

N5

National Qualifications

2023

Applications of Mathematics

Paper 1 (Non-calculator)

Thursday, 4 May

Instructions to Candidates

Candidates should enter their surname, forename(s), date of birth, Scottish candidate number and the name and level of the subject at the top of their first answer sheet.

Total marks – 35

Attempt ALL questions.

You must NOT use a calculator.

To earn full marks you must show your working in your answers.

State the units for your answer where appropriate.

You must clearly identify the question number you are attempting on your answer sheet.

Write your answers clearly on your answer sheet.

An **ow** in the margin indicates a new question.

Questions marked with an asterisk differ in some respects from those in the printed paper.

Marks are shown in square brackets at the end of each question or part question.

[Braille page 2] Tactile diagrams are produced in a separately bound booklet.

A separate formula sheet is provided.

[Braille page 3] Total marks — 35

Attempt ALL questions

Question 1. Josh earns £9 per hour and works 30 hours a week.

His weekly outgoings are £220 a week.

Josh saves all his remaining money.

He books a holiday costing £566.

He will take £800 spending money with him.

Calculate the minimum number of weeks it will take him to save the total amount.
[2 marks]

Question 2. Refer to the diagram for Question 2. A lorry's speedometer is shown.

The lorry's speed is restricted to a maximum of 56 mph.

Use the speedometer to determine this speed in km/h. [2 marks]

Question 3. The crowd at a rugby match was made up of home supporters, away supporters and people who were neutral.

- $\frac{3}{7}$ were home supporters.

- $\frac{2}{5}$ were away supporters.

- The remaining people were neutral.

Calculate the fraction of the crowd that were neutral. [3 marks]

Question 4. Geoffrey shared his savings between his three children, Sophie, Ed and Lucy.

The money was shared in the ratio 7: 2: 6.

Sophie received £3304.

Calculate how much money Geoffrey gave his three children in total. [3 marks]

Question 5. Refer to the diagram for Question 5. Eddie runs a stall at the school fundraiser.

His game requires two spinners, each having five labelled edges, to be spun and allowed to come to rest, landing on an edge. The spinners are labelled Spinner A and Spinner B and are shown, as viewed from above, by the diagram for Question 5.

A prize is won if one spinner lands on blue or green and the other spinner lands on an even number.

Calculate the probability of NOT winning a prize. [3 marks]

ow 6. Kenny buys a new fridge.

The original price of the fridge was £650.

A shop is having a sale with 20% off the price of all fridges.

When Kenny goes to the shop, he finds there is an additional 2.5% off the sale price.

[Braille page 5] Calculate the price Kenny pays for the fridge. [3 marks]

ow * 7. Refer to Diagram 1 and Diagram 2 for Question 7. Biscuits are sold in tins in the shape of a cuboid as shown.

The tins need to be packed into boxes so the arrows on the tin and boxes are pointing up.

There are two types of box available with internal measurements as shown.

Diagram 1 shows the front views of the biscuit tin, Box A and Box B.

Diagram 2 shows the side views of the biscuit tin, Box A and Box B.

The biscuit tin has dimensions width 10 cm, length 10 cm and height 15 cm.

Box A has dimensions width 43 cm, length 51 cm and height 50 cm.

Box B has dimensions width 45 cm, length 72 cm and height 32 cm.

Determine the maximum number of tins which can be packed.

Use your working to justify your answer. [2 marks]

ow 8. Janet travelled by car from her home to a meeting.

She arrived at the meeting at 10:15 am.

[Braille page 6] She travelled 136 miles at an average speed of 40 mph.

During the journey she stopped for 50 minutes for breakfast.

Determine the time Janet left home. [3 marks]

ow * 9. Refer to the diagram for Question 9. A design for a skatepark ramp is shown.

The height of the ramp is 70 cm

To be suitable the ramp must have a gradient of 0.35 ± 0.01 .

Determine whether the ramp is suitable.

Use your working to justify your answer. [3 marks]

[Braille page 7] ow * 10. John owns a bike shop and has a team of mechanics who build each new bicycle.

The table lists the tasks that need to be completed and the time required for each task.

[In the table below, Task is followed by: Detail; Preceding task; time (minutes).]

A: attach bicycle to bicycle clamp stand; F; 1.

B: grease pedals; A; 1.

C: attach wheels; A; 7.

D: put bike on display; G, H, I, J; 2.

E: grease saddle post; F; 1.

F: remove bicycle frame and parts from box; none; 2.

G: insert saddle post into frame and tighten; E; 1.

H: install headset; A; 5.

I: inflate the tyres; C; 4.

J: attach pedals; B; 3.

(a) Refer to the diagram for Question 10(a). Write the order in which the tasks need to be done and the time taken for each task by filling the spaces labelled (i) to (x). Tasks A and D have **[Braille page 8]** been done for you. [2 marks]

(i) _

(ii) A 1

(iii) _

(iv) _

(v) _

(vi) _

(vii) _

(viii) _

(ix) _

(x) D 2

John thinks that the team of mechanics will have the bike ready within 15 minutes.

(b) Determine if John is correct.

Use your working to justify your answer. [2 marks]

[Braille page 9] ow * 11. Refer to the diagram for Question 11. The results were collected from 180 people. The pie chart and key in the diagram booklet shows the results. Complete the table below by writing the missing values labelled (i) to (iii). [3 marks]

[In the table below, Favourite pie filling is followed by: Number of people.]

Apple: _ (i).

Cherry: _ (ii).

Lemon: _ (iii).

ow 12. Laura makes and sells fruit smoothies. She intends to buy kiwi fruit in bulk. She considers the following two options:

a. Option 1: 35 kiwi fruit for £5.95

b. Option 2: 45 kiwi fruit for £8.10

Determine which option offers the best value for money. Use your working to justify your answer. [2 marks]

ow * 13. Senior students are preparing to sell scented candles at the school fair.

Before ordering the candles, they carried out a survey to find out which scent people preferred.

[Braille page 10] The results of the survey are shown below.

[In the table below, Preferred scent of candle is followed by: percentage of people.]

Linen: 50%.

Vanilla: 35%.

Rose: 10%.

Cinnamon: 5%.

The students sell 180 candles in total.

They sold 65 vanilla scented candles.

Determine if this is more or less than expected. [2 marks]

[END OF QUESTION PAPER]