



# Cambridge International AS & A Level

CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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## THINKING SKILLS

9694/01

Paper 1 Problem Solving

For examination from 2020

SPECIMEN PAPER

1 hour 30 minutes

You must answer on the question paper.

No additional materials are needed.

## INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- Show your working.

Where a final answer is incorrect or missing, you may still be awarded marks for correct steps towards a solution.

In most questions, full marks will be awarded for a correct answer without any working. In some questions, however, you will not be awarded full marks if working needed to support an answer is not shown.

## INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Blank pages are indicated.

- 1 Cans of the brand of beans that I always buy are usually 90 cents each. Last week, however, they had been reduced to 70 cents each, so I bought 36 cans.

This week they are back to 90 cents each, but there is a 'buy 2 cans, get another one free' offer in place.

How much more did I pay for the cans I bought last week than if I had bought them this week instead?

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- 2 Barry's 6-digit passcode for internet banking consists of six different digits. If a multiplication sign is placed between the second and third digits and an equals sign is placed between the third and fourth digits, a correct calculation appears.

The first digit of the passcode is 6, the third digit is 5 and the fifth digit is 2.

What is Barry's passcode?

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- 4 A postage company delivers parcels which are in the shape of a cuboid. The length of every side of the parcel must be a whole number of centimetres. The price in cents is determined by multiplying the weight of the parcel (to the nearest kilogram) by 30 and then adding on 20 times the length of the longest side of the parcel.

(a) What is the price for sending a parcel that measures  $3\text{ cm} \times 5\text{ cm} \times 2\text{ cm}$  and weighs 4 kg?

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 ..... [1]

(b) What is the largest a parcel that weighs 5 kg could be if the price for sending it is less than \$3?

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 ..... [3]

The company usually makes a profit on each delivery, but sometimes the cost to deliver a parcel is more than the price the company charges.

(c) (i) Suggest one reason why a delivery may cost more than the price charged.

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 ..... [1]

(ii) The company wishes to adjust its pricing system in order to ensure that it makes a profit on every delivery.

With reference to your answer to part (i), state two pieces of additional information the company would need to collect.

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 ..... [2]

- 5 A computer game involves creating words of five or more letters. At the beginning of each game, the computer assigns a points value of 1, 2, 3 or 4 to each letter of the alphabet, at random.

In the game that I am currently playing I have so far scored 14 points for EARTH, 12 points for CHART and 11 points for TRACE.

How many points would TEACHER score in this game?

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- 6 At the supermarket *Pryslide*, 500ml bottles of shower gel cost \$7 each. However, since the beginning of last week there has been a special offer: 'Buy 2 bottles, get another one for \$2.'

Yesterday, the total income from the sales of these bottles was \$323.

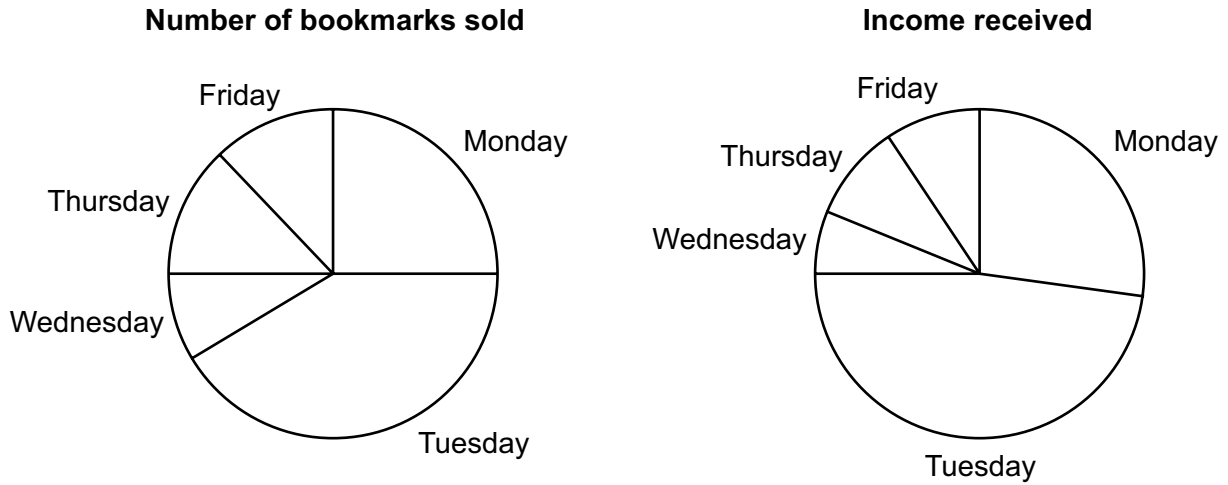
What is the maximum number of bottles that were bought for \$2 yesterday?

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..... [3]





- 9 Each day last week James sold some bookmarks that he had made. He drew pie charts to show how many bookmarks he had sold and how much income he received on each day.



Originally James was charging \$6 for each bookmark, but he changed the price that he was charging at the start of one of the days last week.

- (a) On which day did James change the price that he was charging for the bookmarks?

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 ..... [1]

James sold three times as many bookmarks on Monday as he sold on Wednesday.

- (b) What was the new price that James charged for the bookmarks?

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10 My local store sometimes runs offers on some of its products. There are three different types of offers that could be in place:

- Buy a certain number of a particular product and get an extra one for half price.
- A percentage discount (always a multiple of 5%) on one particular product.
- A percentage discount (always a multiple of 5%) on purchases worth a total of more than \$10.

The store only ever has one of these offers in place at any time.

Last week I bought

- 3 cartons of orange juice for \$4 each
- 1 loaf of bread for \$3
- 5 packets of snacks for \$1 each

This week I bought the same set of items, but only paid \$18 even though the individual items still had the same price.

(a) (i) There are two possible offers that could be applied to orange juice that would each explain this reduction in the total bill.

What are these two offers?

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..... [2]

(ii) What are the other two offers that could explain the reduction in the total bill?

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..... [2]

(b) In order to work out which offer is in place this week, I am going to make another purchase.

What is the minimum that I must buy in order to be certain about which offer is in place?

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..... [2]





12 Paul regularly makes the 100 km journey to visit his family. The journey involves three separate stages:

- A stage of 20 km that is travelled on small roads at a constant speed of 30 km/h.
- A stage of 50 km that is travelled on the highway at a constant speed of 100 km/h.
- A stage of 30 km that is travelled on standard roads at a constant speed of 40 km/h.

(a) How long does it normally take Paul to make this journey?

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..... [1]

Last week there were roadworks on a section of the highway, and Paul was only able to travel at 60 km/h for the length of the roadworks. Paul’s journey last week took 6 minutes longer than usual.

(b) What was the length of the section of roadworks?

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