2.3 Systematic Listing: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Using the digits 2, 5 and 8, list all the two-digit numbers that can be made. Each digit can be used only once in each number.

(Total for Question 1 is 2 marks)

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2 Priya spins a fair spinner with three equal sections labelled A, B and C, and rolls a fair four-sided dice numbered 1 to 4.
List all the possible outcomes.

(Total for Question 2 is 2 marks)

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3 Using the digits 1, 4 and 7, list all the two-digit numbers greater than 40 that can be made. Each digit may be used only once in each number.

(Total for Question 3 is 2 marks)

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4 A cafe lunch deal lets you choose one sandwich from 4 types (cheese, ham, tuna, egg) and one drink from 3 types (water, juice, tea). Work out how many different lunch deals are possible.

(Total for Question 4 is 1 mark)

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5 A cafe sells sandwiches with a choice of 2 types of bread (white, brown) and 4 types of filling (cheese, ham, egg, tuna). A table showing some of the possible combinations has been started below, but is not yet complete.

	Cheese	Ham	Egg	Tuna
White	✓	✓	✓	
Brown	✓		✓	✓

(a) Complete the table to show all 8 possible bread-and-filling combinations. **(2)**

(b) Write down the total number of different sandwiches possible. **(1)**

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(Total for Question 5 is 3 marks)

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6 A phone case shop sells cases in 4 colours (black, white, red, blue) and 2 finishes (matte, glossy). A customer buys one case.

(a) List all the different colour-and-finish combinations possible. **(2)**

(b) Nadia says you do not need to list every combination to find the total number possible. Use multiplication to work out the total number of combinations. **(2)**

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(Total for Question 6 is 4 marks)

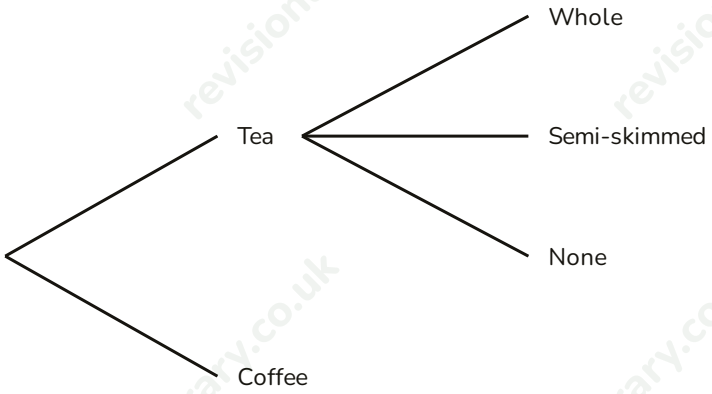
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7 A fair coin is flipped and then a spinner showing the numbers 1, 2, 3 and 4 is spun. Work out the number of possible outcomes in which the spinner shows an even number.

(Total for Question 7 is 2 marks)

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8 A vending machine sells a hot drink: first you choose Tea or Coffee, then you choose Whole milk, Semi-skimmed milk or None. Part of the tree diagram is shown: the Tea branch splits into three further branches (Whole, Semi-skimmed, None), but the branches after Coffee are missing.



(a) Copy and complete the tree diagram by adding the three missing branches after Coffee, labelled correctly. **(1)**

(b) Use the completed tree diagram to work out the total number of different drink orders possible. **(1)**

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(Total for Question 8 is 2 marks)

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9 Aisha, Ben and Chidi stand in a line to have their photograph taken.
List all the different possible orders in which the three friends can stand, and write down the total number of arrangements.

(Total for Question 9 is 3 marks)

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10 A computer password is 3 letters long, using 3 different letters chosen from the 5 letters A, B, C, D and E. The order of the letters matters and no letter is repeated.
Without listing them, work out the total number of different passwords possible.

(Total for Question 10 is 2 marks)

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Mark scheme · 2.3 Systematic Listing: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

systematic list shown, at least 4 correct numbers **B1**

all 6 numbers correct with no repeats or omissions: 25, 28, 52, 58, 82, 85 **B1**

Answer: 25, 28, 52, 58, 82, 85 (6 numbers)

Question 2

systematic list or table shown, at least 8 correct outcomes **B1**

all 12 outcomes listed with no repeats or omissions **B1**

Answer: A1, A2, A3, A4, B1, B2, B3, B4, C1, C2, C3, C4 (12 outcomes)

Question 3

systematic list of two-digit numbers from 1, 4, 7 shown, at least 2 numbers greater than 40 identified **B1**

all 4 numbers correct with no repeats or omissions, and 14 and 17 correctly excluded: 41, 47, 71, 74 **B1**

Answer: 41, 47, 71, 74 (4 numbers)

Question 4

12 cao **B1**

Answer: 12

Question 5

(a) at least 6 cells correctly completed **M1**

(a) all 8 cells correctly completed with no repeats or omissions **A1**

(a) Answer: white+cheese, white+ham, white+egg, white+tuna, brown+cheese, brown+ham, brown+egg, brown+tuna (8 combinations)

(b) 8 ft from part (a) or 8 cao **B1**

(b) Answer: 8

Question 6

(a) systematic list or table shown, at least 5 correct combinations **B1**

(a) all 8 combinations correct with no repeats or omissions **B1**

(a) Answer: black+matte, black+glossy, white+matte, white+glossy, red+matte, red+glossy, blue+matte, blue+glossy (8 combinations)

(b) 4 x 2 seen or correct process **M1**

(b) 8 cao **A1**

(b) Answer: 8

Question 7

identify 2 even spinner outcomes and multiply by 2 coin outcomes (2*2) oe **M1**

4 cao **A1**

Answer: 4

Question 8

(a) three branches added after Coffee, correctly labelled Whole, Semi-skimmed and None oe **B1**

(a) Answer: Coffee branches to Whole, Semi-skimmed, None

(b) 6 cao **B1**

(b) Answer: 6

Question 9

systematic list showing at least 4 correct orders (e.g. fixing Aisha first, then Ben, then Chidi) **B1**

all 6 orders correct with no repeats or omissions: ABC, ACB, BAC, BCA, CAB, CBA **B1**

correct total of 6 stated **B1**

Answer: ABC, ACB, BAC, BCA, CAB, CBA - total 6 arrangements

Question 10

5 x 4 x 3 seen **M1**

60 cao **A1**

Answer: 60

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