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X844/75/01

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N5

National Qualifications

2024

Applications of Mathematics

Paper 1 (Non-calculator)

Monday, 13 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.

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.

An owl in the margin indicates a new question.

[Braille page 2] A separate formula sheet is provided.

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Total marks — 35

Attempt ALL questions

Q1. Refer to the diagram for Question 1. It shows a thermometer with °C and °F markings. Ella's temperature on Wednesday was 37.5°C

Ella's temperature on Thursday was 98°F.

Using the diagram for Question 1, what is the higher temperature of the two readings and on which day did she have the higher temperature? [2 marks]

Q2. Hamish is doing scientific research involving foals (baby horses).

For his research, Hamish must use foals that weigh $49.5 \text{ kg} \pm 2 \text{ kg}$.

Below are the weights of 20 foals, in kilograms.

49.5 46.9 47.9 51.6 49.7

49.4 51.5 47.0 48.6 50.6

51.8 48.8 48.0 47.5 50.0

51.4 47.4 51.0 49.1 47.6

Calculate the percentage of foals that Hamish cannot use for his research. [3 marks]

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Q3. Refer to the diagram for Question 3. Lee is saving up to buy a laptop costing £470.

He earns £11.50 per hour and works 30 hours each week.

Lee is paid weekly.

He pays £20.25 in tax and £12.35 in National Insurance each week.

He spends £42.40 each week on rail fares.

Lee saves 13% of his remaining money towards the laptop.

Calculate how many weeks it will take Lee to save enough money to buy the laptop. [3 marks]

Q4. Refer to the diagram for Question 4. Stephen has built a new ramp.

The height of the ramp is 850 mm.

Calculate the gradient of the ramp.

Give your answer as a fraction in its simplest form. [2 marks]

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ow * 5. The number of films Megan downloaded each month for a year is shown.

34 19 22 10 13 38 9 12 26 7 19 21

(a) For this data, calculate:

- the median
- the lower quartile
- the upper quartile
- the lowest number of films
- the highest number of films [4 marks]

(b) (i) Calculate the interquartile range for the number of films Megan downloaded. [1 mark]

Tommy also recorded the number of films he downloaded each month.

The interquartile range for the number of films Tommy downloaded is 10.

(ii) Make one valid comment comparing the number of films Megan and Tommy downloaded. [1 mark]

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ow 6. Jamie bought 2 identical cakes for his birthday.

His friends ate $\frac{2}{3}$ of the first cake.

His family ate $\frac{3}{4}$ of the second cake.

Calculate the total amount of cake left over.

Give your answer as a fraction of a cake. [3 marks]

ow * 7. Refer to Diagram 1 and Diagram 2 for Question 7. A container consists of a cuboid and a triangular prism.

The cuboid has length 40 cm, width 20 cm and height 15 cm.

The triangular prism has length 20 cm.

Diagram 1 shows the side view of the container.

Diagram 2 shows the top view of the container.

Calculate the volume of the container.

Give your answer in litres. [3 marks]

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ow * 8. Refer to Diagram 1 and Diagram 2 for Question 8. Tabitha is a van driver for a supermarket that provides home deliveries. Orders are packed into boxes for home delivery to customers.

Each box has a length 60 cm, width 40 cm and height 20 cm.

The van has internal dimensions as follows: length 410 cm, width 190 cm and height 220 cm.

Diagram 1 shows the front and side view of a box

Diagram 2 shows the front and side view of internal section of the van.

All boxes must be aligned in the same direction with the arrows on the boxes pointing upwards.

Calculate the maximum number of boxes that will fit in the van. [3 marks]

ow 9. Refer to the diagram for Question 9. A banner is being edged with ribbon.

It is in the shape of a rectangle and two quarter circles.

Calculate the length of ribbon needed to edge the banner.

Use $\pi = 3.14$. [2 marks]

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ow 10. Refer to the diagram for Question 10. It shows a pie chart. In 2022 and 2023 all S4 pupils at Lowgrove Academy achieved a Numeracy qualification.

The results for S4 pupils in 2022 are shown in the pie chart.

The results for S4 pupils in 2023 are shown in the table below.

[In the table below, Qualification is followed by: Number of pupils.]

National 3: 18.

National 4: 52.

National 5: 50.

Determine if there has been an increase in the proportion of pupils achieving National 5 Numeracy.

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

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ow *11. Refer to the diagram for Question 11. It is a scale drawing. A helicopter was hired to drop passengers off at two separate locations marked P and Q.

- (a) Complete the sentences below by writing the missing values labelled (i) to (iv).

Use a scale of 1 cm:10 km.

The helicopter flew (i) km from the start to location P on a bearing of (ii)°.

It then flew (iii) km from location Q on a bearing of (iv)°. [3 marks]

The helicopter then returns to the start from the second location, location Q.

- (b) Use the scale drawing to determine the distance and bearing of the start point from location Q. [2 marks]

[END OF QUESTION PAPER]