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Rewarding Learning

Centre N

71

Candidate Num

General Certificate of Secondary Education
January 2014

Mathematics

Unit T1

(With calculator)

Foundation Tier

[GMT11]

FRIDAY 10 JANUARY, 9.15am–10.45am

MV18

TIME

1 hour 30 minutes, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Complete in blue or black ink only.
Answer **all twenty-nine** questions.
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
You **may** use a calculator for this paper.

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INFORMATION FOR CANDIDATES

The total mark for this paper is 100.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in **Questions 7 and 21**.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 3.
You are provided with an A3 insert for use with **Question 28**.

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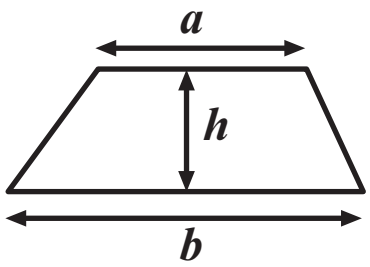
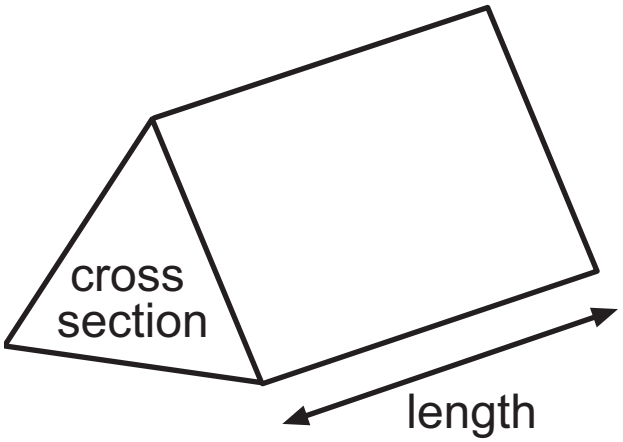
Formula Sheet

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



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1 **(a)** Write 100 million in figures. [1 mark]

Answer _____

(b) Write down the number forty three thousand and twenty six in figures. [1 mark]

Answer _____

(c) Write down the value of the 4 in the number 34 568 [1 mark]

Answer _____

(d) Write 60**%** as a decimal. [1 mark]

Answer _____

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2 **(a)** From the list of numbers below

56 23 80 40 21 70 25 99 67

(i) select two numbers with a sum of 90 [1 mark]

Answer _____ and _____

(ii) select two numbers with a difference of 55 [1 mark]

Answer _____ and _____

(iii) what is the largest number that can be made by multiplying any two of the numbers in the list? [1 mark]

Answer _____

(b) Show how to work out 450 **–** 168 **without using a calculator**. [2 marks]

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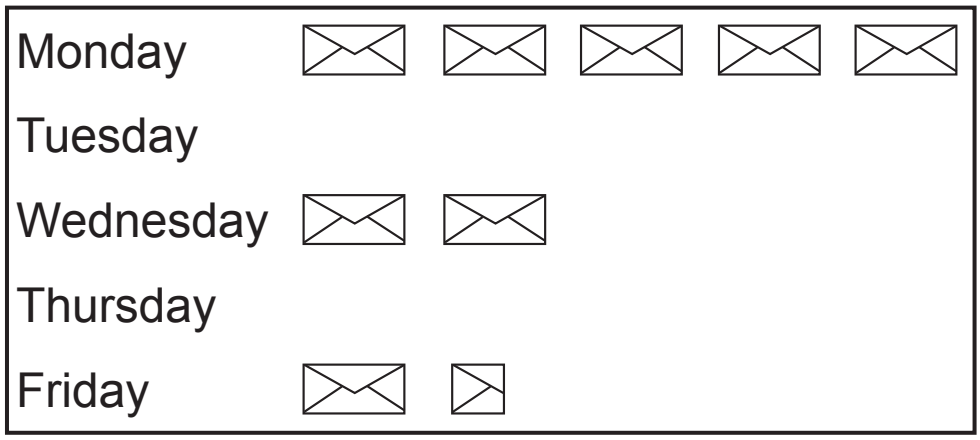
3 The frequency table and the pictogram illustrate some information about the number of letters received in an office during one week.

Monday	
Tuesday	25
Wednesday	20
Thursday	
Friday	15



(a) Complete the frequency table for Monday. [2 marks]

(b) Complete the pictogram for Tuesday. [1 mark]

(c) In total 145 letters are received in the week. Complete both the frequency table and the pictogram for Thursday. [2 marks]

(d) Which day represents the mode? Why do you think the mode is on this day? [2 marks]

_____ because _____

_____

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4 **(a)** Draw a circle with radius 5 cm. [1 mark]

(b) Draw a radius in your circle and label it PQ. [1 mark]

(c) Mark a point X on the circumference of your circle. [1 mark]

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5 Which **metric** unit is the most suitable to measure

(a) the distance from Coleraine to Dungannon, [1 mark]

Answer _____

(b) the weight of a potato, [1 mark]

Answer _____

(c) the capacity of a large can of engine oil? [1 mark]

Answer _____

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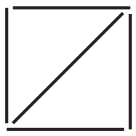
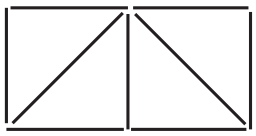
6 Here is a sequence of shapes made using sticks.

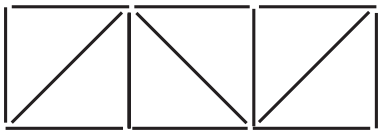
Shape 1



Shape 2



Shape 3



Shape 4

(a) Draw Shape 4 of the sequence. [1 mark]

(b) Complete the table below for the sequence of shapes. [1 mark]

Shape Number	1	2	3	4	5
Number of sticks	5	9	13		

(c) Look at the numbers in the 'Number of sticks' row. Write down the pattern. [1 mark]

Answer _____

(d) Explain why you could not have a shape in the sequence using 100 sticks. [1 mark]

Answer _____

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Quality of written communication will be assessed in this question.

7 Boxes of Tasty Tea come in three sizes

size A	60 bags for **£**1.80
size B	80 bags for **£**2.24
size C	150 bags for **£**4.80

Find out which size is the best bargain.
Show clearly your method and all your working.
[4 marks]

Answer size _____

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8 Tiles cost £7.48 each. How many can be bought for £100? [2 marks]

Answer _____

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9 Nine students each completed an experiment.
The time taken (in minutes) by each student is recorded.

32 17 30 18 21 22 30 24 29

(a) What is the median time? [2 marks]

Answer _____ minutes

(b) Calculate the range of the times. [1 mark]

Answer _____ minutes

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10 The distance chart below shows some distances in miles between various places.

Hull					
60	Leeds				
47	72	Lincoln			
97	44		Manchester		
66		47	39	Sheffield	
	24		71	57	York

Jane travels from Hull to Lincoln, then from Lincoln to Manchester and finally from Manchester to York.
The total distance she covers is 203 miles.
Insert the distance from Lincoln to Manchester in the chart. [2 marks]

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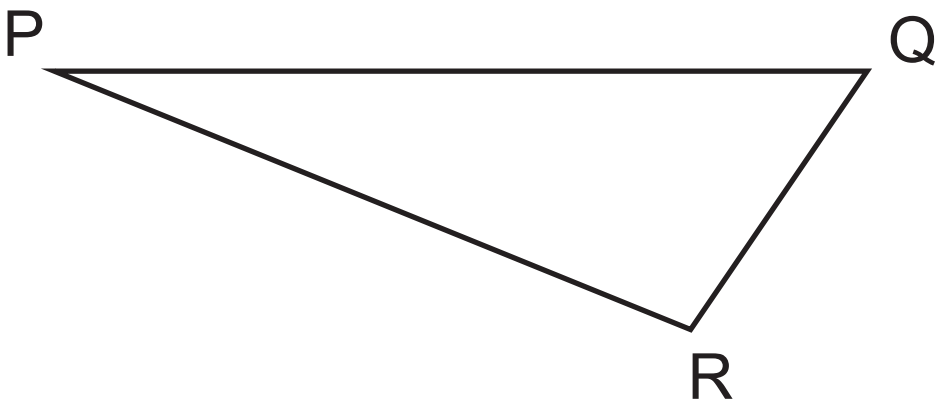
11 (a)



In the triangle PQR measure

(i) the length of PQ, [1 mark]

Answer _____cm

(ii) the size of angle PRQ. [1 mark]

Answer _____°

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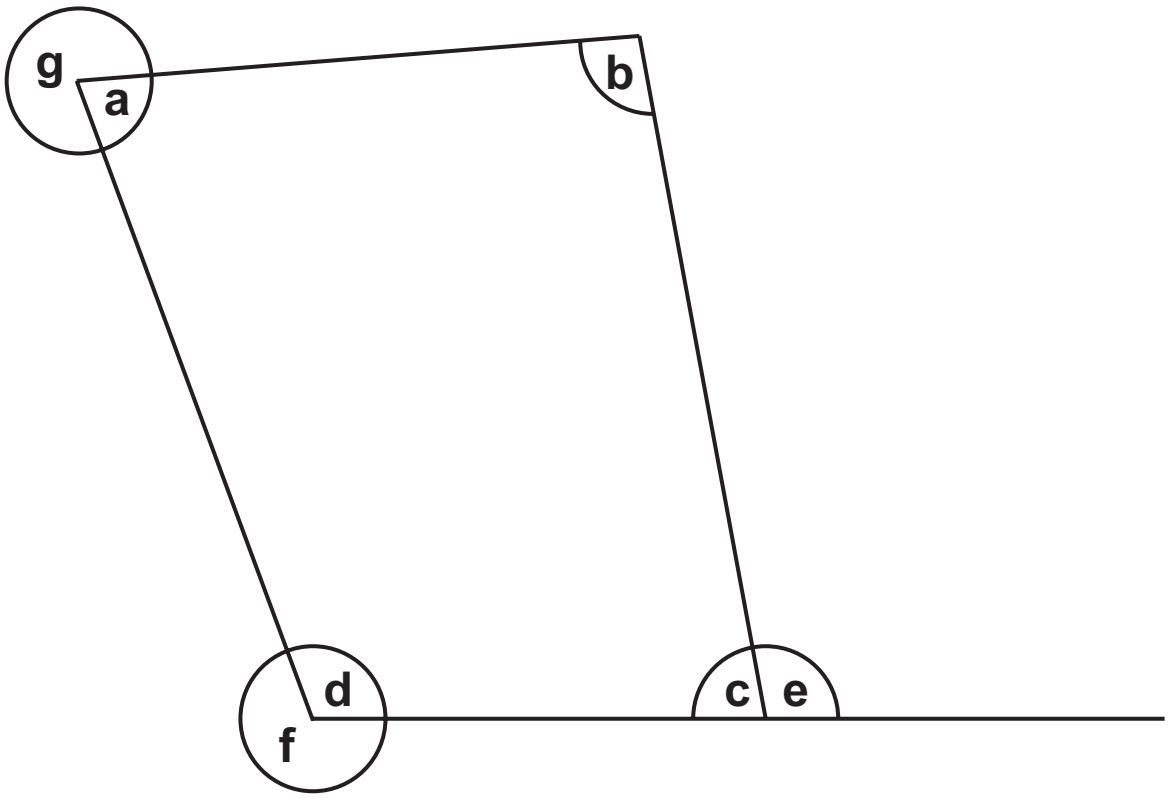
(b)



From the diagram above write down the letter of an angle which is

(i) acute, [1 mark]

Answer _____

(ii) obtuse, [1 mark]

Answer _____

(iii) reflex. [1 mark]

Answer _____

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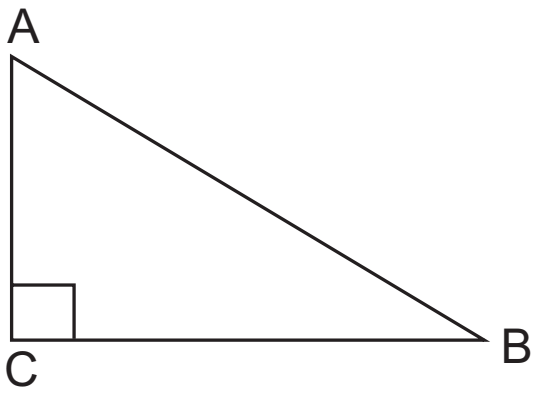
12



The sketch above shows a large garden ABC which is in the shape of a right-angled triangle. The side CB = 160 m and the side AC = 110 m.
Using a scale of 1 cm = 20 m, construct a scale drawing to represent the garden. [2 marks]

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13 (a) Write down the value of 9^2 [1 mark]

Answer _____

(b) Calculate the value of $\sqrt{2.56}$ [1 mark]

Answer _____

(c) Calculate the value of 3.2^2 [1 mark]

Answer _____

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14 **(a)** Put these decimals in order of size starting with the smallest [1 mark]

0.7 0.52 0.413

Answer _____, _____, _____

(b) On the number line shown

(i) estimate the decimal marked by the letter X [1 mark]

Answer _____

(ii) draw an arrow to show the position of the decimal 3.14 [1 mark]

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15 John travelled to Edinburgh and hired a car at the airport.

The charge was **£**39.50 for each day. He also had to pay the cost of refilling the tank with petrol when left back at the airport.

How much did he pay in total for hiring the car for 6 days and refilling with petrol costing **£**46.78? [2 marks]

Answer **£** _____

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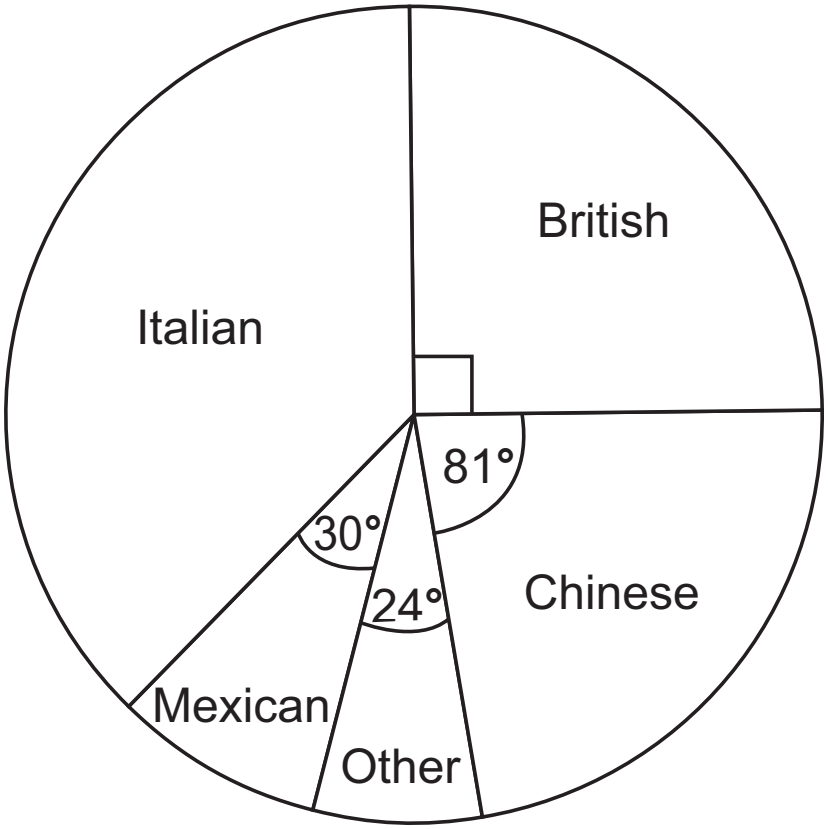
16 120 people were interviewed about their favourite type of food.
The pie chart illustrates the results.



(a) What **fraction** of people prefer Mexican food? [1 mark]

Answer _____

(b) Calculate the number of people who prefer Italian food. [3 marks]

Answer _____

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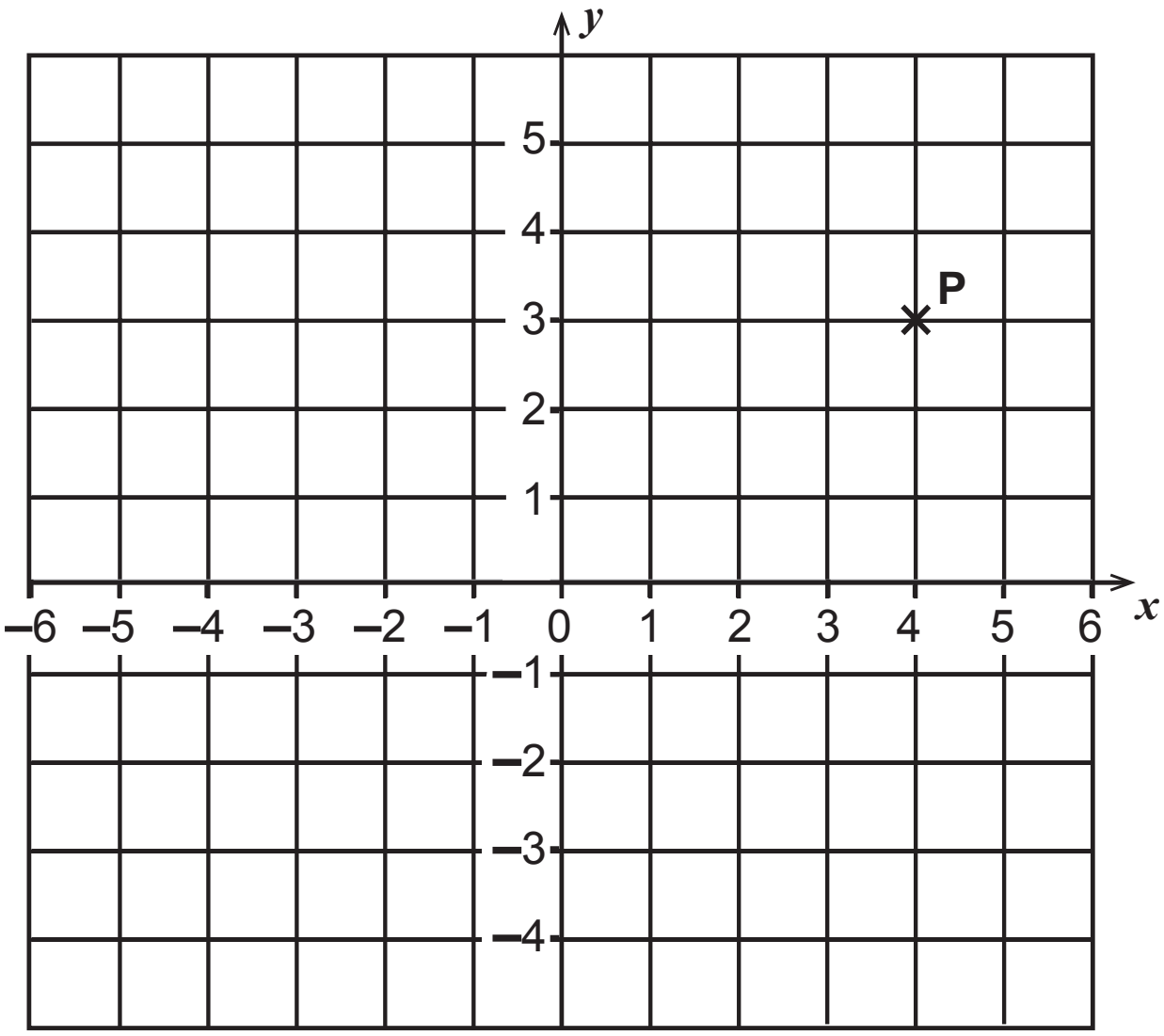
17



(a) Write down the coordinates of the point P which is marked on the grid above. [1 mark]

Answer P (_____ , _____)

(b) On the grid above, plot and label the points A (–5, 4) and B (3, –2). [2 marks]

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18 Solve the following equations [1 mark]/[1 mark]

(a) $x - 3 = 15$

Answer $x =$ _____

(b) $4y = 36$

Answer $y =$ _____

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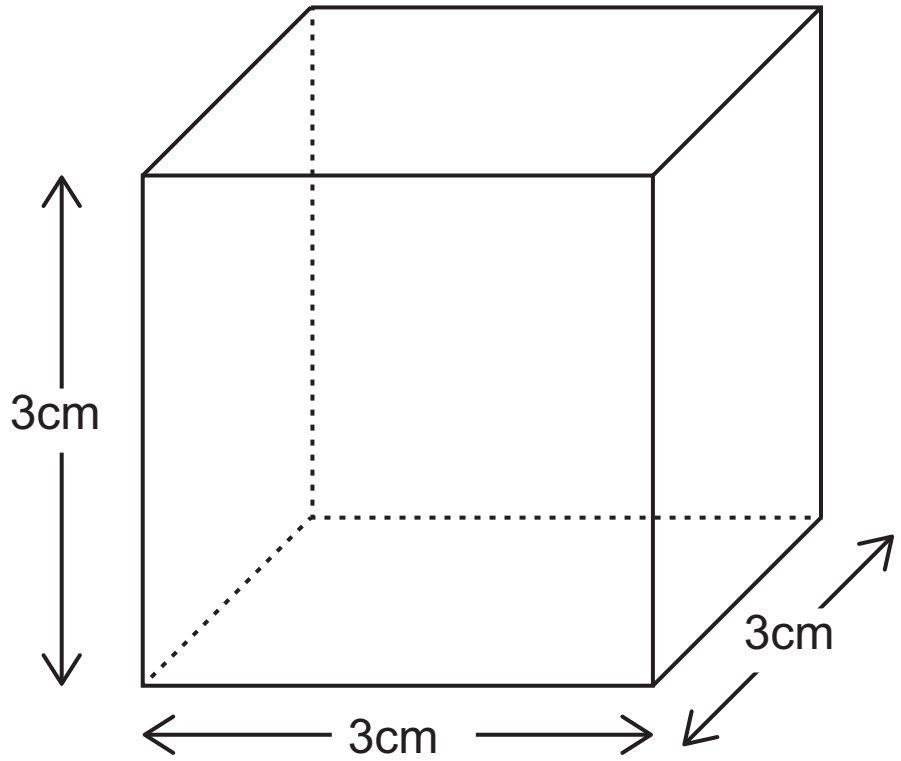
19



(a) Draw a net of this cube on the 1 cm grid opposite. [2 marks]

(b) Find the volume of this cube. [3 marks]

Answer _____

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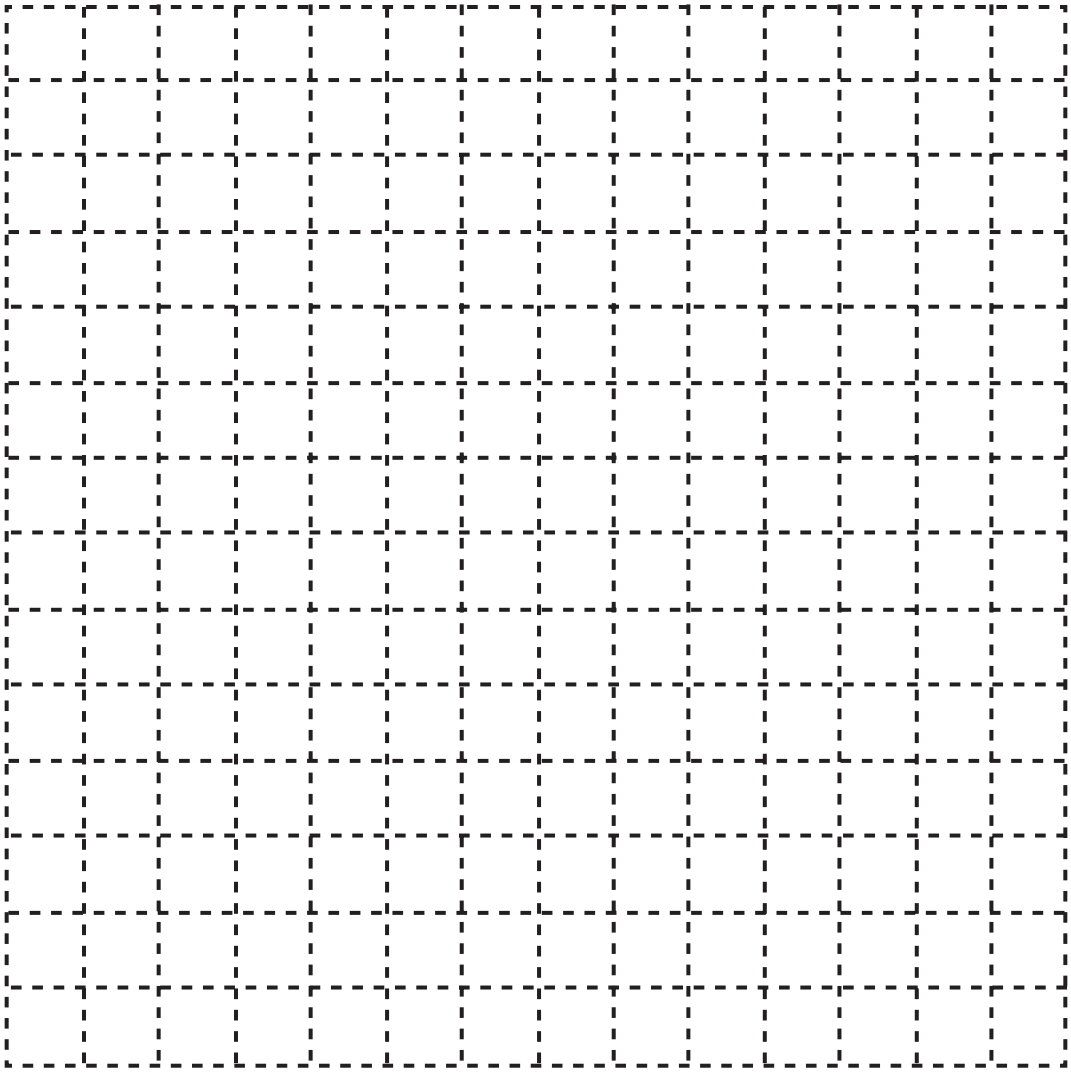

Key = 1 cm^2

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20 **(a)** Write the fraction $\frac{36}{48}$ in its lowest terms. [1 mark]

Answer _____

(b) Calculate 3**%** of **£**900 [2 marks]

Answer **£** _____

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Quality of written communication will be assessed in this question.

21 (a) Work out the value of $2^2 \times 3^3$ showing each step of your working. [2 marks]

Answer _____

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(b) Which of the following fractions is nearest in value to $\frac{1}{4}$? [2 marks]

$\frac{2}{10}$ $\frac{3}{20}$ $\frac{7}{30}$ $\frac{11}{40}$

Show clearly how you reach your answer.

Answer _____

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22 (a) From the numbers in the list below

24 56 81 40 25 66 59 90 27

(i) write down a square number, [1 mark]

Answer _____

(ii) write down a cube number. [1 mark]

Answer _____

(b) Martha's grandmother's age on her next birthday will be both a square number and a cube number at the same time.

What age is Martha's grandmother now? [2 marks]

Answer _____

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23 Anne bought pink and blue ribbon for her Nursery School.

She bought 3.2 metres of pink ribbon and 2.6 metres of blue ribbon and paid the shopkeeper **£**8.89

The pink ribbon cost **£**1.60 per metre.

How much did the blue ribbon cost per metre? [4 marks]

Show clearly how you worked out your answer.

Answer **£** _____

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24

Year	2008	2009	2010	2011	2012
Rainfall (cm)	60.5	62.5	62.0	61.0	

The mean rainfall over these 5 years was 62 cm. What was the rainfall in 2012? [3 marks]

Answer _____ cm

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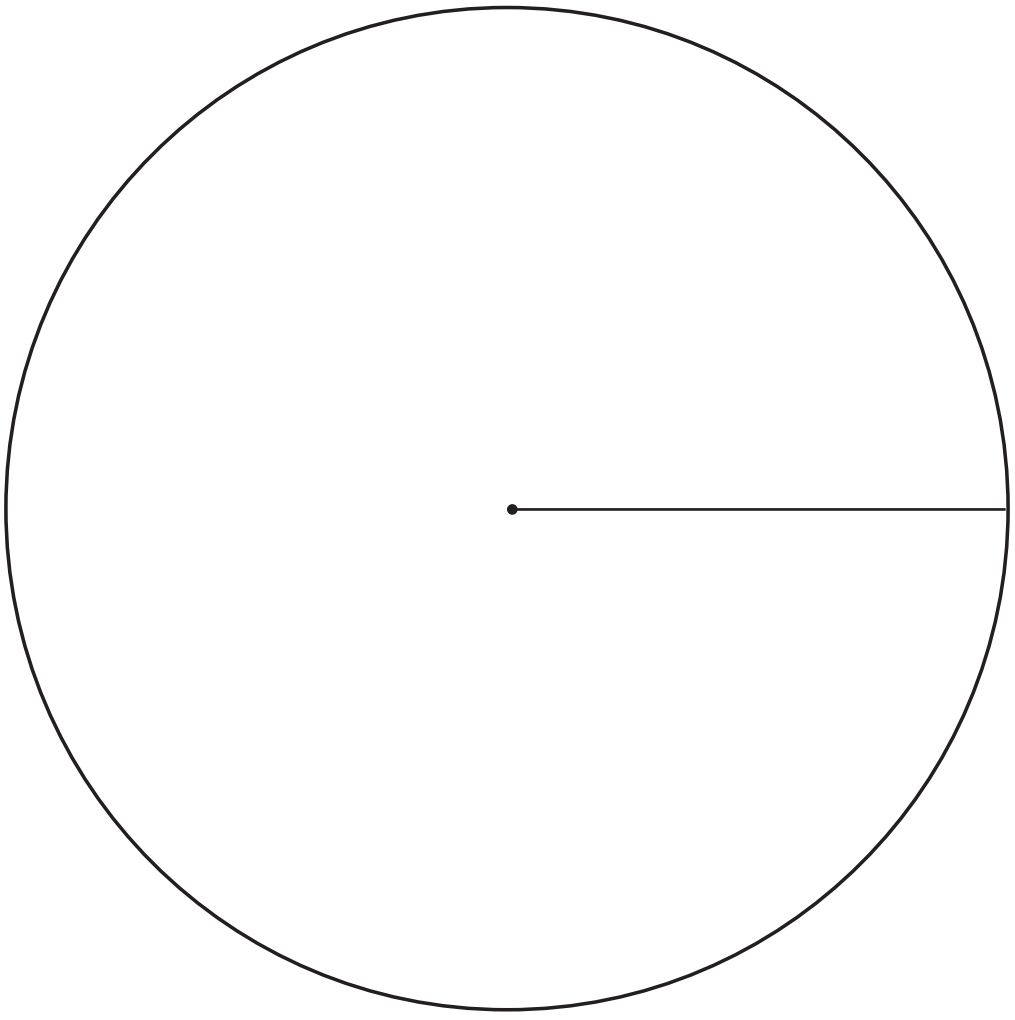
25 The table below shows the number of pairs of shoes of different colours sold in a shop one day.

Colour	Black	Brown	Blue	Other
Number	35	20	18	17
Angle				

Draw a clearly labelled pie chart to show the number of pairs of shoes of each colour. [4 marks]



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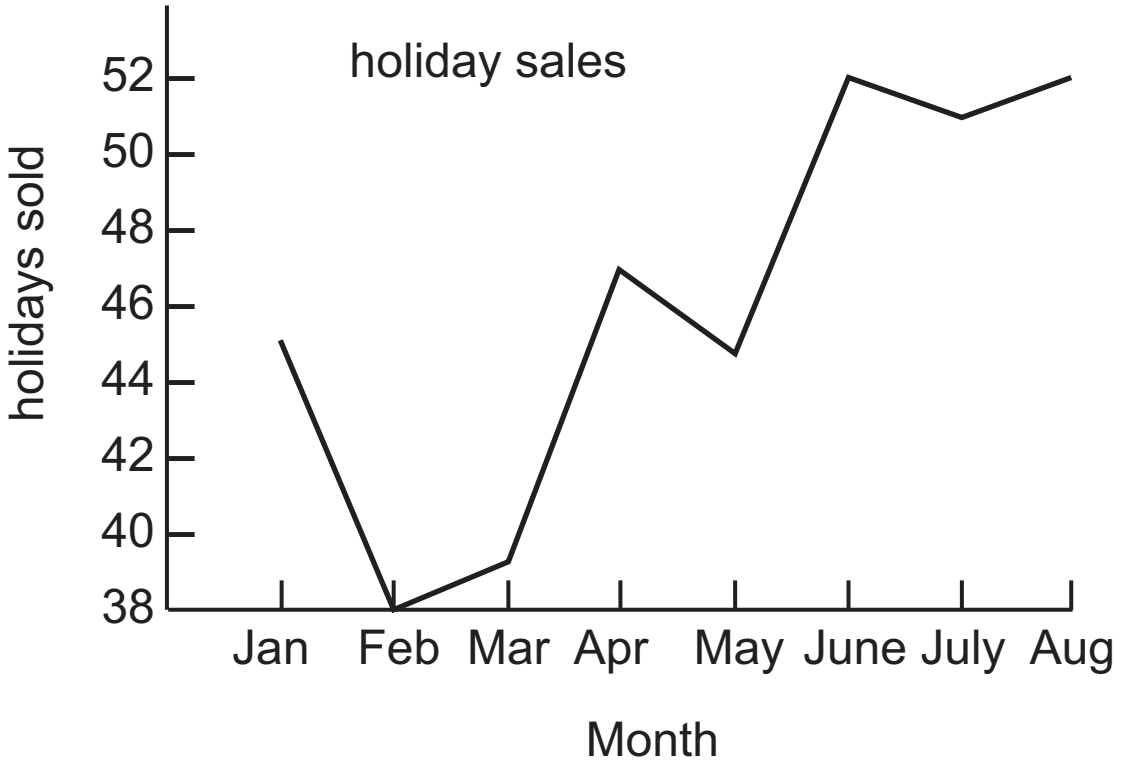
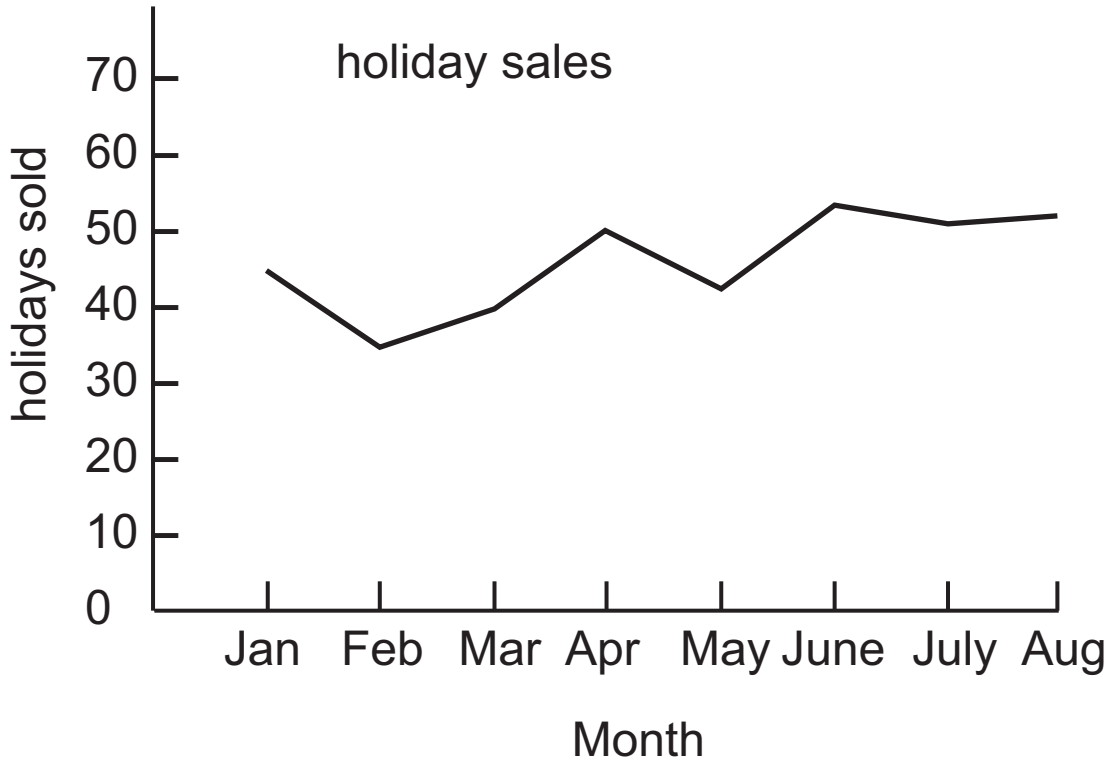
26 The two graphs below show similar information but look different.

Graph A



Graph B



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(a) Which graph appears to show the biggest increase in sales? [1 mark]

Answer Graph _____

(b) What causes this graph to be misleading? [1 mark]

Answer _____

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27 Calculate the size of angle x in the diagram below.
[3 marks]

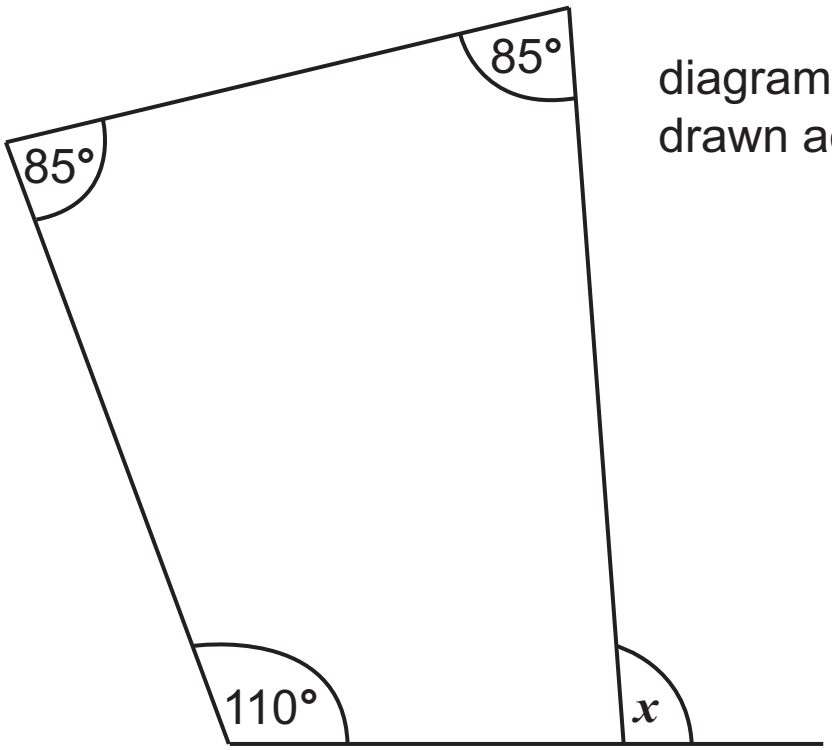

diagram not
drawn accurately

Answer x = _____ °

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28 Using the A3 insert provided answer the following parts **(a), (b)** and **(c)** to this question.

(a) Sarah takes the 1134 train from Portadown to Belfast Central.
How long should the journey take? [1 mark]

Answer _____ minutes

(b) James is in Portadown. He has to be in Holywood by 5 pm. What is the latest train he could take from Portadown? [1 mark]

Answer _____

(c) Using this train service, but not starting in Portadown, Joshua made a journey which lasted exactly 2 hours 7 minutes. What is the earliest time his journey could have started? [1 mark]

Answer _____

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29 (a) Simplify [2 marks]

$5x + 2y - 3x - 5y$

Answer _____

(b) Solve [2 marks]

$7x - 3 = 18$

Answer $x =$ _____

THIS IS THE END OF THE QUESTION PAPER

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SOURCES

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For Examiner's use only	
Question Number	**Marks**
1	
2	
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29	
Total Marks	

Examiner Number

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This insert is for use with Question 28.

Dublin Connolly				**1000**				**1300**				**1600**						
Newry L				**1112**				**1412**				**1712**						
Poyntzpass				|				|				|					
Scarva				|				|				|					
Portadown	0845	0945	1045	**1134**	1145	1245	1345	**1434**	1445	1545	1645	**1734**	1745	1845				
Lurgan	0851	0951	1051	**1144**	1151	1251	1351	|	1451	1551	1651	|	1751	1851				
Moira	0857	0957	1057	|	1157	1257	1357	|	1457	1557	1657	|	1757	1857				
Lisburn	0910	1010	1110	**1203**	1210	1310	1410	|	1510	1610	1710	|	1810	1910				
Hilden	0912	1012	1112	|	1212	1312	1412	|	1512	1612	1712	|	1812	1912				
Lambeg	0914	1014	1114	|	1214	1314	1414	|	1514	1614	1714	|	1814	1914				
Derriaghy	0916	1016	1116	|	1216	1316	1416	|	1516	1616	1716	|	1816	1916				
Dunmurry	0919	1019	1119	|	1219	1319	1419	|	1519	1619	1719	|	1819	1919				
Finaghy	0922	1022	1122	|	1222	1322	1422	|	1522	1622	1722	|	1822	1922				
Balmoral	0924	1024	1124	|	1224	1324	1424	|	1524	1624	1724	|	1824	1924				
Adelaide	0926	1026	1126	|	1226	1326	1426	|	1526	1626	1726	|	1826	1926				
Great Victoria Street	0834	0934	1034	1134	|	1234	1334	1434	|	1534	1634	1734	|	1834	1934			
City Hospital	0837	0937	1037	1137	|	1237	1337	1437	|	1537	1637	1737	|	1837	1937			
Botanic	0839	0939	1039	1139	|	1239	1339	1439	|	1539	1639	1739	|	1839	1939			
Belfast Central M	0842	0942	1042	1142	**1216**	1242	1342	1442	**1507**	1542	1642	1742	**1807**	1842	1942			
Belfast Central	0845	0945	1045	1145		1245	1345	1445		1545	1645	1745		1845		1945		
Titanic Qtr (Bridge End)	0848	0948	1048	1148		1248	1348	1448		1548	1648	1748		1848		1948		
Sydenham ✈	0851	0951	1051	1151		1251	1351	1451		1551	1651	1751		1851		1948		
Holywood	0855	0955	1055	1155		1255	1355	1455		1555	1655	1755		1855		1955		
Marino	0857	0957	1057	1157		1257	1357	1457		1557	1657	1757		1857		1957		
Cultra	0859	0959	1059	1159		1259	1359	1459		1559	1659	1759		1859		1959		
Seahill	0902	1002	1102	1202		1302	1402	1502		1602	1702	1802		1902		2002		
Helen's Bay	0905	1005	1105	1205		1305	1405	1505		1605	1705	1805		1905		2005		
Carnalea	0909	1009	1109	1209		1309	1409	1509		1609	1709	1809		1909		2009		
Bangor West	0911	1011	1111	1211		1311	1411	1511		1611	1711	1811		1911		2011		
Bangor	0916	1016	1116	1216		1316	1416	1516		1616	1716	1816		1916		2016		

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