

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%

Question 1

- (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 20km 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]

Question 2

(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 15 600.
The population is now 11 420.

Calculate the percentage decrease in the population. [3]

(ii) The population of 15 600 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]

Question 3

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]

Question 4

(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]

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

Question 5

(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]

Question 6

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]

Question 7

- (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]