N5

National Qualifications 2016

Mark

X744/75/01

Lifeskills Mathematics Paper 1 (Non-Calculator)

WEDNESDAY, 4 MAY

9:00 AM – 9:50 AM

X7447501

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 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.

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.

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.
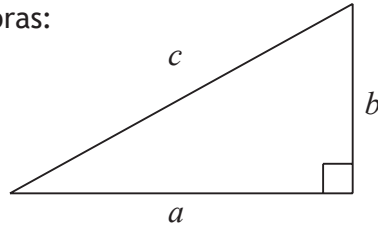
SQA

FORMULAE LIST

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

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

Theorem of Pythagoras:

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

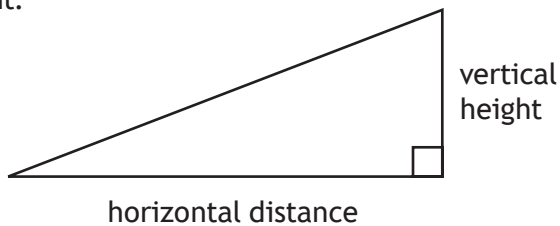Volume of a cylinder: $V = \pi r^2 h$

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

Gradient:

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

Total marks — 35

Attempt ALL questions

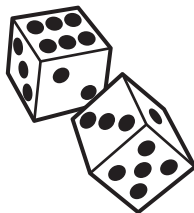**1.** A restaurant can buy long grain rice in two sizes of bags.

- A 9 kg bag costs £25·65
- A 20 kg bag costs £57·20

Which size of bag is better value for the restaurant?

Use your working to justify your answer.

3

2. Aneesha and Brian are playing a board game. Each move is determined by rolling two dice.

Aneesha requires a total of **10 or more** on her next roll to win the game.

What is the probability of Aneesha winning the game on the next roll?

Give your answer as a fraction.

3

[Turn over

3. Gary lives in Biggar and has to go to a meeting in Edinburgh.

He plans to travel to his meeting by bus.

He uses this bus timetable to plan his journey.

Dumfries ● Biggar ● Edinburgh

Monday to Friday

Route Number	101	101	101	101	101	102	101	101	101	101	101	102
Dumfries Whitesands Stance 4		0535	0710		0910	1025			1315			1815
Heathhall		0543	0720		0920	|			1325			|
Amisfield Main Rd		0547	0725		0925	|			1330			|
Parkgate		0552	0730		0930	|			1335			|
St Ann's		0557	0736		0936	|			1341			|
Beattock Primary School		0606	0745		0945	|			1350			|
Moffat High St Stance 2		0612	0752		0952	|			1357			|
Holywood		|	|		|	1031			|			1821
Auldgirth		|	|		|	1039			|			1829
Closeburn		|	|		|	1046			|			1836
Thornhill Cross		|	|		|	1050			|			1840
Durisdeermill		|	|		|	1100			|			1850
Troloss		|	|		|	1105			|			1855
Elvanfoot		|	|		|	1117			|			1907
Crawford		0633	0813		1013	1128			1418			1913
Abington Village		0640	0820		1020	1135			1425			1920
Abington Service Area		0646	0827		1027	1142			1432			1927
Roberton		0651	0832		1032	1147			1437			1932
Lamington		0657	0838		1038	1153			1443			1938
Coulter		0702	0843		1043	1158			1448			1943
Biggar	0633	0709	0853	0953	1053	1208	1253	1353	1458	1623	1803	1953
Dolphinton	0644	0721	0905	1004	1104	1219	1304	1404	1509	1634	1814	2004
West Linton	0651	0731	0915	1011	1111	1226	1311	1411	1516	1641	1821	2011
Carlops	0655	0735	0920	1015	1115	1230	1315	1415	1520	1645	1825	2015
Silverburn	0702	0741	0927	1021	1121	1236	1321	1421	1526	1651	1831	2021
Penicuik Town Centre Stop C	0707	|	0932	1026	|	1241	1326	1426	|	1656	1836	2026
Flotterstone	0717	0746	0942	1036	1126	1251	1336	1436	1531	1706	1846	2034
Fairmilehead, Swanston Drive	0724	0753	0948	1042	1132	1257	1342	1442	1537	1712	1852	2039
Morningside Station	0732	0801	0956	1050	1140	1305	1350	1450	1545	1720	1900	2045
Tollcross	0740	0809	1004	1058	1148	1313	1358	1458	1553	1728	1908	2050
Lothian Road, Caledonian Hotel	0749	0818	1011	1104	1154	1319	1404	1504	1600	1735	1914	2055
Edinburgh Bus Stance E	0801	0830	1021	1114	1204	1329	1414	1514	1611	1745	1924	2102

His meeting in Edinburgh starts at 11:30 am.

It will take him 25 minutes to walk from the Edinburgh bus stance to his meeting.

What is the latest bus he can catch in Biggar to be at his meeting on time?

2

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Page 04

4. Seonaid is saving up to buy a tablet computer costing £388.

   She earns £7·30 per hour and works for 30 hours each week.

   Seonaid is paid at the end of each week.

   She pays £5·32 in Income Tax and £7·68 in National Insurance each week.

   Her living expenses are £86 per week.

   Seonaid saves **half** of the money that she has left each week towards the tablet computer.

   How many weeks will it take her to save up enough money to buy the computer?

   3

[Turn over

5. A computer company is researching how long it would take to develop a new games console and bring it to market.

The following table of necessary tasks was produced.

Activity	Description	Preceding Task	Time (months)
A	Product design	None	12
B	Market research	None	2
C	Production analysis	A	3
D	Product model	A	4
E	Sales brochure	A	1
F	Product testing	D	5
G	Cost analysis	C	3
H	Sales training	B,E	2
I	Pricing	H	1
J	Project report	F,G,I	1

(a) Complete the diagram below to show the tasks and times in the boxes. (An additional diagram, if required, can be found on *Page 12*).   **2**
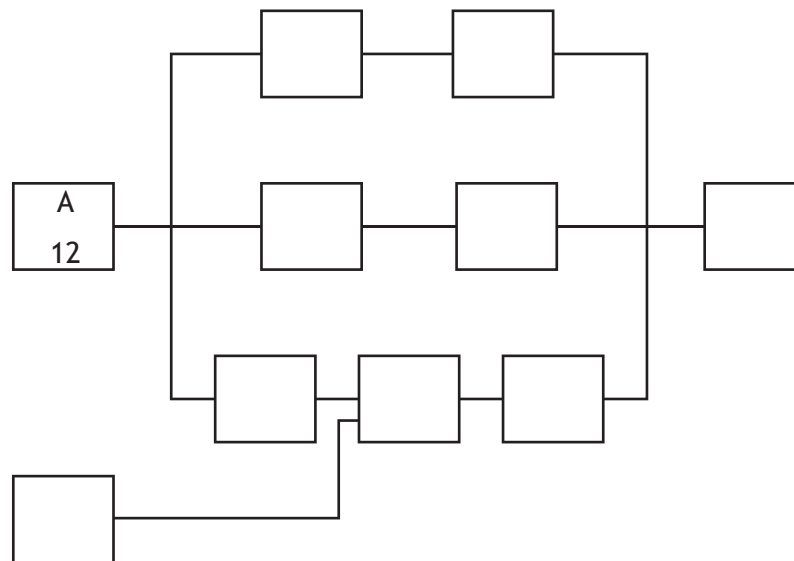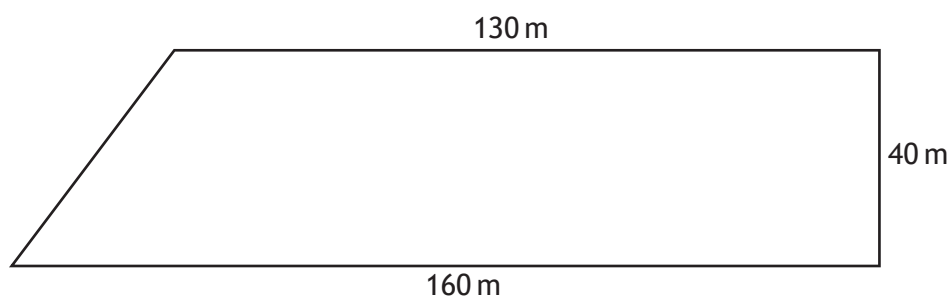

(b) The company want this entire process to be completed in 2 years.

Based on the times given, is this possible?

Show working to justify your answer.   **2**

6. A farmer needs to **completely enclose** this field with a new fence.

130 m

40 m

160 m

The fence is only sold in 80 metre rolls.

Each roll costs £73·99.

Calculate the cost of the new fence. **5**

[Turn over

7. The table below shows the vehicle tax to be paid on different vehicles.

The amount of vehicle tax paid depends on the CO_2 emissions of the vehicle and the fuel type.

Standard Rates – The following table contains the rates of vehicle tax for already registered cars, based on CO_2 emissions and fuel type.

Bands	CO_2 emission figure (g/km)	Petrol Car (Tax Class 48) and Diesel Car (Tax Class 49)				
		Non Direct Debit		Direct Debit		
		12 months	Six months	Single 12 month payment	Total payable by 12 monthly instalments	Single six month payment
Band A	Up to 100	£0	–	–	–	–
Band B	101 to 110	£20	–	£20	£21	–
Band C	111 to 120	£30	–	£30	£31·50	–
Band D	121 to 130	£110	£60·50	£110	£115·50	£57·75
Band E	131 to 140	£130	£71·50	£130	£136·50	£68·25
Band F	141 to 150	£145	£79·75	£145	£152·25	£76·13
Band G	151 to 165	£180	£99	£180	£189	£94·50
Band H	166 to 175	£205	£112·75	£205	£215·25	£107·63
Band I	176 to 185	£225	£123·75	£225	£236·25	£118·13
Band J	186 to 200	£265	£145·75	£265	£278·25	£139·13
Band K	201 to 225	£290	£159·50	£290	£304·50	£152·25
Band L	226 to 255	£490	£269·50	£490	£514·50	£257·25
Band M	Over 255	£505	£277·75	£505	£530·25	£265·13

MARKS

Tom buys a **petrol** car which has a CO_2 emission figure of 142 g/km.

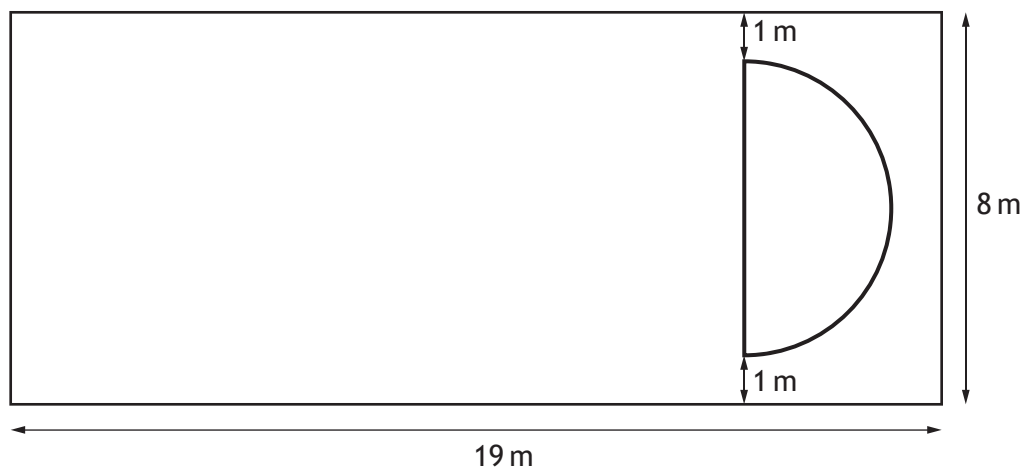Tom decides to pay his vehicle tax by direct debit in two single six month payments.

How much more expensive is this than a single 12 month payment by direct debit?

3

8. A new playground is planned for Aberbeath Primary School.

It will be a rectangle measuring 19 metres by 8 metres.

A semi-circular sandpit will be built within the playground as shown

The playground, excluding the sandpit, is to be covered in rubber tiles.

Calculate the area to be covered by the rubber tiles.

Take π = 3·14.

Give your answer to **3 significant figures**. 4

9. A picture is glued onto a piece of card as shown.

- The picture is a rectangle with dimensions 4 cm by 5 cm.
- The rectangular card has an **area** 2·8 times greater than the **area** of the picture.
- One of the dimensions of the piece of card is 7 cm.

Calculate the other dimension of the piece of card. **3**

10. Bradley decides to cycle from Kilsyth to the highest point of Tak-Ma-Doon Road.

- The horizontal distance between these two places is 4·5 kilometres.
- Kilsyth is 70 metres above sea level.
- The highest point of Tak-Ma-Doon Road is 320 metres above sea level.

(a) Calculate the average gradient between Kilsyth and the highest point of Tak-Ma-Doon Road.

Give your answer as a fraction **in its simplest form**. **3**

(b) One part of the road has gradient $\frac{2}{25}$.

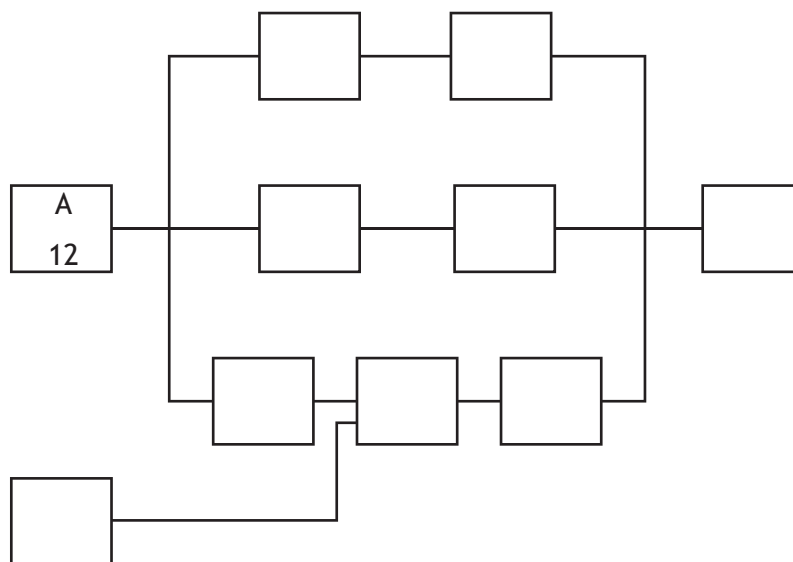Is this steeper than the average gradient?

You must justify your answer. **2**

[END OF QUESTION PAPER]

ADDITIONAL SPACE FOR ANSWERS

Additional diagram for Question 5 (a)

ADDITIONAL SPACE FOR ANSWERS

ADDITIONAL SPACE FOR ANSWERS

ADDITIONAL SPACE FOR ANSWERS

ADDITIONAL SPACE FOR ANSWERS