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COMMERCIAL STUDIES

7101/22

Paper 2 Arithmetic

October/November 2015

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.

Do not 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 **15** printed pages and **1** blank page.

Section A (76 marks)

Answer **all** questions in this section.

1 (a) Put brackets into these calculations so that the answer is correct.

(i) $20 - 5 - 4 = 19$ [1]

(ii) $6 + 3 \times 2 + 7 = 33$ [1]

(b) Calculate

(i) $1\frac{7}{8} \div 4.125$ giving your answer to 3 significant figures

Answer (b)(i) [2]

(ii) $17\frac{1}{4}\%$ of £800

Answer (b)(ii) £ [2]

(iii) $\frac{1}{7}$ of \$48 giving your answer to the nearest cent.

Answer (b)(iii) \$ [2]

2 (a) Write 240% as a fraction in its lowest terms.

Answer (a) [2]

(b) Find the percentage increase when a price rises from \$8 to \$8.60.

Answer (b) % [3]

- (c) £80 000 was invested for 4 years in an account paying simple interest. At the end of 4 years the amount in the account had risen to £88 000.

What was the interest rate?

Answer (c) % [4]

- 3 (a) A UK car dealer imports cars from Germany. He has to pay for the cars in euros. He imports 3 cars for a total cost of 60 000 euros. The exchange rate is 1 euro = £0.82.

What is the total cost of the 3 cars in pounds?

Answer (a) £ [2]

- (b) In order to buy more cars, the dealer exchanges £60 500 for euros when the exchange rate is 1 euro = £0.805.

He is charged a commission of 1.25% which is subtracted from the euros.

How many euros will he receive? Give your answer to the nearest euro.

Answer (b) euros [4]

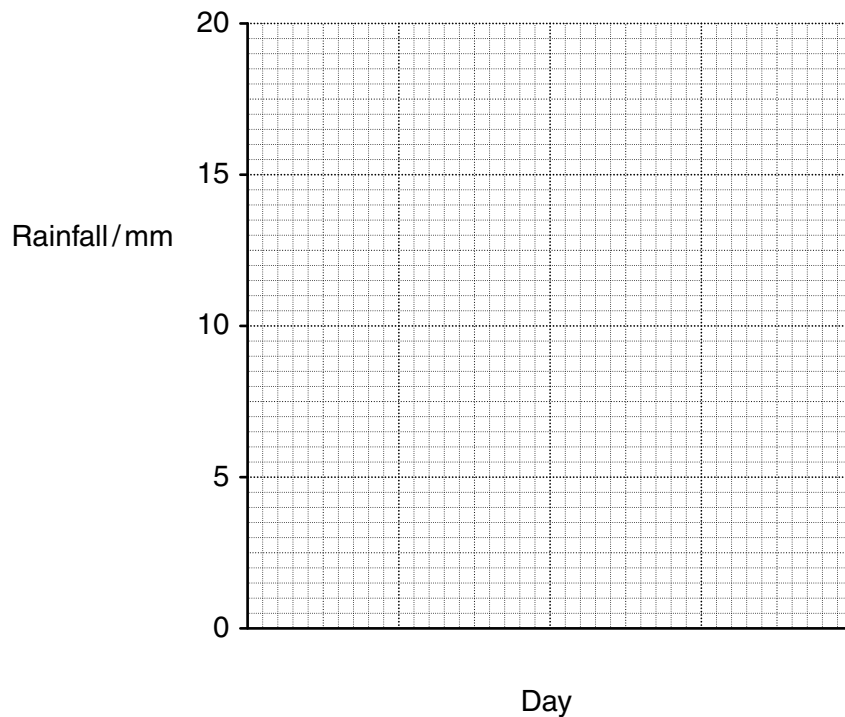
- 4 A plant nursery owner regularly records the amount of rainfall in millimetres (mm) and the hours of sunshine. The results during one week are shown in the table below.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Rainfall (mm)	3	8	0	14	7	13	5
Sunshine (hours)	8	6	9½	1¼	7¼	0	7¼

- (a) What is the mode of the hours of sunshine?

Answer (a)[1]

- (b) On the grid below, draw a bar chart to show the rainfall during the week.



[5]

- 5 A savings account offers a compound interest rate of 3.5% for the first year and 2.8% in the following years.

What will be the amount in the account after 4 years if \$60 000 is invested?
Give your answer to the nearest \$.

Answer \$[5]

- 6 (a) An investor has 6500 shares in a company. The company declares a pre-tax dividend of 12p per share. 20% tax is deducted before payment.

How much dividend does the investor receive?

Answer (a) £[3]

- (b) The investor bought some more shares in the company at 97p each. The total cost of the transaction was £7934.60. This includes paying a stockbroker a commission of $2\frac{1}{4}\%$ of the total cost of the shares.

How many shares did the investor buy?

Answer (b)[4]

- 7 An insurance company offers buildings insurance. The annual premium is calculated at a rate of 0.32% of the value of the building.

Contents insurance rates are shown in the table below.

Value of contents (£)	Up to 10 000	10 001 to 20 000	20 001 to 30 000	30 001 to 40 000	40 001 to 50 000	50 001 to 60 000
Total annual premium (£)	80	150	220	290	360	440

If both buildings insurance and contents insurance are bought there will be a 5% discount on the total premium paid.

Calculate the total annual premium if insurance is purchased for a building valued at £350 000 and for contents valued at £40 000.

Answer £[5]

- 8 A company produces items which weigh 45 kilograms each when packed ready for shipping.

550 of these items would completely fill a standard container, but for safety reasons the maximum load the container can carry is 21.8 tonnes.

- (a) How many items can be carried in a container at its maximum safety load?

Answer (a)[3]

- (b) What percentage of the space in the container would be filled with these items at maximum safety load?

Answer (b) % [2]

- 9 A small company has 6 employees who work 35 hours per week. The employees work extra hours (overtime) if needed. The table below shows the hours worked by each employee during one week.

Employee	A	B	C	D	E	F
Hours worked	38½	35	41	39½	37	37

- (a) Calculate the mean number of hours worked per employee.

Answer (a) hours [3]

- (b) The basic pay rate is £8.80 per hour. Overtime is paid at 1¼ times the basic rate.

How much does employee A earn for their week's work?

Answer (b) £ [5]

- (c) The company sales representative earned £24 200 in one year. This was made up of a basic annual salary of £21 500, plus commission on sales. She sold £36 000 worth of goods during the year.

Calculate the percentage commission rate on her sales.

Answer (c) % [3]

- 10 (a)** A wholesaler offers a retailer 26% trade discount and then a cash discount of 5%, 7 days or 2½%, 30 days.

How much will the retailer pay for goods with a list price of \$840 if he pays after 21 days?

Answer (a) \$ [3]

- (b)** The retailer sells these goods for \$740.

Calculate his percentage profit, giving your answer to 2 decimal places.

Answer (b) % [5]

- 11 (a)** A company imports sugar from Guatemala, Peru and Jamaica in the ratio 2 : 4 : 7 respectively. 8050 tonnes of sugar were imported from Jamaica.

How many tonnes of sugar were imported from Peru?

Answer (a) tonnes [3]

- (b)** How many tonnes of sugar did the company import in total?

Answer (b) tonnes [3]

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Please turn over for Question 12.

Section B (24 marks)

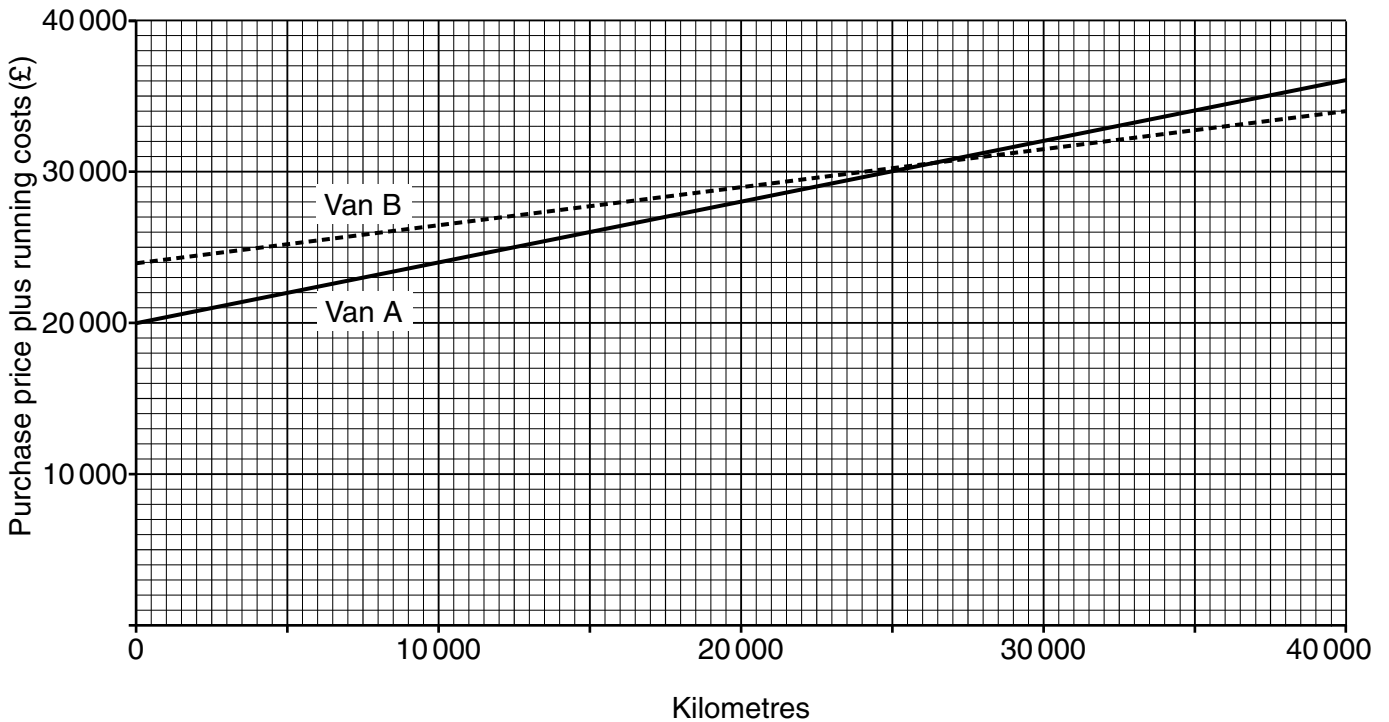
Answer any **two** questions from this section.

- 12** The owner of a delivery company is intending to purchase a new delivery van. She has to choose between two vans, Van A and Van B.

The graph below shows the purchase price and the running costs of each van. Van A has a purchase price of £20 000 and a running cost of 40 pence per kilometre (km).

The graph shows that Van B has a higher purchase price than Van A but a lower running cost.

Purchase Prices and Running Costs of Van A and Van B



- (a) Use the graph to answer the following questions.

- (i) What is the purchase price of Van B?

Answer (a)(i) £ [1]

- (ii) Calculate the running cost of Van B in pence per km.

Answer (a)(ii) pence per km [3]

- (b) (i) One of the delivery drivers had to take a load from the company depot to a customer's factory, a distance of 380 km away. His average speed for the journey was 80 km per hour.

How many hours and minutes did the journey take?

Answer (b)(i) [2]

- (ii) If the delivery driver left the depot at 07:35, at what time did he reach the customer's factory?

Answer (b)(ii) [2]

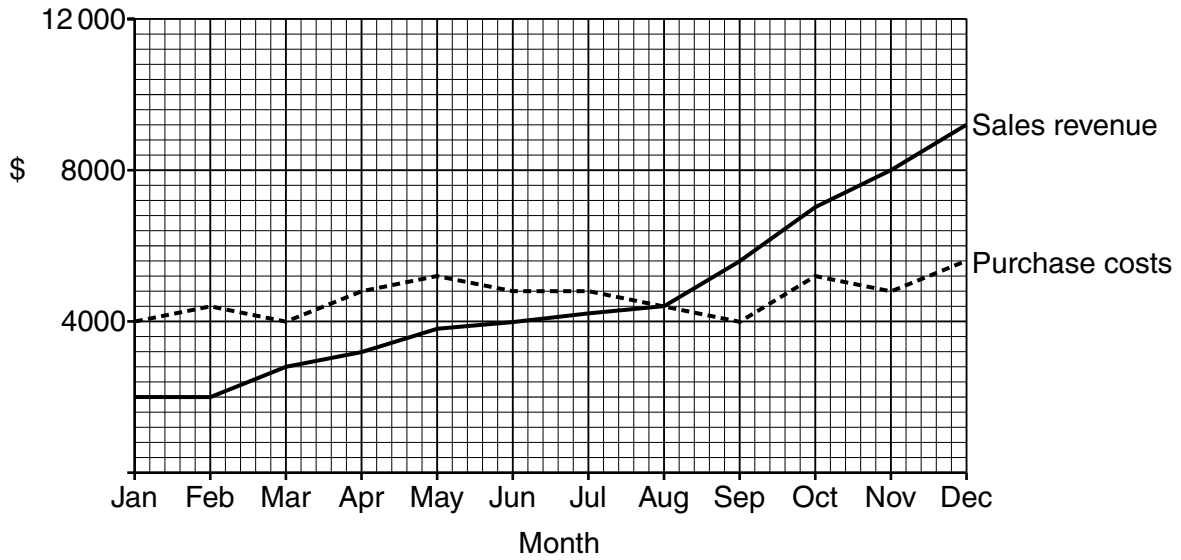
- (iii) The delivery driver left the customer's factory at 14:45 to make another delivery to a factory 265 km away. He arrived at 19:10.

What was his average speed for this journey? Answer in km per hour.

Answer (b)(iii) km per hour [4]

13 The graph shows the value of a retailer's purchases and sales over one year.

A Retailer's Purchase Costs and Sales Revenue



(a) The sales revenue in November was \$8000. What was the profit in November?

Answer (a) \$ [3]

(b) Calculate the percentage increase in sales revenue between September and November.

Give your answer to 1 decimal place.

Answer (b) % [4]

- (c) Last year the Retail Price Index (RPI) was 160. The retailer's rent for his premises was \$1250 per month. The rent increases annually in line with the RPI. This year the RPI is 172.

Calculate the rent this year.

Answer (c) \$ [2]

- (d) The table below shows the retailer's opening times.

Monday	9 a.m. to 5 p.m.
Tuesday	9 a.m. to 5 p.m.
Wednesday	9 a.m. to 1 p.m.
Thursday	8:30 a.m. to 4 p.m.
Friday	8:45 a.m. to 6 p.m.
Saturday	9 a.m. to 5:30 p.m.
Sunday	Closed

For how many hours in total is the retailer open each week?

Answer (d) hours [3]

14 Fig. 1 shows information about the imports and exports of Country X.

	Visible	Invisible
Exports	\$26 billion	\$28 billion
Imports	\$30 billion	\$28 billion

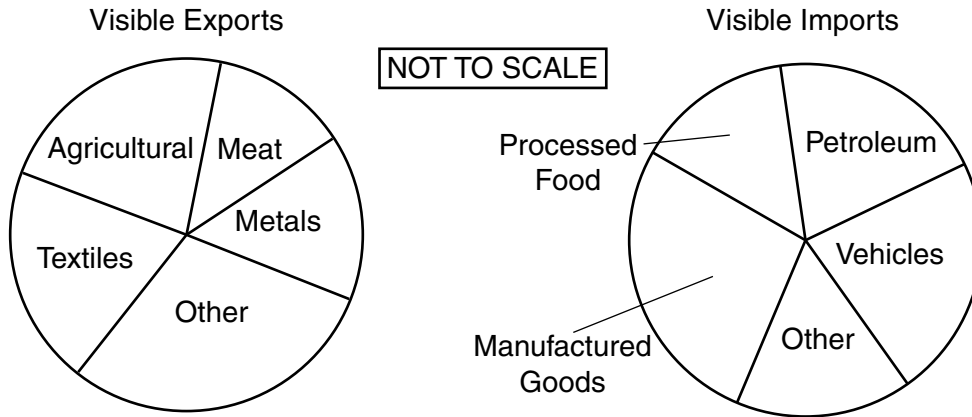


Fig. 1

Use Fig. 1 to help you answer the following questions.

(a) Calculate the balance of trade.

Answer (a) \$ [2]

(b) The sector angle in the visible exports pie chart in Fig. 1 for 'Metals' is 46°.

Calculate the value of metal exports. Give your answer in \$billion correct to 2 significant figures.

Answer (b) \$ billion [4]

(c) In the visible imports pie chart in Fig. 1, the value of 'Vehicles' is 22% of the total.

(i) Calculate the pie chart sector angle for 'Vehicles' imports.

Answer (c)(i) ° [3]

- (ii) 65% of the imported vehicles are commercial vehicles.

Calculate the value of the imported non-commercial vehicles.

Answer (c)(ii) \$ billion [3]

- 15** Ann, Beth and Colin are shareholders in a private limited company that they set up 10 years ago. Each shareholder receives a dividend in proportion to the number of shares they hold in the company. Their shareholdings amount to:

Ann	650 shares
Beth	840 shares
Colin	750 shares

For 2014 the gross profit was \$24 500. Expenses amounted to \$3500.
The company decided to retain 20% of net profit.

- (a) Calculate Beth's dividend.

Answer (a) \$ [6]

- (b) The net profit in 2014 increased by 12% compared to the net profit in 2013.

Calculate the net profit for 2013.

Answer (b) \$[4]

- (c) The number of products sold in each of their first 7 years of trading is shown in the table below.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
400	660	580	450	640	530	530

What is the median number of products sold?

Answer (c)[2]

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