FOR OFFICIAL USE

N5

National
Qualifications
SPECIMEN ONLY

Mark

SQ26/N5/01

Lifeskills Mathematics Paper 1 (Non-Calculator)

Date — Not applicable

Duration — 50 minutes

* S Q 2 6 N 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

D D M M Y Y

Scottish candidate number

Total marks — 35

You may NOT use a calculator.

Attempt ALL questions.

Use **blue** or **black** ink. Pencil may be used for graphs and diagrams only.

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

Square-ruled paper is provided at the back of this booklet.

Full credit will be given only to solutions which contain appropriate working.

State the units for your answer where appropriate.

Before leaving the examination room you must give this booklet to the Invigilator. If you do not, you may lose all the marks for this paper.

SQA ©

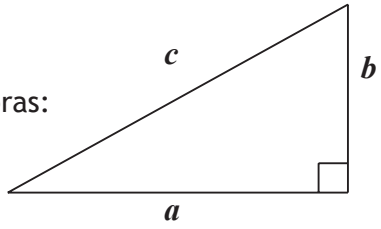
* S Q 2 6 N 5 0 1 0 1 *

FORMULAE LIST

Circumference of a circle: $C = \pi d$

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

Theorem of Pythagoras:



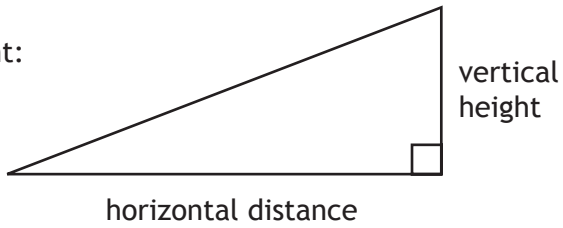
$a^2 + b^2 = c^2$

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

Volume of a prism: $V = Ah$

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

Gradient:



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

Attempt ALL questions

1. Dave and Elaine each have the same monthly data allowance on their mobile phone contract.

Dave has used $\frac{4}{7}$ of his monthly data allowance.

Elaine has used $\frac{5}{8}$ of her monthly data allowance.

Who has used the most data?

Give a reason for your answer. **2**

2. Alzena drove from Glasgow to Manchester Airport, 252 miles away.

Alzena left Glasgow at 11.25 pm.

She arrived at Manchester Airport at 3.25 am.

(a) How long did Alzena's journey take ? **1**

(b) Calculate her average speed in miles per hour for the journey. **2**

Total marks 3

MARKS | DO NOT WRITE IN THIS MARGIN

3. A charity had a stall at a fair selling crafts and cakes to raise money.
The stall had sales worth £70.

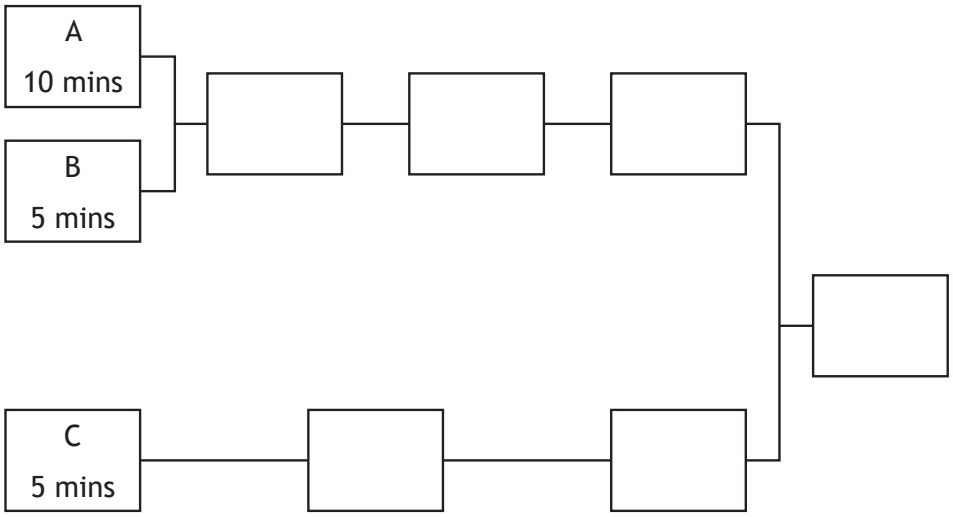
The charity must pay 15% of the money from the sales to the organisers.
The materials for the crafts and cakes cost £24.
What is the **net** amount of money raised? **2**

4. Three friends decide to tidy up their garden.

The tasks which need to be done are shown in the table below:

Tasks	Detail	Preceding task	Time (minutes)
A	Clear rubbish from the garden	None	10
B	Get lawnmower and edge shears out of the shed	None	5
C	Get hedge trimmer out of the shed	None	5
D	Cut grass in the garden	A, B	30
E	Trim edges of the lawn with shears	B, D	10
F	Cut the hedge	C	20
G	Put grass clippings in bag	D, E	5
H	Put hedge clippings in bag	F	5
I	Take bags to recycling centre	G, H	45

(a) Complete the chart below by writing the letter of the tasks and time (in minutes) in the boxes. **2**



(b) Calculate how much time **in total** the three friends should allow for the garden to be completed? **1**

Total marks 3

5. Callum, a fitness instructor, is working with ten adults.

He records their resting pulse rates in beats per minute (bpm).

He then takes them on a "Step" exercise session and records their pulse rates immediately after this exercise.

Callum allows the adults to return to their resting pulse rates.

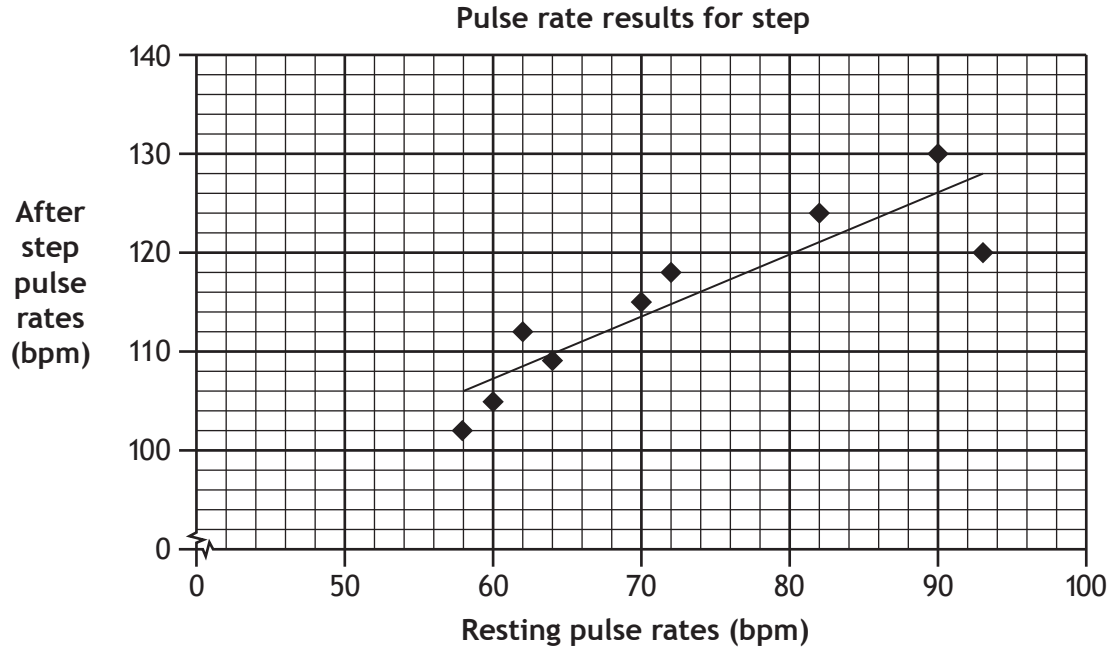
He then takes them on a "Rowing" exercise session and records their pulse rates immediately after this exercise.

The results are displayed in the table below:

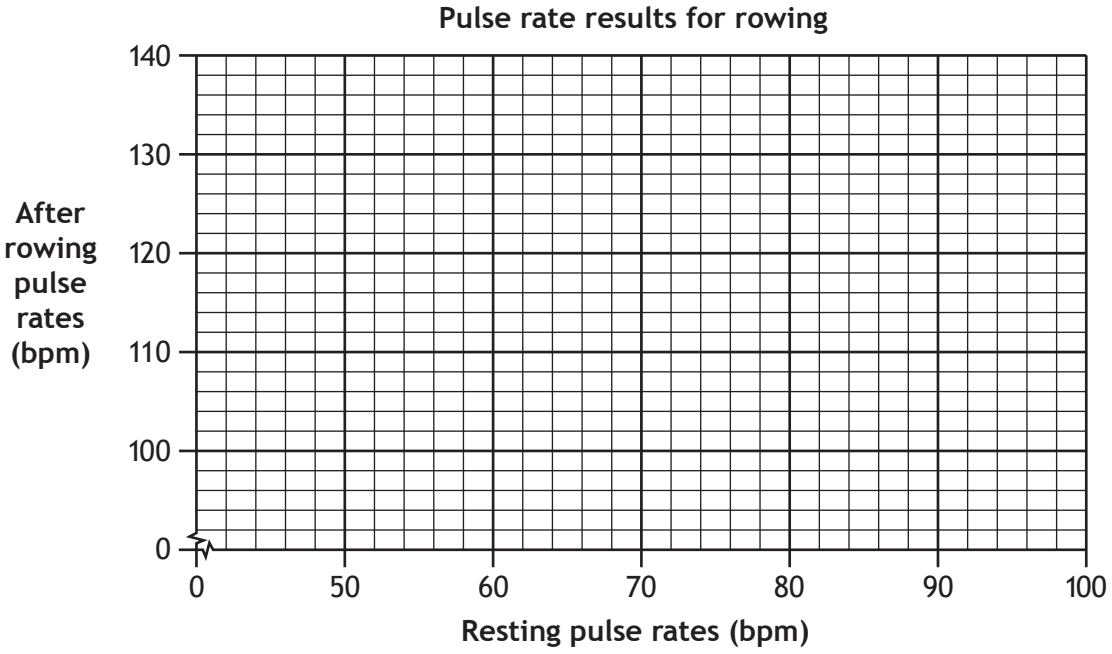
Adult		A	B	C	D	E	F	G	H	I	J
Resting pulse rate (bpm)		60	70	64	78	58	93	62	72	82	90
After Step pulse rate (bpm)		105	115	109	120	102	120	112	118	124	130
After Rowing pulse rate (bpm)		102	117	100	110	100	120	105	107	112	120

5. (continued)

Callum has drawn the following scattergraph of the pulse rate results for the **step** exercise, and marked in a line of best fit.



(a) Mark in the pulse rate results for **rowing** on the grid below. **2**



(b) Draw a line of best fit on the diagram above. **1**

5. (continued)

(c) A new member of the group had a resting pulse rate of 87. After exercise his pulse rate was 112.

Which exercise do you think he is likely to have done?

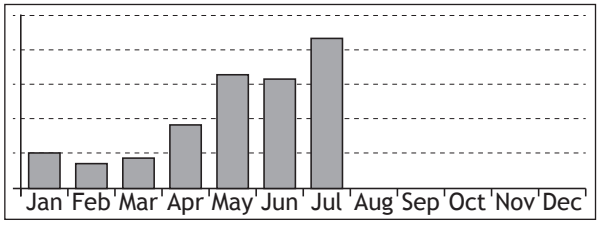
Give a reason for your answer. **2**

Total marks 5

6. The table below shows the average monthly exchange rates for British pounds (GBP) to euros (EUR) between January and July 2012.

Foreign Exchange Conversion Data

1 GBP to Euros



Average Monthly Rates

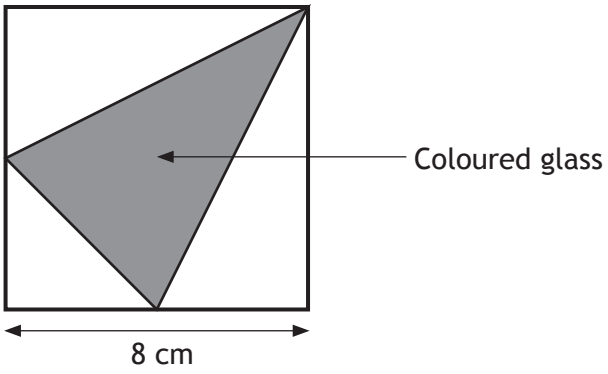
January	1·2018 EUR
February	1·1949 EUR
March	1·1984 EUR
April	1·2166 EUR
May	1·2435 EUR
June	1·2410 EUR
July	1·2637 EUR

Using the information above, how many more euros would I have received if I changed £500 when the exchange rate was at its highest in comparison to its lowest? **4**

Show all your working.

MARKS | DO NOT WRITE IN THIS MARGIN

7. In a **square** plain glass panel, a designer wants to place a coloured triangular piece of glass as shown in the diagram below.



The triangular piece of coloured glass is formed from a corner of the square to the mid points of the opposite edges as shown in the diagram.

Calculate the ratio of the area of **coloured** glass to the area of **plain** glass. **4**

Show all your working.

MARKS | DO NOT WRITE IN THIS MARGIN

8. Jill earns £24 300 per annum.

She has a personal tax allowance of £8130.

She pays tax at the basic rate of 20%.

(a) Calculate how much tax she must pay each year. **2**

(b) Jill also pays £166·08 **per month** in National Insurance and £100 **per month** into her pension.

(i) Calculate Jill's **total monthly** deductions. **2**

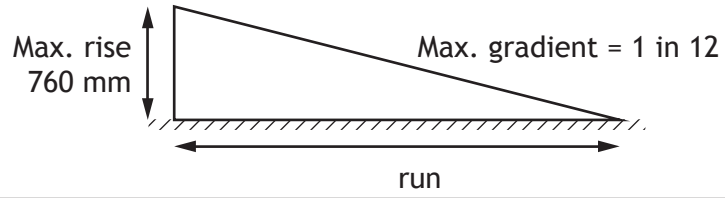
(ii) Calculate Jill's **monthly** take home pay. **1**

Total marks 5

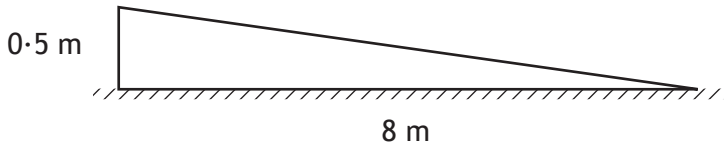
9. The 'Accessibility Guidelines for Buildings and Facilities for Wheelchair Access' give two recommendations.

Recommendations

1. The maximum gradient of a ramp shall be 1 in 12.
2. The maximum rise shall be 760 mm for any length of run.



The drawing below shows the design of a **new ramp**.



(a) Does the new ramp meet Recommendation 1 ?

Give a reason. **2**

(b) Does the new ramp meet Recommendation 2 ?

Give a reason. **1**

Total marks 3

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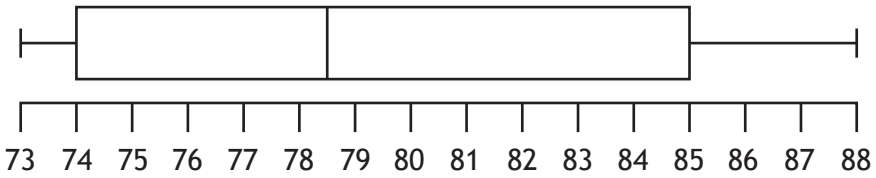
10. Juma recorded his golf scores over the year. He played 12 times in windy conditions and 12 times in calm conditions.

The data for the windy conditions are illustrated in the box plot below.

Windy conditions



His scores for the calm conditions are shown in the table below.

Calm conditions

70	68	73	70
67	78	74	73
74	76	78	76

(a) Construct a box plot to illustrate the data for Juma's golf scores in calm conditions. **3**

10. (continued)

(b) State a valid comparison between the scores for the windy and calm conditions. **1**

Total marks 4

[END OF SPECIMEN QUESTION PAPER]

MARKS | DO NOT WRITE IN THIS MARGIN

ADDITIONAL SPACE FOR ANSWERS

MARKS | DO NOT WRITE IN THIS MARGIN

ADDITIONAL SPACE FOR ANSWERS

National
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SQ26/N5/01

Lifeskills Mathematics
Paper 1

Marking Instructions

These Marking Instructions have been provided to show how SQA would mark this Specimen Question Paper.

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Part One: General Marking Principles for National 5 Lifeskills Mathematics
This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question. The marking schemes are written to assist in determining the 'minimal acceptable answer' rather than listing every possible correct and incorrect answer.

(a) Marks for each candidate response must always be assigned in line with these General Marking Principles and the specific Marking Instructions for the relevant question.

(b) Marking should always be positive, ie marks should be awarded for what is correct and not deducted for errors or omissions.

(c) Credit must be assigned in accordance with the specific assessment guidelines.

(d) Candidates may use any mathematically correct method to answer questions except in cases where a particular method is specified or excluded.

(e) Working subsequent to an error must be followed through, with possible credit for the subsequent working, provided that the level of difficulty involved is approximately similar. Where, subsequent to an error, the working is easier, candidates lose the opportunity to gain credit.

(f) Where transcription errors occur, candidates would normally lose the opportunity to gain a processing mark.

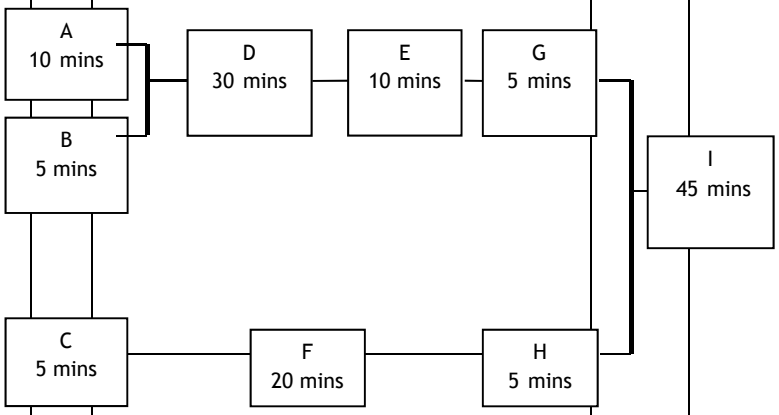
(g) Scored out or erased working which has not been replaced should be marked where still legible. However, if the scored out or erased working has been replaced, only the work which has not been scored out should be judged.

(h) Unless specifically mentioned in the specific assessment guidelines, do not penalise:

- Working subsequent to a correct answer
- Correct working in the wrong part of a question
- Legitimate variations in solutions
- Bad form
- Repeated error within a question

Part Two: Specific Marking Instructions for each question

Question			Marking scheme Give one mark for each •	Max mark	Illustrations of evidence for awarding a mark at each •
1			**Ans: Elaine has** $\frac{35}{56} > \frac{32}{56}$ • [1] Process: find common denominator • [2] Communication: state conclusion with reason	2	• [1] 56 (or equivalent) • [2] Elaine has $\frac{35}{56} > \frac{32}{56}$
2	a		**Ans: 4 hours** • [1] Process: calculate time across midnight	1	• [1] 4 hours
2	b		**Ans: 63 (mph)** • [1] Strategy: substitute into correct formula • [2] Process: calculate speed	2	• [1] $s = \frac{252}{4}$ • [2] 63 (mph)
3			**Ans: £35·50** • [1] Strategy: know to find 15% • [2] Process: calculate net amount of money raised	2	• [1] 70 ÷ 100 × 15 accept any alternative method • [2] 70 − 10·50 − 24 = £35·50

4	**a**		**Ans: task letters and times inserted in chart** • [1] Strategy: start to allocate tasks • [2] Strategy: complete allocation of tasks and times  	**2**	• [1] task letters in correct boxes • [2] times in correct boxes
4	**b**		**Ans: 100 mins or 1 hr 40 mins** • [1] Process: calculate total time	**1**	• [1] for longest time in each section: 10 + 30 + 10 + 5 + 45 = 100 mins or 1 hr 40 min
5	**a**		**Ans: All points plotted correctly** • [1] Strategy: start to plot points • [2] Process: plot all 10 points	**2**	• [1] 3 points plotted correctly • [2] All 10 points plotted correctly
5	**b**		**Ans: Best fitting line drawn** • [1] Strategy: know to draw line of best fit	**1**	• [1] Accept line with positive gradient which has minimum 3 points above and 3 points below the drawn line
5	**c**		**Ans: Rowing with reason** • [1] Strategy: know to use line of best fit • [2] Communication: state answer with justification	**2**	• [1] Plotting of point on second line of best fit or equivalent • [2] Rowing because for example, step line is above 120 at 87 bpm

6			**Ans: 34 euros or 34 (·40) euros** • [1] Strategy: identify highest and lowest values • [2] Strategy: know to find number of euros • [3] Strategy: know to find difference • [4] Process: carry out calculations correctly	**4**	• [1] 1·2637 *and* 1·1949 • [2] 1·2637 × 500 *and* 1·1949 × 500 • [3] 631·85 – 597·45 • [4] 34 euros or 34 (·40) euros
7			**Ans: 3 : 5 or equivalent** • [1] Strategy: know to work out the area of coloured glass • [2] Process: calculate: area of square calculate area of triangle 1 calculate area of triangle 2 calculate area of triangle 3 • [3] Process: subtract areas of three right angle triangles from area of square • [4] Communication: calculate ratio	**4**	• [1] know that area of coloured glass is area of whole square minus areas of 3 right angled triangles • [2] 8 × 8 = 64 (cm^2) ½ × 4 × 8 = 16 (cm^2) ½ × 4 × 4 = 8 (cm^2) ½ × 4 × 8 = 16 (cm^2) • [3] 64 − 40 = 24 (cm^2) • [4] 3 : 5 or equivalent
8	**a**		**Ans: £3234 per year** • [1] Process: find taxable pay • [2] Process: find tax paid	**2**	• [1] £16 170 • [2] £3234 per year
8	**b**	**i**	**Ans: £535·58** • [1] Process: find monthly tax paid • [2] Process: find total monthly deductions	**2**	• [1] £269·50 • [2] 269·50 + 166·08 + 100 = £535·58

8	**b**	**ii**	**Ans: £1489·42** • [1] Process: find monthly take home pay	**1**	 • [1] £1489·42
9	**a**		**Ans: Yes, the ramp will conform to recommendation 1 because its gradient of 1 in 16 is less steep than 1 in 12.** • [1] Process: Calculate gradient • [2] Communication: Interpret gradient of ramp	**2**	 • [1] 0·5/8 × 2/2 = 1/16 • [2] Yes, 1 in 16 is less steep than 1 in 12
9	**b**		**Ans: Yes, rise is less than 760 mm** • [1] Communication: state conclusion	**1**	 • [1] Yes, 500 mm < 760 mm or equivalent
10	**a**		**Ans: appropriate box plot drawn** • [1] Strategy: know information required to construct box plot • [2] Process: State 5 figure summary for calm conditions • [3] Communication: box plot drawn correctly	**3**	 • [1] begins to list five figure summary • [2] Calm conditions L-67, Q1-70, Q2-73.5, Q3-76, H-78 • [3] Box plot drawn to an approximate scale or to scale on square-ruled paper

10	**b**		• [1] Communication: valid comparison	**1**	• [1] Any valid comparison for example: • Scores tend to be higher in windy conditions • There is less spread of data in calm conditions • Scores tend to be lower in calm conditions • There is a greater spread of scores in windy conditions • Scores tend to be more consistent in calm conditions

TOTAL MARKS FOR PAPER 1-35

[END OF SPECIMEN MARKING INSTRUCTIONS]