FOR OFFICIAL USE

N5

National Qualifications 2026

Mark

X844/75/01

Applications of Mathematics Paper 1 (Non-calculator)

FRIDAY, 15 MAY

9:00 AM – 9:50 AM

* X 8 4 4 7 5 0 1 *

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Number of seat

Date of birth

Day Month Year

Scottish candidate number

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.

Write your answers clearly in the spaces provided in this booklet. Additional space for answers is provided at the end of this booklet. If you use this space you must clearly identify the question number you are attempting.

Use **blue** or **black** ink.

Do not remove any exam materials. You must leave this booklet on your desk; if you do not, you could lose all the marks for this paper.

Qualifications Scotland
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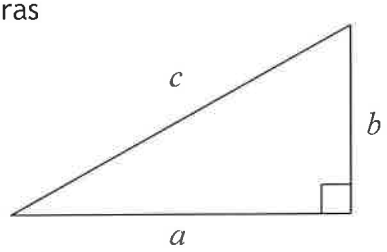
* X 8 4 4 7 5 0 1 0 1 *

FORMULAE LIST

Circumference of a circle $C = \pi d$

Area of a circle $A = \pi r^2$

Theorem of Pythagoras



$a^2 + b^2 = c^2$

Volume of a cylinder $V = \pi r^2 h$

Volume of a prism $V = Ah$

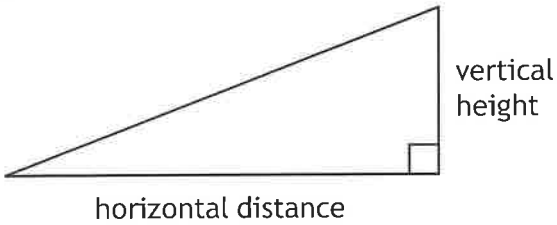
Volume of a cone $V = \frac{1}{3}\pi r^2 h$

Volume of a sphere $V = \frac{4}{3}\pi r^3$

Standard deviation $s = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$

or $s = \sqrt{\frac{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}{n-1}}$, where n is the sample size.

Gradient

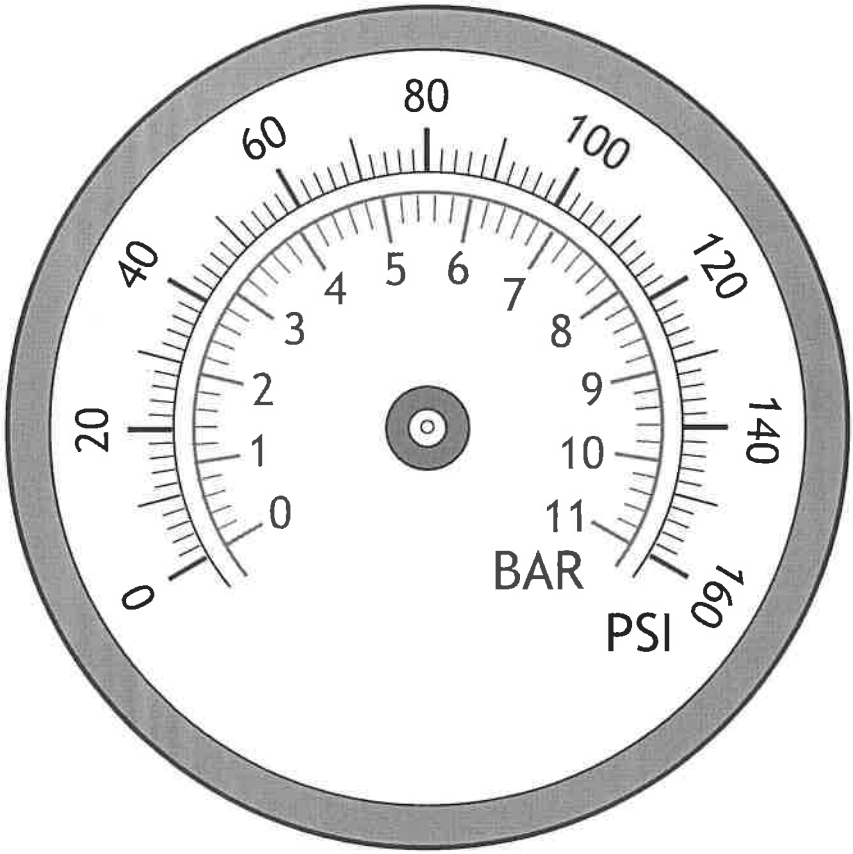


$$\text{gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Total marks — 35

Attempt ALL questions

1. A tyre pressure gauge is shown.



Safety regulations require a lorry's tyre pressure must be greater than or equal to 8.2 bar.

Trevor's lorry has a tyre pressure of 112 psi.

Mark **both** pressures on the gauge **and** determine if the tyre is safe. 2

MARKS | DO NOT WRITE IN THIS MARGIN

2. Craig is a farmer.

Each of Craig's sheep receives one dose of vitamins.

- On Monday he gave $\frac{1}{7}$ of his sheep a dose of vitamins.
- On Tuesday he gave a different $\frac{2}{3}$ of his sheep a dose of vitamins.

Calculate the fraction of Craig's sheep that have not yet had a dose of vitamins. 3

3. Helen is saving to buy a puppy.

   - Her monthly net pay is £1770.
   - Her monthly expenses are £1420.
   - She plans to save 20% of her remaining money each month.

   The puppy will cost £1250.

   Calculate the minimum number of months it will take to save this amount. 2

MARKS | DO NOT WRITE IN THIS MARGIN

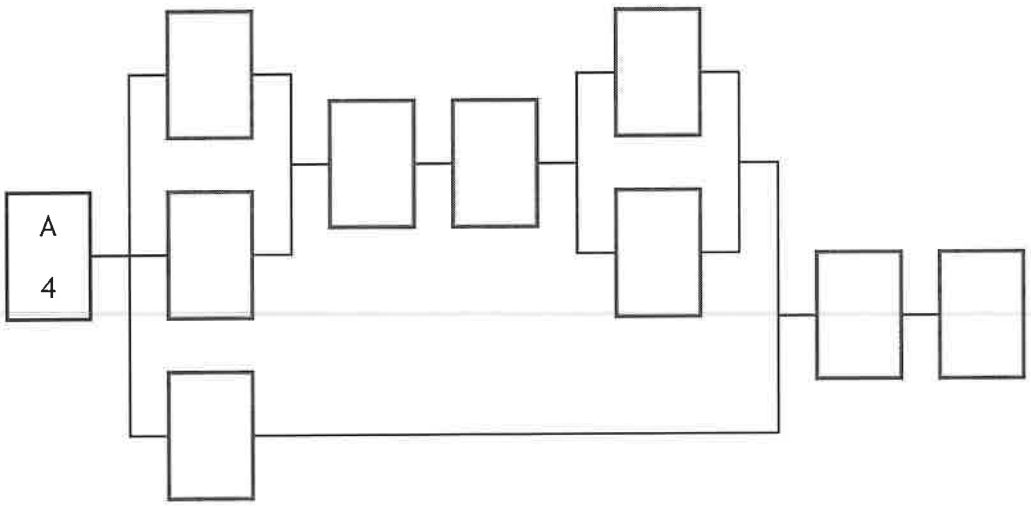
4. A company renovates houses before they are rented out.

The table shows the tasks that must be completed before the house can be rented out.

Task	Description	Preceding task	Time (hours)
A	Inspect property	none	4
B	Repair electrics	F	6
C	Service boiler	A	3
D	Empty property	A	8
E	Order materials	A	2
F	Repair plumbing	D, E	7
G	Clean property	I	12
H	Repair flooring	B	10
I	Paint property	C, H, J	24
J	Repair walls, doors and ceilings	B	5

(a) Complete the diagram below to show the tasks and times. 2

(An additional diagram, if required, can be found on *page 15*.)



(b) Calculate the minimum time taken to complete all of the tasks. 1

5. Ainzlie recorded the number of cars that she washed each day at a carwash over a period of ten days.

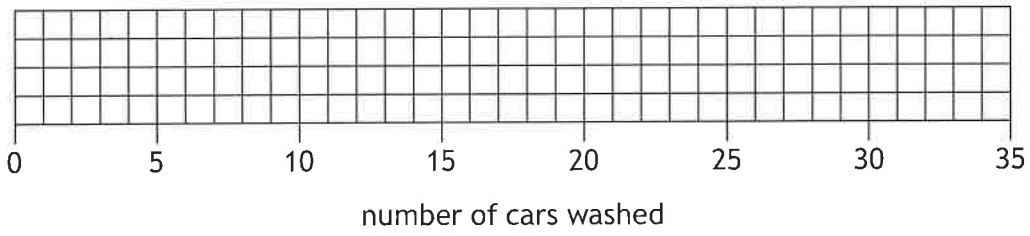
26 9 27 14 31 18 21 7 10 17

(a) For this data, calculate:

- the median
- the upper and lower quartiles. 2

(b) Construct a box plot for this set of data. 2

(An additional grid, if required, can be found on *page 15*.)

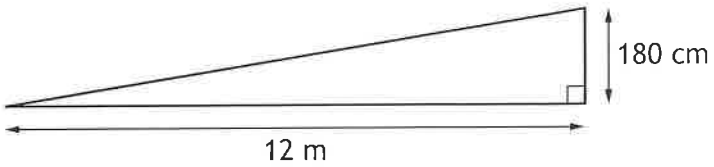


(c) Calculate the interquartile range for the number of cars that Ainzlie washed. 1

[Turn over

6. A warehouse has a ramp at its back door.

The dimensions are shown.



Calculate the gradient of the ramp.

Give your answer as a fraction **in its simplest form.** 2

MARKS | DO NOT WRITE IN THIS MARGIN

7. Jayanti sells kitchens.

She is paid a basic monthly salary of £1765 plus commission of 5% on her monthly sales **over** £40,000.

In March her sales totalled £56,000.

Calculate Jayanti's gross pay in March. 2

8. David is a pilot. He keeps a record of the distances and times of each flight.

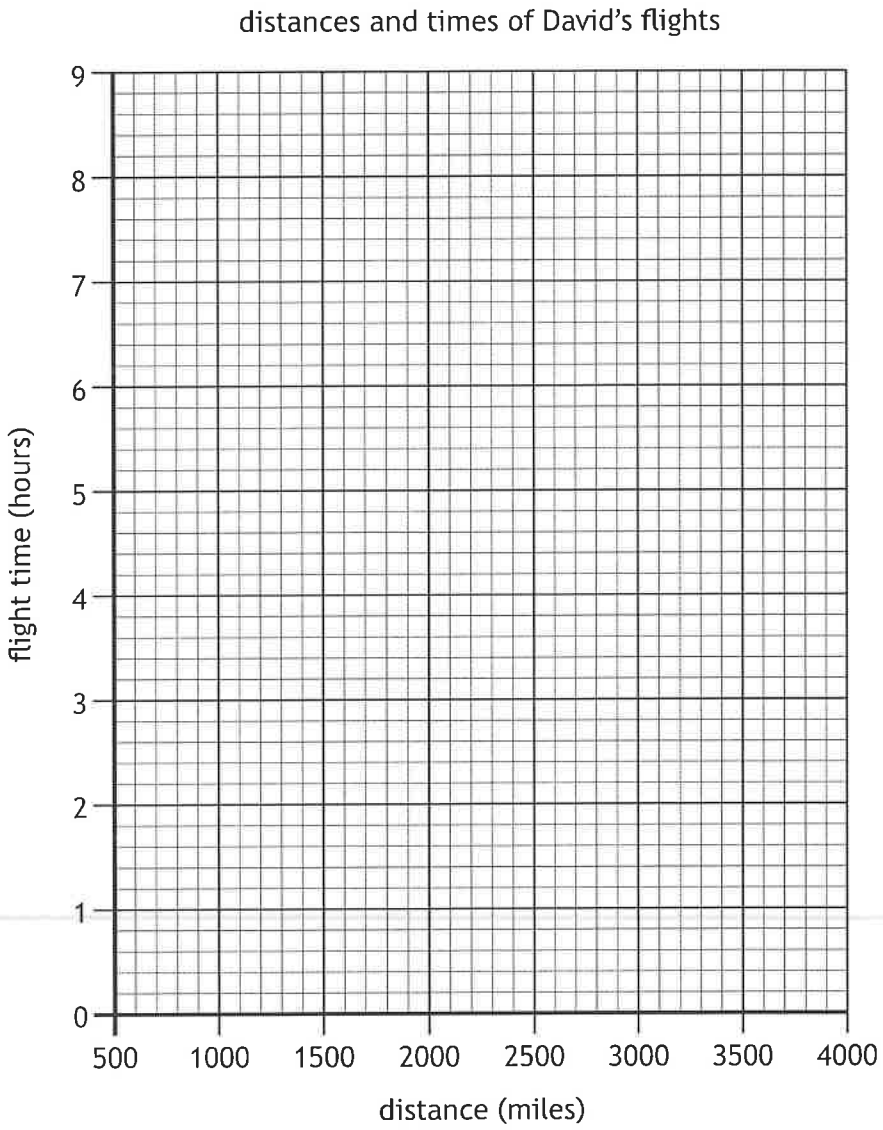
MARKS | DO NOT WRITE IN THIS MARGIN

The table shows the distances, to the nearest 100 miles, and times taken for the flights.

Distance (miles)	600	700	1100	1800	2000	2100	3300	3600
Flight time (hours)	1.8	2.4	2.6	4.2	4.4	5.6	8.0	7.2

(a) On the grid below draw a scattergraph to show this data. 2

(An additional grid, if required, can be found on *page 16*.)



(b) Draw a line of best fit on your scattergraph. 1

(c) David's next flight is expected to last 3.4 hours.

Use your line of best fit to estimate the distance of this flight. 1

MARKS | DO NOT WRITE IN THIS MARGIN

9. The volume flow rate (VFR) of a liquid is calculated using volume of liquid in m^3 and time in seconds.

It is calculated using the formula

$$\text{VFR} = \frac{\text{volume}}{\text{time}}$$

54 m^3 of water flows from a tank in a time of $1\frac{1}{2}$ **minutes.**

Calculate the volume flow rate of the water in m^3 **per second.**

Give your answer as a decimal. **2**

10. Emma sells bath salts.

The price of the bath salts is directly proportional to its weight.

Emma sells 450 grams of bath salts for £4.32.

Calculate the price of **1 kilogram** of bath salts. **2**

[Turn over

MARKS | DO NOT WRITE IN THIS MARGIN

11. Ann is playing a game which involves rolling a fair dice and flipping a fair coin.

- The dice has six sides numbered 1, 2, 3, 4, 5, 6.
- The coin has two sides, heads and tails.

There are two possible ways to win the game:

1. The coin landing on tails **and** the dice landing on a multiple of 3.
2. The coin landing on heads **and** the dice landing on an odd number.

Calculate the probability that Ann will win on her next turn.

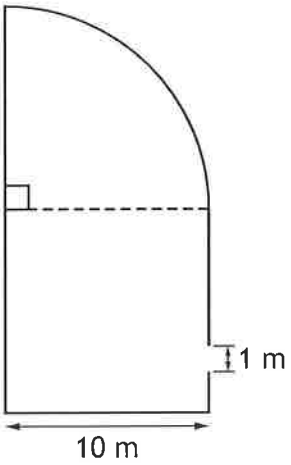
Give your answer as a fraction. 3

MARKS | DO NOT WRITE IN THIS MARGIN

12. A garden has been designed in the shape of a square and a quarter circle.

A fence will be built around the garden.

The fence will have a 1 metre-wide gap as shown.



Calculate the total length of the fence.

Use $\pi = 3.14$.

2

[Turn over

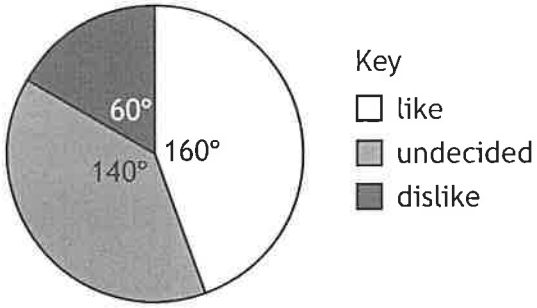
MARKS | DO NOT WRITE IN THIS MARGIN

13. A company was interested in customer opinions about a soft drink.

They carried out a survey.

The results are shown in the pie chart.

results of survey about soft drink



Following this survey, the company changed to a new recipe.

They then carried out a second survey.

The results of the second survey are shown in the table.

Like	Dislike	Undecided
280	70	130

Determine if there has been a decrease in the proportion of customers who **dislike** the soft drink.

Use your working to justify your answer. 3

[END OF QUESTION PAPER]

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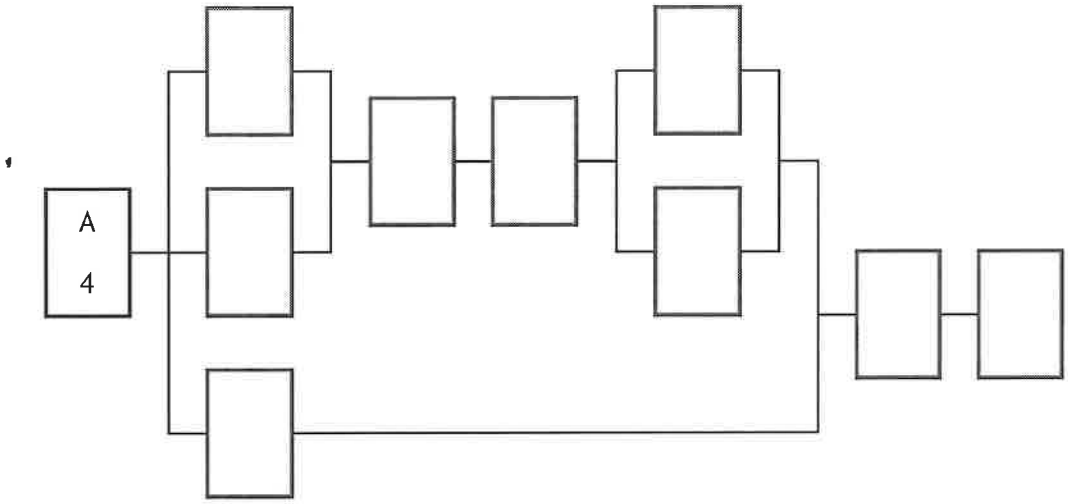
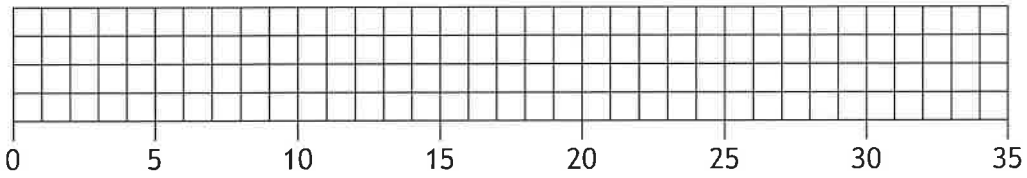
ADDITIONAL SPACE FOR ANSWERS

Additional diagram for use with question 4 (a)



Additional grid for use with question 5 (b)



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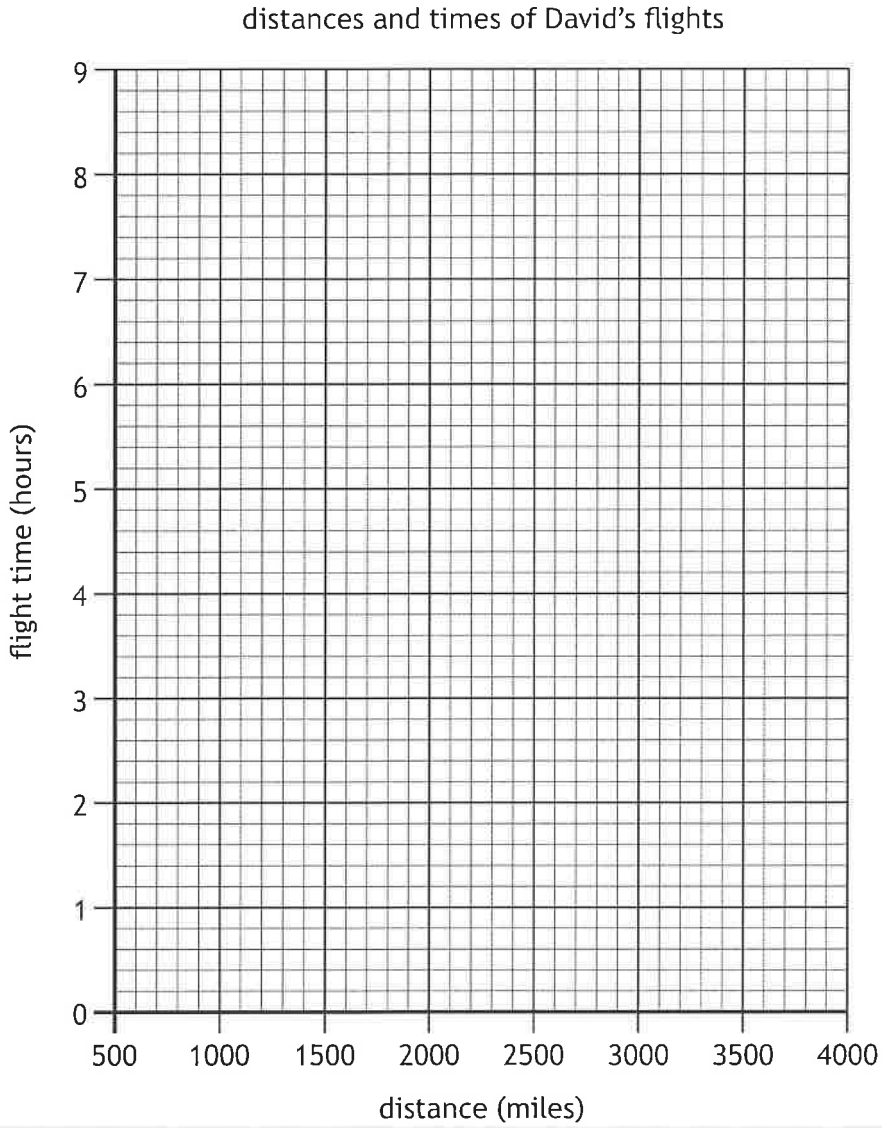
ADDITIONAL SPACE FOR ANSWERS

Additional grid for use with question 8 (a)



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