbie's remaining money in its simplest form. [2]

(b) (i) The population of a town in the year 1990 was 15600.
The population is now 11420.

Calculate the percentage decrease in the population. [3]

(ii) The population of 15600 was 2.5% less than the population in the year 1980.

Calculate the population in the year 1980. [3]

(c) Chris invests \$200 at a rate of x% per year simple interest.
At the end of 15 years the total interest received is \$48.

Find the value of x. [2]

(d) Dani invests \$200 at a rate of y% per year compound interest.
At the end of 10 years the value of her investment is \$256.

Calculate the value of y, correct to 1 decimal place. [3]

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An energy company charged these prices in 2013.

Electricity price	Gas price
23.15 cents per day plus 13.5 cents for each unit used	24.5 cents per day plus 5.5 cents for each unit used

(a) (i) In 90 days, the Siddique family used 1885 units of **electricity**.

Calculate the total cost, in dollars, of the electricity they used. [2]

(ii) In 90 days, the **gas** used by the Khan family cost $198.16 .

Calculate the number of units of gas used. [3]

(b) In 2013, the price for each unit of electricity was 13.5 cents.
Over the next 3 years, this price increased exponentially at a rate of 8% per year.

Calculate the price for each unit of electricity after 3 years. [2]

(c) Over these 3 years, the price for each unit of gas increased from 5.5 cents to 7.7 cents.

(i) Calculate the percentage increase from 5.5 cents to 7.7 cents. [3]

(ii) Over the 3 years, the 5.5 cents increased exponentially by the same percentage each year to 7.7 cents.

Calculate the percentage increase **each year**. [3]

(d) In 2015, the energy company divided its profits in the ratio

shareholders : bonuses : development = 5 : 2 : 6.

In 2015, its profits were $390 million.

Calculate the amount the company gave to shareholders. [2]

(e) The share price of the company in June 2015 was $258.25 .
This was an increase of 3.3% on the share price in May 2015.

Calculate the share price in May 2015. [3]

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(a) Annie and Dermot share \$600 in the ratio 11 : 9.

(i) Show that Annie receives \$330. [1]

(ii) Find the amount that Dermot receives. [1]

(b) (i) Annie invests \$330 at a rate of 1.5% per year compound interest.

Calculate the amount that Annie has after 8 years.
Give your answer correct to the nearest dollar. [3]

(ii) Find the amount of **interest** that Annie has, after the 8 years, as a percentage of the \$330. [2]

(c) Dermot has $70 to spend.
He spends $24.75 on a shirt.

(i) Find $24.75 as a fraction of $70.
Give your answer in its lowest terms. [1]

(

ii) The $24.75 is the sale price after reducing the original price by 10%.

Calculate the original price. [3]

(d) After one year, the value of Annie's car had reduced by 20%. [2]
At the end of the second year, the value of Annie's car had reduced by a further 15% of its value at the end of the first year.

(i) Calculate the overall percentage reduction after the two years.

(ii) After three years the overall percentage reduction in the value of Annie's car is 40.84%.

Calculate the percentage reduction in the third year. [2]

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(a) In 2016, a company sold 9600 cars, correct to the nearest hundred.

(i) Write down the lower bound for the number of cars sold. [1]

(ii) The average profit on each car sold was $2430, correct to the nearest $10.

Calculate the lower bound for the total profit.
Write down the exact answer. [2]

(iii) Write your answer to **part (a)(ii)** correct to 4 significant figures. [1]

(iv) Write your answer to **part (a)(iii)** in standard form. [1]

(b) In April, the number of cars sold was 546.
This was an increase of 5% on the number of cars sold in March.

Calculate the number of cars sold in March. [3]

(c) The price of a new car grows exponentially by 3% per year.
A new car has a price of $3000 in 2013.

Find the price of a new car 4 years later. [2]

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The Smith family paid $5635 for a holiday in India.
The total cost was divided in the ratio travel : accommodation : entertainment = 10 : 17 : 8.

(a) Calculate the percentage of the total cost spent on entertainment. [2]

(b) Show that the amount spent on accommodation was $2737. [2]

(c) The $5635 was the total amount Mr Smith received from an investment he made 5 years ago. Compound interest at a rate of 2.42% per year was paid on this investment.

Calculate the amount he invested 5 years ago. [3]

(d) Mr Smith, his wife and their three children visit a theme park.
The tickets cost 2500 Rupees for an adult and 1650 Rupees for a child.

Calculate the total cost of the tickets. [2]

(e) One day the youngest child spent 130 Rupees on sweets.
On this day the exchange rate was 1 Rupee = $0.0152.

Calculate the value of the sweets in dollars, correct to the nearest cent. [2]

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(a) (i) Each year the value of a car decreases by 15% of its value at the beginning of that year.
Alberto buys a car for $18 000.

Calculate the value of Alberto's car after 3 years. [2]

(ii) Belinda bought a car one year ago.
The value of this car has decreased by 15% to $14025.

Calculate how much Belinda paid for the car. [3]

(b) Chris invested some money at a rate of 5% per year compound interest.
After 2 years the value of this investment is $286.65 .

Calculate how much Chris invested. [2]

(c) Dani invested \$200 and after 2 years the value of this investment is \$224.72 .

Calculate the rate of interest per year when the interest is

(i) simple, [3]

(ii) compound. [3]

Number
Difficulty: Hard

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 2

Time allowed: **104 minutes**

Score: **/90**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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(a) $1= 3.67 dirhams

Calculate the value, in dollars, of 200 dirhams.
Give your answer correct to 2 decimal places. [2]

(b) (i) Write as a single fraction, in its simplest form.

$$\frac{1000}{x} - \frac{1000}{x+1}$$ [3]

(ii) One day in 2014, 1 euro was worth x rand.
One year later, 1 euro was worth $(x + 1)$ rand.

Winston changed 1000 rand into euros in both years.
In 2014 he received 4.50 euros more than in 2015.

Write an equation in terms of x and show that it simplifies to

$$9x^2 + 9x - 2000 = 0.$$ [3]

(iii) Use the quadratic formula to solve the equation $9x^2 + 9x - 2000 = 0$.
Show all your working and give your answers correct to 2 decimal places. [4]

(iv) Calculate the number of euros Winston received in 2014.
Give your answer correct to 2 decimal places. [2]

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(a) A jigsaw puzzle has edge pieces and inside pieces.
The ratio edge pieces : inside pieces = 3 : 22.

(i) There are 924 inside pieces.

Calculate the total number of pieces in the puzzle. [2]

(ii) Find the percentage of the total number of pieces that are edge pieces. [1]

(iii) Anjum and Betty spent a total of 9 hours completing the puzzle.
The ratio Anjum's time : Betty's time = 7 : 5.

Work out how much time Anjum spent on the puzzle. [2]

(b) The price of the puzzle was $15.99 in a sale.
This was 35% less than the original price.

Calculate the original price of the puzzle. [3]

(c) Betty takes a photograph of the completed puzzle.
The photograph and the completed puzzle are mathematically similar.

The area of the photograph is 875 cm^2 and the area of the puzzle is 2835 cm^2.
The length of the photograph is 35 cm.

Work out the length of the puzzle. [3]

(d) (i) The area of another puzzle is 6610 cm^2.

Change 6610 cm^2 into m^2. [1]

(ii) The cost price of this puzzle is $12.50 .
The selling price is $18.50 .

Calculate the percentage profit. [3]

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(a) Kristian and Stephanie share some money in the ratio 3 : 2.
Kristian receives $72.

(i) Work out how much Stephanie receives. [2]

(ii) Kristian spends 45% of his $72 on a computer game.

Calculate the price of the computer game. [1]

(iii) Kristian also buys a meal for $8.40 .

Calculate the fraction of the $72 Kristian has left after buying the computer game and the meal.
Give your answer in its lowest terms. [2]

(iv) Stephanie buys a book in a sale for $19.20 .
This sale price is after a reduction of 20%.

Calculate the original price of the book. [3]

(b) Boris invests $550 at a rate of 2% per year simple interest.

Calculate the amount Boris has after 10 years. [3]

(c) Marlene invests $550 at a rate of 1.9% per year compound interest.

Calculate the amount Marlene has after 10 years. [2]

(d) Hans invests $550 at a rate of x% per year compound interest.
At the end of 10 years he has a total amount of $638.30, correct to the nearest cent.

Find the value of x. [3]

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A football club sells tickets at different prices dependent on age group.

(a) (i) At one game, the club sold tickets in the ratio

under 18 : 18 to 60 : over 60 = 2 : 7 : 3.

There were 6100 tickets sold for people aged under 18.

Calculate the **total** number of tickets sold for the game. [3]

(ii) Calculate the percentage of tickets sold for people aged under 18. [1]

(b) The table shows the football ticket prices for the different age groups.

Age	Price
Under 18	$15
18 to 60	$35
Over 60	$18

At a **different** game there were 42 600 tickets sold.

- 14% were sold to people aged under 18
- $\frac{2}{3}$ of the tickets were sold to people aged 18 to 60
- The remainder were sold to people aged over 60

Calculate the total amount the football club receives from ticket sales for this game. [5]

(c) In a sale, the football club shop reduced the price of the football shirts to $23.80 .
An error was made when working out this sale price.
The price was reduced by 30% instead of 20%.

Calculate the correct sale price for the football shirt. [5]

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Aasha, Biren and Cemal share $640 in the ratio 8 : 15 : 9.

(a) Show that Aasha receives $160. [1]

(b) Calculate the amount that Biren and Cemal receive. [2]

(c) Aasha uses her $160 to buy some books.
Each book costs $15.25 .

Find the greatest number of books that she can buy. [2]

(d) Biren spends $\frac{3}{8}$ of his share on clothes and $\frac{1}{3}$ of his share on a computer.

Find the fraction of his share that he has left.
Write your fraction in its lowest terms. [3]

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(a) Meena sells her car for $6000.
This is a loss of 4% on the price she paid.

Calculate the price Meena paid for the car. [3]

(b) Eisha changes some euros (€) into dollars ($) when the exchange rate is €1 = $1.351 .
She receives $6000.

Calculate how many euros Eisha changes.
Give your answer correct to the nearest euro. [3]

(c) Meena and Eisha both invest their $6000.
Meena invests her $6000 at a rate of 1.5% per year compound interest.
Eisha invests her $6000 in a bank that pays simple interest.
After 8 years, their investments are worth the same amount.

Calculate the rate of simple interest per year that Eisha received. [5]

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A film company uses 512 actors in a film.
The actors are in the ratio men : women : children = 7 : 11 : 14.

(a) (i) Show that there are 224 children in the film. [2]

(ii) Find the number of men in the film. [1]

(b) Every working day, each child is given $1 to spend.
Each child works for 45 days.

Calculate the total amount that the film company gives the children to spend.
Give your answer correct to the nearest $100. [2]

(c) The children have lessons every day in groups of no more than 12.

Calculate the smallest possible number of groups. [2]

(d) The film costs four million and ninety three thousand dollars to make.

(i) Write this number in figures. [1]

(ii) Write your answer to **part (d)(i)** in standard form. [1]

(e) A DVD copy of the film costs $2.75 to make.
The selling price is $8.20 .

Calculate the percentage profit. [3]

Number
Difficulty: Hard

Question Paper 3

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 3

Time allowed: **93 minutes**

Score: **/81**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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12000 vehicles drive through a road toll on one day.
The ratio cars : trucks : motorcycles = 13 : 8 : 3.

(a) (i) Show that 6500 cars drive through the road toll on that day. [1]

(ii) Calculate the number of trucks that drive through the road toll on that day. [1]

(b) The toll charges in 2014 are shown in the table.

Vehicle	Charge
Cars	$2
Trucks	$5
Motorcycles	$1

Show that the total amount paid in tolls on that day is $34500. [2]

(c) This total amount is a decrease of 8% on the total amount paid on the same day in 2013.

Calculate the total amount paid on that day in 2013. [3]

(d) 2750 of the 6500 car drivers pay their toll using a credit card.

Write down, in its simplest terms, the fraction of car drivers who pay using a credit card. [2]

(e) To the nearest thousand, 90000 cars drive through the road toll in one week.

Write down the lower bound for this number of cars. [1]

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(a) Last year a golf club charged $1650 for a family membership.
This year the cost increased by 12%.

Calculate the cost of a family membership this year. [2]

(b) The golf club runs a competition.
The total prize money is shared in the ratio 1st prize : 2nd prize = 9 : 5.
The 1st prize is $500 more than the 2nd prize.

(i) Calculate the total prize money for the competition. [2]

(ii) What percentage of the total prize money is given as the 1st prize? [1]

(c) For the members of the golf club the ratio men : children = 11 : 2.
The ratio women : children = 10 : 3.

(i) Find the ratio men : women. [2]

(ii) The golf club has 24 members who are children.

Find the total number of members. [3]

(d) The club shop sold a box of golf balls for $20.40 .
The shop made a profit of 20% on the cost price.

Calculate the cost price of the golf balls. [3]

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Jaideep builds a house and sells it for $450000.

(a) He pays a tax of 1.5% of the selling price of the house.

Show that he pays $6750 in tax. [1]

(b) $6750 is 12.5% more than the tax Jaideep paid on the first house he built.

Calculate the tax Jaideep paid on the first house he built. [3]

(c) The house is built on a rectangular plot of land, 21 m by 17 m, both correct to the nearest metre.

Calculate the upper bound for the area of the plot. [2]

(d) On a plan of the house, the area of the kitchen is 5.6 cm^2.
The scale of the plan is 1:200.

Calculate the actual area of the kitchen in square metres. [2]

(e) The house was built using cuboid blocks each measuring 12 cm by 16 cm by 27 cm.

Calculate the volume of one block. [2]

(f) Jaideep changes $12000 into euros (€) to buy land in another country.
The exchange rate is €1 = $1.33 .

Calculate the number of euros Jaideep receives.
Give your answer correct to the nearest euro. [3]

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(a) Alfonso has \$75 to spend on the internet.
He spends some of the money on music, films and books.

(i) The money he spends on music, films and books is in the ratio

music : films : books = 5 : 3 : 7.

He spends \$16.50 on music.

Calculate the **total** amount he spends on music, films and books. [3]

(ii) Find this total amount as a percentage of the \$75. [1]

(b) The download times for the music, films and books are in the ratio

music : films : books = 2 : 9 : 1.

The **total** download time is 3 hours and 33 minutes.

Calculate the download time for the films.
Give your answer in hours, minutes and seconds. [3]

(c) The cost of \$16.50 for the music was a reduction of 12% on the original cost.

Calculate the original cost of the music. [3]

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There are three different areas, A, B and C, for seating in a theatre.
The numbers of seats in each area are in the ratio $A:B:C = 11:8:7$.
There are 920 seats in area B.

(a) (i) Show that there are 805 seats in area C. [1]

(ii) Write the number of seats in area B as a percentage of the total number of seats. [2]

(b) The cost of a ticket for a seat in each area of the theatre is shown in the table.

Area A	\$11.50
Area B	\$15
Area C	\$22.50

For a concert 80% of area B tickets were sold and $\frac{3}{5}$ of area C tickets were sold.
The total amount of money taken from ticket sales was \$35834.

Calculate the number of area A tickets that were sold. [5]

(c) The total ticket sales of \$35834 was 5% less than the ticket sales at the previous concert.

Calculate the ticket sales at the previous concert. [3]

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Last year Mukthar earned $18900 .
He did not pay tax on $5500 of his earnings.
He paid 24% tax on his remaining earnings.

(a) (i) Calculate how much tax Mukthar paid last year. [2]

(ii) Calculate how much Mukthar earned each month after tax had been paid. [2]

(b) This year Mukthar now earns $19750.50 .

Calculate the percentage increase from $18900. [2]

(c) Mukthar has $1500 to invest in one of the following ways.

- **Account A** paying **simple** interest at a rate of 4.1% per year
- **Account B** paying **compound** interest at a rate of 3.3% per year

Which account will be worth more after **3 years** and by how much? [5]

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Noma flies from Johannesburg to Hong Kong.
Her plane leaves Johannesburg at 18 45 and arrives in Hong Kong 13 hours and 25 minutes later.
The local time in Hong Kong is 6 hours ahead of the time in Johannesburg.

(a) At what time does Noma arrive in Hong Kong? [2]

(b) Noma sleeps for part of the journey.
The time that she spends sleeping is given by the ratio

sleeping : awake = 3 : 4 .

Calculate how long Noma sleeps during the journey.
Give your answer in hours and minutes. [2]

(c) (i) The distance from Hong Kong to Johannesburg is 10 712 km.
The time taken for the journey is 13 hours and 25 minutes.

Calculate the average speed of the plane for this journey. [2]

(ii) The plane uses fuel at the rate of 1 litre for every 59 metres travelled.

Calculate the number of litres of fuel used for the journey from Johannesburg to Hong Kong.
Give your answer in standard form.

[4]

(d) The cost of Noma's journey is 10148 South African Rand (R). This is an increase of 18% on the cost of the journey one year ago.

Calculate the cost of the same journey one year ago. [3]

Number
Difficulty: Hard

Question Paper 4

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 4

Time allowed: **93 minutes**

Score: **/81**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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(a) (i) In a camera magazine, 63 pages are used for adverts.
The ratio number of pages of adverts : number of pages of reviews = 7 : 5 .

Calculate the number of pages used for reviews. [2]

(ii) In another copy of the magazine, 56 pages are used for reviews and for photographs.
The ratio number of pages of reviews : number of pages of photographs = 9 : 5 .

Calculate the number of pages used for photographs. [2]

(iii) One copy of the magazine costs \$4.90 .
An annual subscription costs \$48.80 for 13 copies.

Calculate the percentage discount by having an annual subscription. [3]

(b) In a car magazine, 25% of the pages are used for selling second-hand cars, $62\frac{1}{2}$% of the **remaining** pages are used for features, and the other 36 pages are used for reviews.

Work out the total number of pages in the magazine. [4]

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A factory produces bird food made with sunflower seed, millet and maize.

(a) The amounts of sunflower seed, millet and maize are in the ratio sunflower seed : millet : maize = 5 : 3 : 1 .

(i) How much millet is there in 15 kg of bird food? [2]

(ii) In a small bag of bird food there is 60 g of sunflower seed.

What is the mass of bird food in a small bag? [2]

(b) Sunflower seeds cost \$204.50 for 30 kg from Jon's farm or €96.40 for 20 kg from Ann's farm.
The exchange rate is \$1 = €0.718.

Which farm has the cheapest price per kilogram?
You must show clearly all your working. [4]

(c) Bags are filled with bird food at a rate of 420 grams per second.

How many 20 kg bags can be **completely** filled in 4 hours? [3]

(d) Brian buys bags of bird food from the factory and sells them in his shop for \$15.30 each.
He makes 12.5% profit on each bag.

How much does Brian pay for each bag of bird food? [3]

(e) Brian orders 600 bags of bird food.

The probability that a bag is damaged is $\frac{1}{50}$.

How many bags would Brian expect to be damaged? [1]

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(a) The Martinez family travels by car to Seatown.
The distance is 92 km and the journey takes 1 hour 25 minutes.

(i) The family leaves home at 0750.
Write down the time they arrive at Seatown. [1]

(ii) Calculate the average speed for the journey. [2]

(iii) During the journey, the family stops for 10 minutes.

Calculate 10 minutes as a percentage of 1 hour 25 minutes. [1]

(iv) 92 km is 15% more than the distance from Seatown to Deecity.

Calculate the distance from Seatown to Deecity. [3]

(b) The Martinez family spends \$150 in the ratio

fuel : meals : gifts = 11 : 16 : 3 .

(i) Show that \$15 is spent on gifts.

Answer (b)(i) [2]

(ii) The family buys two gifts.
The first gift costs \$8.25.

Find the ratio

cost of first gift : cost of second gift.

Give your answer in its simplest form. [2]

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(a) In Portugal, Miguel buys a book about planets.
The book costs €34.95.
In England the same book costs £27.50.
The exchange rate is £1 = €1.17.

Calculate the difference in pounds (£) between the cost of the book in Portugal and England.

[2]

(b) In the book, the distance between two planets is given as 4.07×10^{12} kilometres.
The speed of light is 1.1×10^{9} kilometres per hour.

Calculate the time taken for light to travel from one of these planets to the other.
Give your answer in days and hours.

[3]

(c) In one of the pictures in the book, a rectangle is drawn.
The rectangle has length 9.3 cm and width 5.6cm, both correct to one decimal place.

(i) What is the lower bound for the length? [1]

(ii) Work out the lower and upper bounds for the area of the rectangle. [2]

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(a) Abdullah and Jasmine bought a car for $9000.
Abdullah paid 45% of the $9000 and Jasmine paid the rest.

(i) How much did Jasmine pay towards the cost of the car? [2]

(ii) Write down the ratio of the payments Abdullah : Jasmine in its simplest form. [1]

(b) Last year it cost $2256 to run the car.
Abdullah, Jasmine and their son Henri share this cost in the ratio 8 : 3 : 1.
Calculate the amount each paid to run the car. [3]

(c) (i) A new truck costs $15 000 and loses 23% of its value each year.
Calculate the value of the truck after three years. [3]

(ii) Calculate the overall percentage loss of the truck's value after three years. [3]

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(a) $72 = 2 \times 2 \times 2 \times 3 \times 3$ written as a product of prime factors.

(i) Write the number 126 as a product of prime factors. [2]

(ii) Find the value of the highest common factor of 72 and 126. [1]

(iii) Find the value of the lowest common multiple of 72 and 126. [2]

(b) John wants to estimate the value of π.
He measures the circumference of a circular pizza as 105 cm and its diameter as 34 cm, both correct to the nearest centimetre.

Calculate the lower bound of his estimate of the value of π.
Give your answer correct to 3 decimal places. [4]

(c) The volume of a cylindrical can is 550 cm^3, correct to the nearest 10 cm^3.
The height of the can is 12 cm correct to the nearest centimetre.

Calculate the upper bound of the radius of the can. [5]
Give your answer correct to 3 decimal places.

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A school has 220 boys and 280 girls.

(a) Find the ratio of boys to girls, in its simplest form. [1]

(b) The ratio of students to teachers is 10 : 1.
Find the number of teachers. [2]

(c) There are 21 students on the school's committee.
The ratio of boys to girls is 3 : 4.
Find the number of girls on the committee. [2]

(d) The committee organises a disco and sells tickets.
35% of the school's students each buy a ticket. Each ticket costs $1.60.
Calculate the total amount received from selling the tickets. [3]

(e) The cost of running the disco is $264.
This is an increase of 10% on the cost of running last year's disco.
Calculate the cost of running last year's disco. [2]

Number
Difficulty: Hard

Question Paper 5

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 5

Time allowed: **78 minutes**

Score: **/68**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

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Chris goes to a shop to buy meat, vegetables and fruit.

(a) (i) The costs of the meat, vegetables and fruit are in the ratio

meat : vegetables : fruit = 2 : 2 : 3.

The cost of the meat is $2.40.

Calculate the **total** cost of the meat, vegetables and fruit. [2]

(ii) Chris pays with a $20 note.

What percentage of the $20 has he spent? [2]

(b) The masses of the meat, vegetables and fruit are in the ratio

meat : vegetables : fruit = 1 : 8 : 3.

The total mass is 9 kg.

Calculate the mass of the vegetables. [2]

(c) Calculate the cost per kilogram of the fruit. [3]

(d) The cost of the meat, $2.40, is an increase of 25% on the cost the previous week.

Calculate the cost of the meat the previous week. [2]

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Vreni took part in a charity walk.
She walked a distance of 20 kilometres.

(a) She raised money at a rate of \$12.50 for each kilometre.

(i) How much money did she raise by walking the 20 kilometres? [1]

(ii) The money she raised in **part (a)(i)** was $\frac{5}{52}$ of the total money raised.
Work out the total money raised. [2]

(iii) In the previous year the total money raised was \$2450.
Calculate the percentage increase on the previous year's total. [2]

(b) Part of the 20 kilometres was on a road and the rest was on a footpath.
The ratio road distance : footpath distance was 3:2.

(i) Work out the road distance. [2]

(ii) Vreni walked along the road at 3 km/h and along the footpath at 2.5 km/h.
How long, in hours and minutes, did Vreni take to walk the 20 kilometres? [2]

(iii) Work out Vreni's average speed. [1]

(iv) Vreni started at 08 55. At what time did she finish? [1]

(c) On a map, the distance of 20 kilometres was represented by a length of 80 centimetres.
The scale of the map was $1 : n$.
Calculate the value of n. [2]

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(a) The scale of a map is 1:20 000 000.

On the map, the distance between Cairo and Addis Ababa is 12 cm.

(i) Calculate the distance, in kilometres, between Cairo and Addis Ababa. [2]

(ii) On the map the area of a desert region is 13 square centimetres.

Calculate the actual area of this desert region, in square kilometres. [2]

(b) (i) The actual distance between Cairo and Khartoum is 1580 km.

On a different map this distance is represented by 31.6 cm.

Calculate, in the form $1:n$, the scale of this map. [2]

(ii) A plane flies the 1580 km from Cairo to Khartoum.

It departs from Cairo at 11 55 and arrives in Khartoum at 1403.

Calculate the average speed of the plane, in kilometres per hour. [4]

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Hassan sells fruit and vegetables at the market.

(a) The mass of fruit and vegetables he sells is in the ratio
fruit : vegetables = 5 : 7.
Hassan sells 1.33 **tonnes** of vegetables.
How many **kilograms** of fruit does he sell? [3]

(b) The amount of money Hassan receives from selling fruit and vegetables is in the ratio
fruit : vegetables = 9 : 8.
Hassan receives a **total** of $765 from selling fruit and vegetables.
Calculate how much Hassan receives from selling fruit. [2]

(c) Calculate the average price of Hassan's fruit, in dollars per kilogram. [2]

(d) (i) Hassan sells oranges for $0.35 per kilogram.
He reduces this price by 40%.
Calculate the new price per kilogram. [2]

(ii) The price of $0.35 per kilogram of oranges is an increase of 25% on the previous day's price.
Calculate the previous day's price. [2]

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Fatima and Mohammed each buys a bike.

(a) Fatima buys a city-bike which has a price of $120.
She pays 60 % of this price and then pays $10 per month for 6 months.

(i) How much does Fatima pay altogether? [2]

(ii) Work out your answer to **part (a)(i)** as a percentage of the original price of $120. [2]

(b) Mohammed pays $159.10 for a mountain-bike in a sale.
The original price had been reduced by 14 %.
Calculate the original price of the mountain-bike. [2]

(c) Mohammed's height is 169 cm and Fatima's height is 156 cm.
The frame sizes of their bikes are in the same ratio as their heights.
The frame size of Mohammed's bike is 52 cm.
Calculate the frame size of Fatima's bike. [2]

(d) Fatima and Mohammed are members of a school team which takes part in a bike ride for charity.

(i) Fatima and Mohammed ride a total distance of 36 km.
The ratio distance Fatima rides : distance Mohammed rides is 11 : 9.
Work out the distance Fatima rides. [2]

(ii) The distance of 36 km is only $\frac{2}{23}$ of the total distance the team rides.

Calculate this total distance. [2]

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A train starts its journey with 240 passengers.
144 of the passengers are adults and the rest are children.

(a) Write the ratio Adults : Children in its lowest terms. [2]

(b) At the first stop, $37\frac{1}{2}$ % of the adults and $\frac{1}{3}$ of the children get off the train.
20 adults and x children get onto the train.
The total number of passengers on the train is now 200.

(i) How many children got off the train? [1]

(ii) How many adults got off the train? [1]

(iii) How many **adult** passengers are **on** the train as it sets off again? [1]

(iv) What is the value of x? [1]

(c) After a second stop, there are 300 passengers on the train and the ratio

Men : Women : Children is 6 : 5 : 4.

Calculate the number of children now on the train. [2]

(d) On Tuesday the train journey took 7 hours and 20 minutes and began at 13 53.

(i) At what time did the train journey end? [1]

(ii) Tuesday's time of 7 hours 20 minutes was 10% more than Monday's journey time.
How many minutes longer was Tuesday's journey? [2]