



Cambridge International Examinations
Cambridge Ordinary Level

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COMMERCIAL STUDIES

7101/22

Paper 2 Arithmetic

October/November 2016

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided above.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

You may use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions in **Section A** and any **two** questions from **Section B**.

All working must be clearly shown in the space provided and should be done on the same sheet as the rest of the answer.

The businesses described in this Question Paper are entirely fictitious.

You may use a calculator in this examination.

N.B. £1 = 100p.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **18** printed pages and **2** blank pages.

Section A (76 marks)Answer **all** questions in this section.**1** Calculate**(a)** $3\frac{1}{8} + 4\frac{5}{6} \times 7\frac{2}{9}$ giving your answer as a mixed number,*Answer (a)*[2]**(b)** $2.55 \div 80.32$ giving your answer to 2 significant figures,*Answer (b)*[2]**(c)** $\frac{5}{11}$ of 76.338 giving your answer to 2 decimal places.*Answer (c)*[2]

2 A company declares a dividend of 13 cents per share.

An investor has 13800 shares.

The dividend will be taxed at 15%.

How much will the investor receive after tax?

Answer \$[3]

3 (a) Saif invests \$19000 in an account paying 1.8% compound interest annually.

Calculate the total **interest** earned at the end of the 3 years.

Answer (a) \$[5]

- (b) Anne takes out a loan of \$8000 at a simple interest rate of 5.69% per annum over 4 years. She has to repay the loan plus interest by equal monthly instalments over the 4 years. Calculate the amount she has to repay each month.

Answer (b) \$[5]

- 4 (a) Olga Dreesman runs a travel and tourism company and is researching the Trans-Siberian Railway for a client.

The Trans-Siberian Railway links Moscow and Vladivostok, a distance of 9289 kilometres. The fastest train completes the journey in 6 days and 4 hours.

Calculate the average speed of the train. Give your answer to the nearest whole number.

Answer (a)km/hr [4]

- (b) A train leaves Moscow at 13.50 and takes 6 hours and 13 minutes to reach Nyzhny Novgorod, which is in the same time zone.

At what time does it arrive in Nyzhny Novgorod?

Answer (b)[2]

- (c) The railway is also used to carry freight.

8×10^5 kilograms of coal has to be transported to a power station. The coal is carried in wagons, each of which can carry a maximum of 20 tonnes.

How many wagons will be needed?

Answer (c)[3]

5 (a) An estimate for the North Sea gas production in 2017 was 1.38×10^{10} therms.

This estimate has now been reduced by 8%.

Calculate the new estimate for the 2017 gas production.

Answer (a)therms [2]

(b) This year's estimate for North Sea oil production in 2017 was 2.9×10^7 tonnes.

This forecast is a reduction of 11% from last year's estimate.

Calculate last year's estimate.

Answer (b)tonnes [2]

6 Tim Fields is a company director. He has to travel to a seminar in Nairobi, Kenya.

(a) Tim changes 2000 euros (€) into Kenyan shillings at a rate of $1\text{€} = 118.18$ Kenyan shillings.

How many Kenyan shillings does he receive?

Answer (a) Kenyan shillings [2]

(b) A foreign exchange bureau in Nairobi is open every day from Monday to Saturday from 9.15 am until 5.30 pm each day.

For how many hours a week is the bureau open?

Answer (b) [3]

(c) Leaving Kenya, Tim exchanges 60 000 Kenyan shillings for euros (€) at a rate of $1\text{€} = 120$ Kenyan shillings.

How many euros does he receive?

Answer (c)€ [2]

8

- 7** Susan normally works 36 hours each week in a factory for which she is paid £14.30 per hour. One week she worked an extra 5 hours and her gross pay for the week was £614.80. Calculate her hourly pay rate for these extra hours.

Answer £ per hour [6]

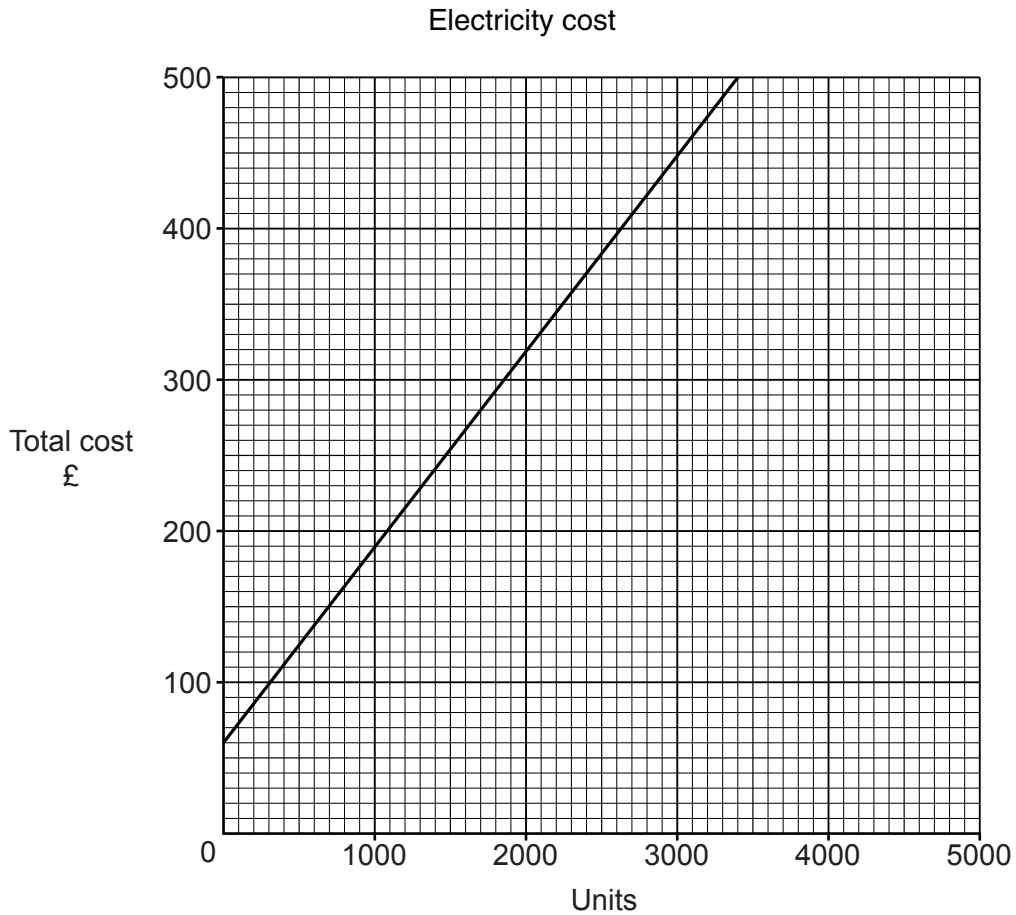
- 8 (a)** A sales representative has an annual salary of \$25 500 plus a commission of 3¼% of his sales. Calculate his total annual income if the value of his sales was \$85 000.

Answer (a) \$ [4]

(b) What value of sales would generate a **commission** of \$6600 for the sales representative?

Answer (b) \$ [3]

9 The graph below shows how a shop's electricity cost is calculated.



The total cost of the electricity consists of two parts:

- a fixed annual charge which has to be paid however much electricity is used
- a charge for each unit used

(a) How much is the fixed charge?

Answer (a) £ [1]

(b) What will the shop's total bill be if 2700 units are used?

Answer (b) £ [1]

(c) What is the cost per unit of electricity?
Give your answer in pence.

Answer (c) p [3]

- 10 (a) In 2015 a landlord charged rent of \$400 per month for a furnished apartment. In addition there was a service charge of \$360 per year.

Calculate the total cost for the year payable by a tenant.

Answer (a) \$ [3]

- (b) The rent is increased annually in line with the Retail Price Index (RPI).

If the RPI in 2015 was 192, calculate the monthly rent in 2016 when the RPI is 198.

Answer (b) \$ [3]

- (c) The landlord of the apartment pays insurance premiums as follows:

- Premises valued at \$80 000 at 0.7% of value
- Fixtures, fittings and furnishings valued at \$12 000 at \$3.20 per \$1000.
- Third party liability of \$1 000 000 at \$15.

Calculate the total premium payable.

Answer (c) \$ [6]

- 11 Carol has an online business in the UK making and selling jewellery items. She uses the postal service to deliver her goods.

Table 1 below shows the costs for parcels. Table 2 shows the cost of insurance.

Table 1

Cost for parcels (£)			
Weight – up to	Europe	World Zone 1	World Zone 2
500g	10.15	12.45	12.90
750g	11.60	15.15	15.75
1 kg	13.05	17.85	18.60
1.25 kg	14.50	20.55	21.45
1.5 kg	15.95	23.25	24.30
2 kg	18.85	28.65	30.00
Each additional 100g over 2 kg	0.95	1.45	1.55

Table 2

Insurance Costs	
Up to £500	Free
Up to £1000	£8
Up to £1500	£12
Up to £2000	£16
Up to £2500	£20

Calculate the costs for sending

- (a) a parcel of value £400 weighing 600g to World Zone 1,

Answer (a) £ [1]

- (b) a parcel of value £400 weighing 2400g to World Zone 2,

Answer (b) £ [3]

- (c) a parcel of value £1000 weighing 1.25 kg to Europe.

Answer (c) £ [3]

Section B (24 marks)

Answer any **two** questions from this section.

- 12 (a)** Tom, a builder, is starting a new project and needs 45 cubic metres (m^3) of concrete for the foundations.

Concrete is a mix of cement, sand, and gravel in the ratio 1 : 2 : 3 respectively.

How many m^3 of sand will be required?

Answer (a) m^3 [4]

- (b)** Rather than mixing the concrete himself, Tom could buy ready mixed concrete. Tom gets prices from 6 suppliers as shown in the table below.

65	52	56	58	54	54
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- (i)** Calculate the mean price.

Answer (b) (i) £ [3]

- (ii)** Write down the mode.

Answer (b) (ii) £ [1]

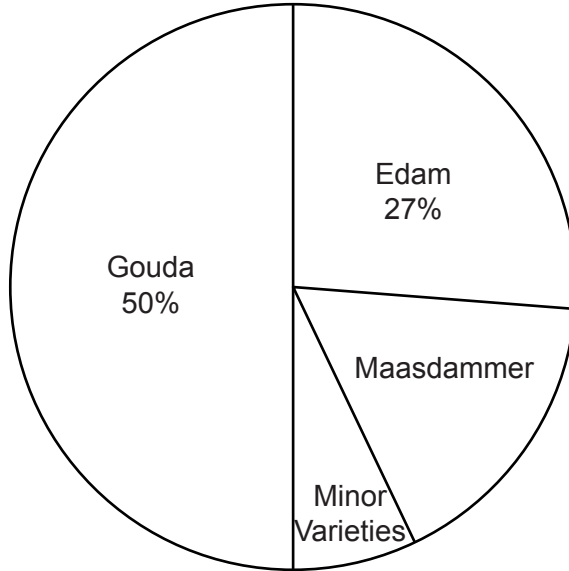
- (iii)** Work out the median price.

Answer (b) (iii) £ [4]

13 The Netherlands produces 6.5×10^8 kg of cheese each year.

There are three main varieties of cheese and a number of minor varieties as shown in the pie chart below.

Netherlands Cheese Production



NOT TO SCALE

(a) Edam is 27% of the total.

Calculate the pie chart angle for Edam.

Answer (a) ° [3]

(b) The pie chart angle for Maasdammer is 54°.

How many kilograms of Maasdammer is produced?

Answer (b) kg [3]

(c) A single Gouda cheese weighs 12 kg.

How many of these cheeses are produced each year?
Give your answer to 2 significant figures.

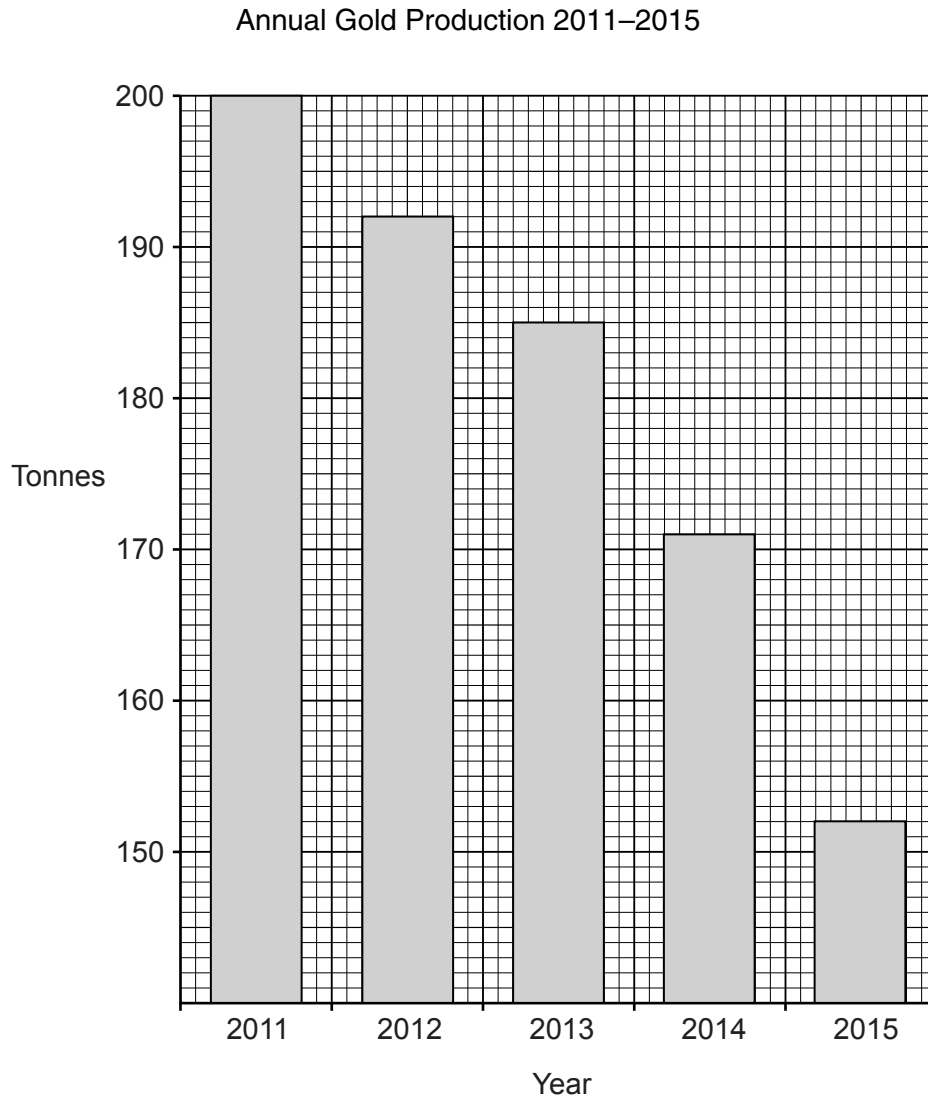
Answer (c) [3]

(d) The pie chart angle for Minor Varieties is 28.8° .

What fraction of the total is 'Minor Varieties'?
Give your answer in its simplest form.

Answer (d) [3]

14 The bar chart below shows a country's annual gold production from 2011 to 2015.



Use the bar chart to help you answer the following questions.

(a) What was the total gold production for the country from 2011 to 2015?

Answer (a)tonnes [4]

(b) Calculate the percentage decrease in gold production from 2011 to 2015

Answer (b) % [3]

(c) A standard gold bar weighs 12.4 kg.

How many gold bars could be made from the 2015 gold production?

Answer (c) [3]

(d) In 2015 the country's gold production was 6.4% of the world's gold production.

Calculate the world's gold production in 2015.

Answer (d) tonnes [2]

15 An investor buys shares in two companies as shown in the table below.

Company	Number of shares	Cost \$ per share
A	4500	2.27
B	2100	8.22

- (a) Company A shares have a face value of \$1.50 and the company pays a dividend of 8% of the face value.

This dividend is then taxed at 20%.

How much dividend does the investor receive?

Answer (a) \$ [4]

- (b) The investor sells Company B shares for \$9.15 each.
The broker charges a commission of \$150 for the transaction.
The investor's **profit** on the sale is taxed at 15%.

Calculate the investor's net percentage profit.
Give your answer to 2 decimal places.

Answer (b) % [8]

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