

FOR OFFICIAL USE



National
Qualifications
2015

Mark

X744/75/01

Lifeskills Mathematics Paper 1 (Non-Calculator)

WEDNESDAY, 29 APRIL

1:00 PM – 1:50 PM



* X 7 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.

Write your answers 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.

You may NOT use a calculator.

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.



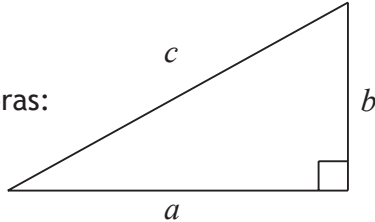
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FORMULAE LIST

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: $V = \pi r^2 h$

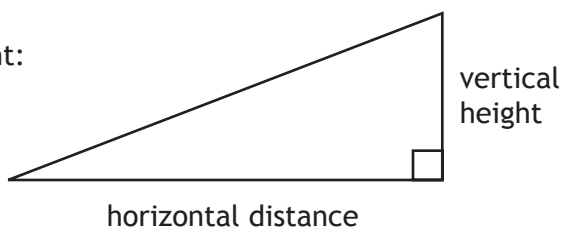
Volume of a prism: $V = Ah$

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

Gradient:



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

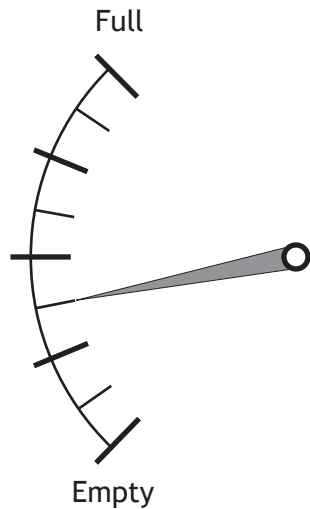


Total marks — 35
Attempt ALL questions

MARKS
DO NOT
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MARGIN

1. Carol knows that she can travel 280 miles on a full tank of fuel. She is making a trip of 110 miles.

The diagram below shows the car's fuel gauge



Does she have enough fuel to make the journey?

Show working to justify your answer.

2

2. Usain flies from London to Moscow for a business meeting.

The plane leaves London at 1845.

The flight takes 3 hours and 40 minutes.

Moscow time is 4 hours ahead of London.

It should take 45 minutes to collect his luggage and clear security.

His company arranges for a driver to collect him from Moscow Airport.

At what time should the driver expect to collect Usain?

2

[Turn over



3. Freddie and Kamal work in a warehouse stacking shelves.
A section of the warehouse has 5 shelves; each shelf is 10 metres in length.
The shelves are currently stocked as shown below.

Shelf 1	Box A (7 m)
Shelf 2	Box B (5 m)
Shelf 3	Box C (6 m) Box D (3 m)
Shelf 4	Box E (4 m) Box F (3 m)
Shelf 5	Box G (2 m)

A new delivery of Box H (6 m), Box I (5 m), Box J (3 m), Box K (4 m), Box L (1 m) arrives to be stored in this section of the warehouse.

These new boxes need to be stored on different shelves from the existing stock.

The existing stock can be re-arranged to create space for the new delivery.

By writing the letters A to L in the diagram below, show how Freddie and Kamal can fit all the boxes onto the shelves.

(An additional diagram, if required can be found on *Page eleven*)

2

Shelf 1	
Shelf 2	
Shelf 3	
Shelf 4	
Shelf 5	



* X 7 4 4 7 5 0 1 0 4 *

4. A company orders a batch of washers with a thickness of 2.4 ± 0.05 mm. A quality control inspector takes a sample from the batch of washers. The thicknesses, in mm, of the washers in this sample are shown below.

2.44, 2.37, 2.36, 2.45, 2.35

2.35, 2.44, 2.43, 2.34, 2.40

2.40, 2.41, 2.39, 2.38, 2.46

2.41, 2.39, 2.53, 2.36, 2.37

For the batch to be accepted, at least 88% of the washers in this sample must be within tolerance.

Will the batch be accepted?

3

5. A shop sells Ice Cola in 330 millilitre cans. An individual can costs 66 pence. Complete the shelf label for Ice Cola below to show the price per litre.



2

330 ml	equivalent to	1 litre
<u>66p</u>		_____

[Turn over



MARKS

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6. Mhairi buys 200 shares for £700.

When she decides to sell them, the share price has dropped to £2.75 per share.

She has to pay a fee of $2\frac{1}{2}\%$ of her selling price when she sells her shares.

Calculate the loss that she has made.

4

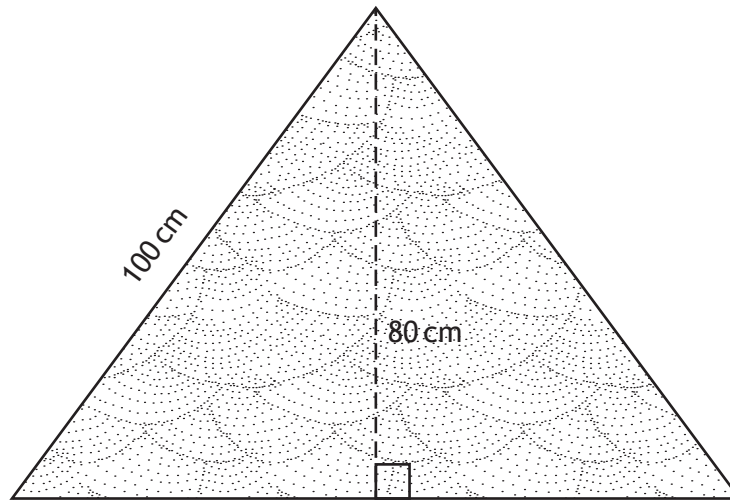


* X 7 4 4 7 5 0 1 0 6 *

MARKS

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7. Lucy has a scarf in the shape of an isosceles triangle with dimensions as shown below.



Lucy wants to sew ribbon along all three edges of the scarf.

She has 3.5 metres of ribbon.

Does Lucy have enough ribbon for the scarf?

Show all working and justify your answer.

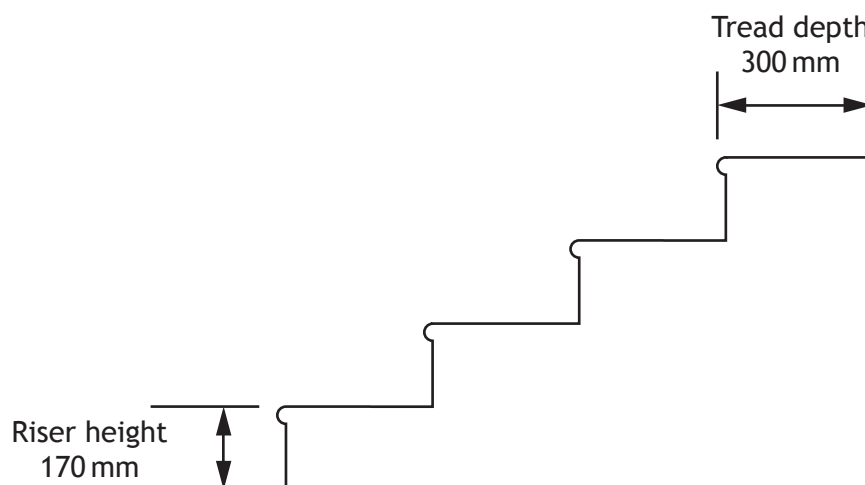
4

[Turn over



* X 7 4 4 7 5 0 1 0 7 *

8. The diagram below shows a staircase Mark intends to install in his home. The dimensions of the riser and tread of each step are shown.



For safety reasons, these rules must be applied.

- Twice the riser height plus the tread depth should be $625 \text{ mm} \pm 15 \text{ mm}$.
- The gradient of each step should be less than $\frac{1}{2}$.

Mark thinks that this staircase will meet both of these rules.

Is Mark correct?

Use your working to justify your answer.

5



9. Novak is going to buy a new computer system. He researches online to find the prices from different retailers.

Retailer	Keyboard	Monitor	Computer Tower	Mouse	Printer
Easy Comp	50	130	130	15	95
ABC	45	135	140	20	75
Compact	30	125	180	25	120
Hardy's	70	130	165	15	125
Tonda	35	115	150	20	80
Disme	40	120	180	10	105

All prices are in £s

- (a) Novak needs to buy one of each item. He is happy to buy these from different retailers.

What is the minimum total cost for his new computer system?

1

- (b) Novak cannot afford to pay for his computer system all at once.

Disme can provide a finance package to buy the complete computer system.

The deposit is 10% of the cash price, followed by 12 payments of £40.

He chooses to buy the complete computer system from Disme using their finance package.

How much more than the minimum total will this cost him?

4

[Turn over

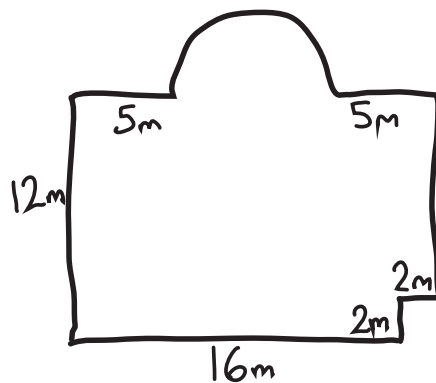


* X 7 4 4 7 5 0 1 0 9 *

10. A hotel is redecorating their function room which includes a semi-circular stage area.

They plan to lay a hardwood floor.

A sketch of the floor plan of the room is shown below.



(a) Calculate the area of the floor in the hotel's function room.

Use $\pi = 3 \cdot 14$.

4

(b) Hardwood flooring comes in packs of 4m^2 and is sold at £67.95 per pack.

Calculate the cost for the hotel to floor their function room.

2

[END OF QUESTION PAPER]



* X 7 4 4 7 5 0 1 1 0 *

ADDITIONAL SPACE FOR ANSWERS

MARKS DO NOT WRITE IN THIS MARGIN

Additional diagram for Question 3

Shelf 1	
Shelf 2	
Shelf 3	
Shelf 4	
Shelf 5	



ACKNOWLEDGEMENTS

Paper 1, Question 5 – Coprid/shutterstock.com



* X 7 4 4 7 5 0 1 1 2 *