



Centre Number

71	
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Candidate Number

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General Certificate of Secondary Education
January 2014

Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

MV18

FRIDAY 10 JANUARY, 9.15am–10.45am

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.

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.

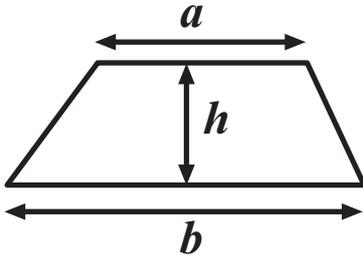
You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 3.

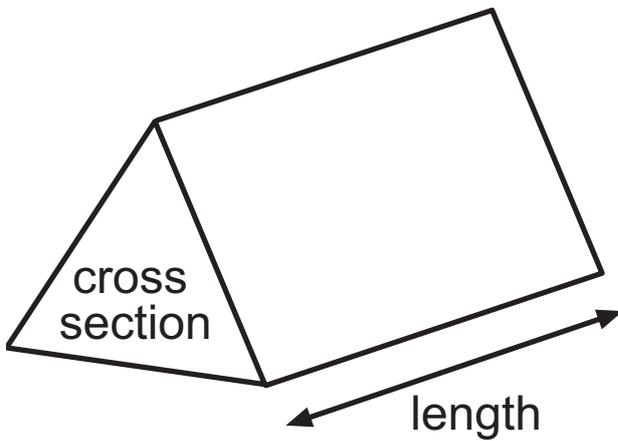
You are provided with an A3 insert for use with **Question 28.**

Formula Sheet

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



Volume of prism = area of cross section \times length



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 _____

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]

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

Monday		Monday					
Tuesday	25	Tuesday					
Wednesday	20	Wednesday					
Thursday		Thursday					
Friday	15	Friday					

(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 _____

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]

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]

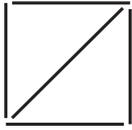
Answer _____

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

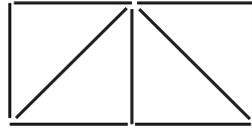
Answer _____

6 Here is a sequence of shapes made using sticks.

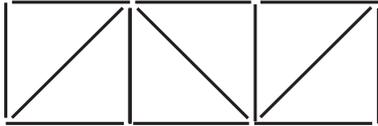
Shape 1



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 _____

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 _____

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

Answer _____

- 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

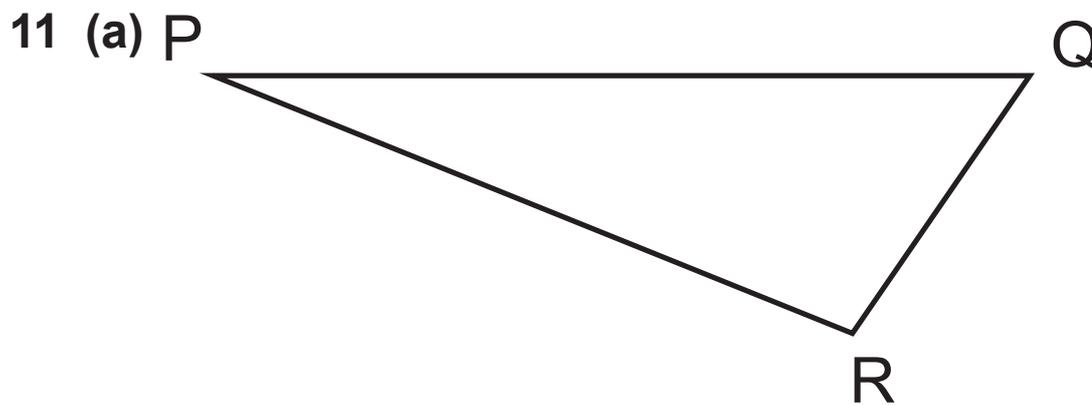
- 10** The distance chart below shows some distances in miles between various places.

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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(Questions continue overleaf)



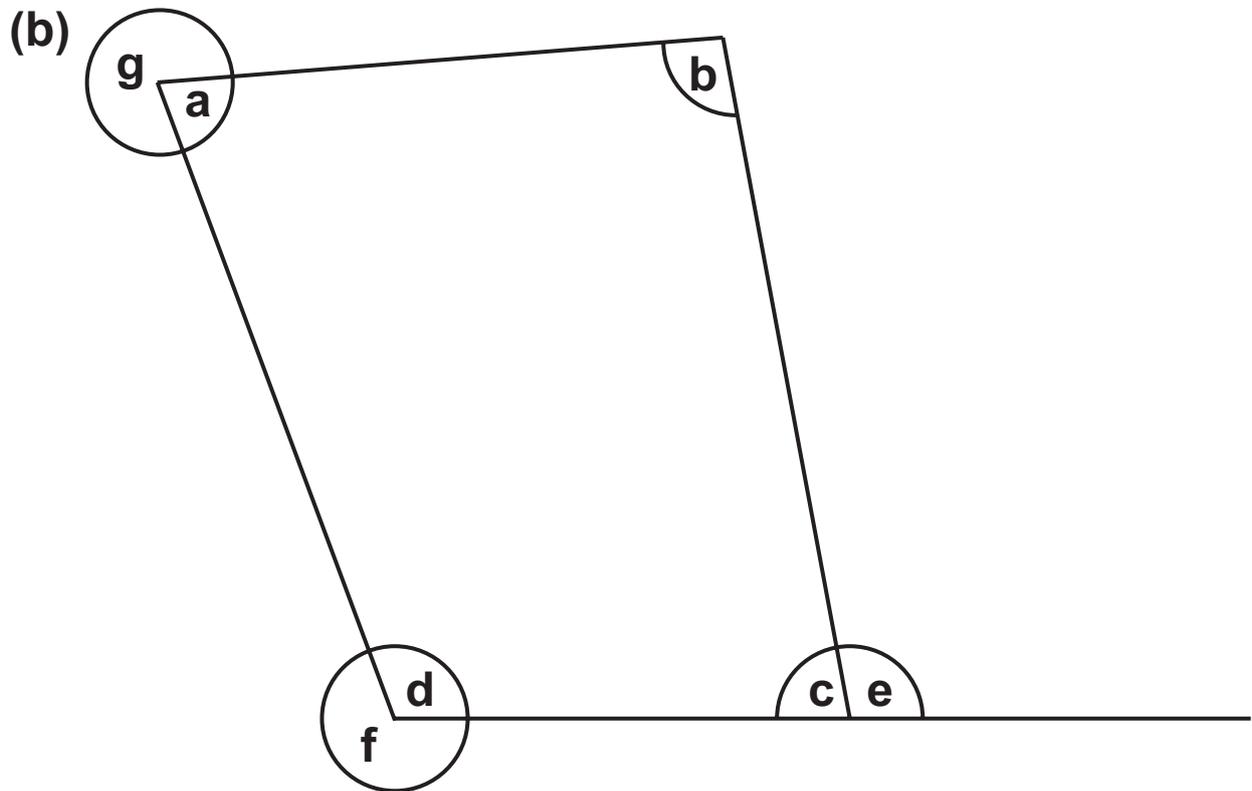
In the triangle PQR measure

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

Answer _____ cm

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

Answer _____ °



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

(i) acute, [1 mark]

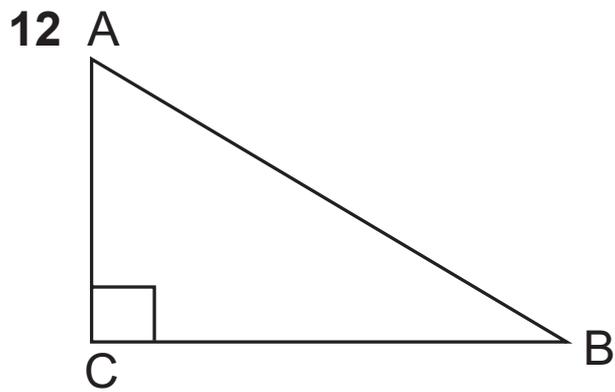
Answer _____

(ii) obtuse, [1 mark]

Answer _____

(iii) reflex. [1 mark]

Answer _____



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 $1 \text{ cm} = 20 \text{ m}$, construct a scale drawing to represent the garden. [2 marks]

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 _____

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]

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

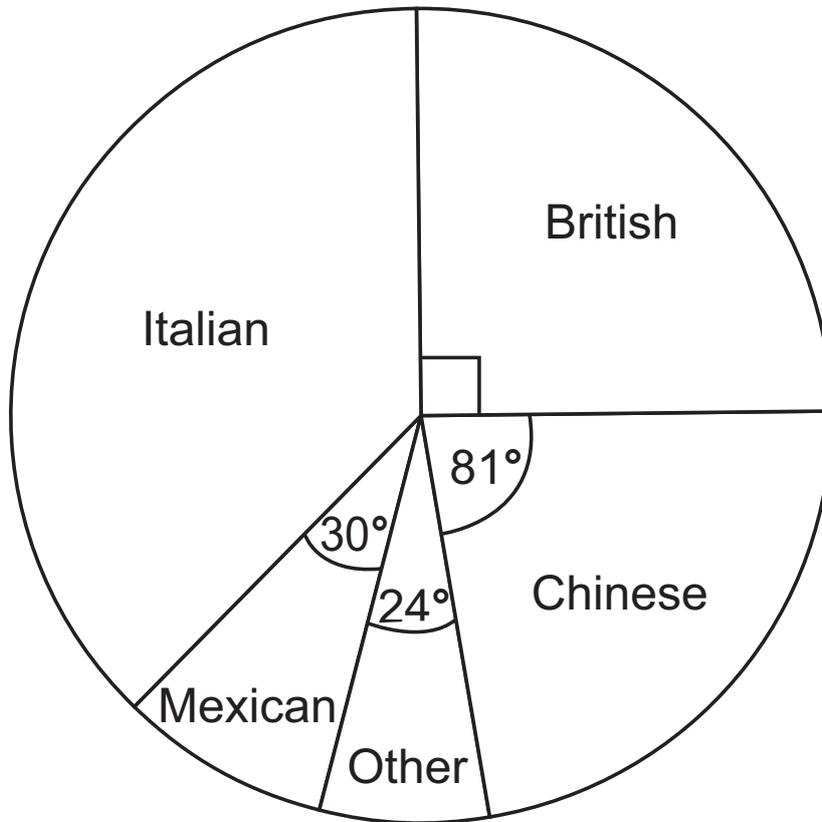
The charge was £39.50 for each day. He also had to pay the cost of refilling the tank with petrol when left back at the airport.

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

Answer £ _____

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 _____

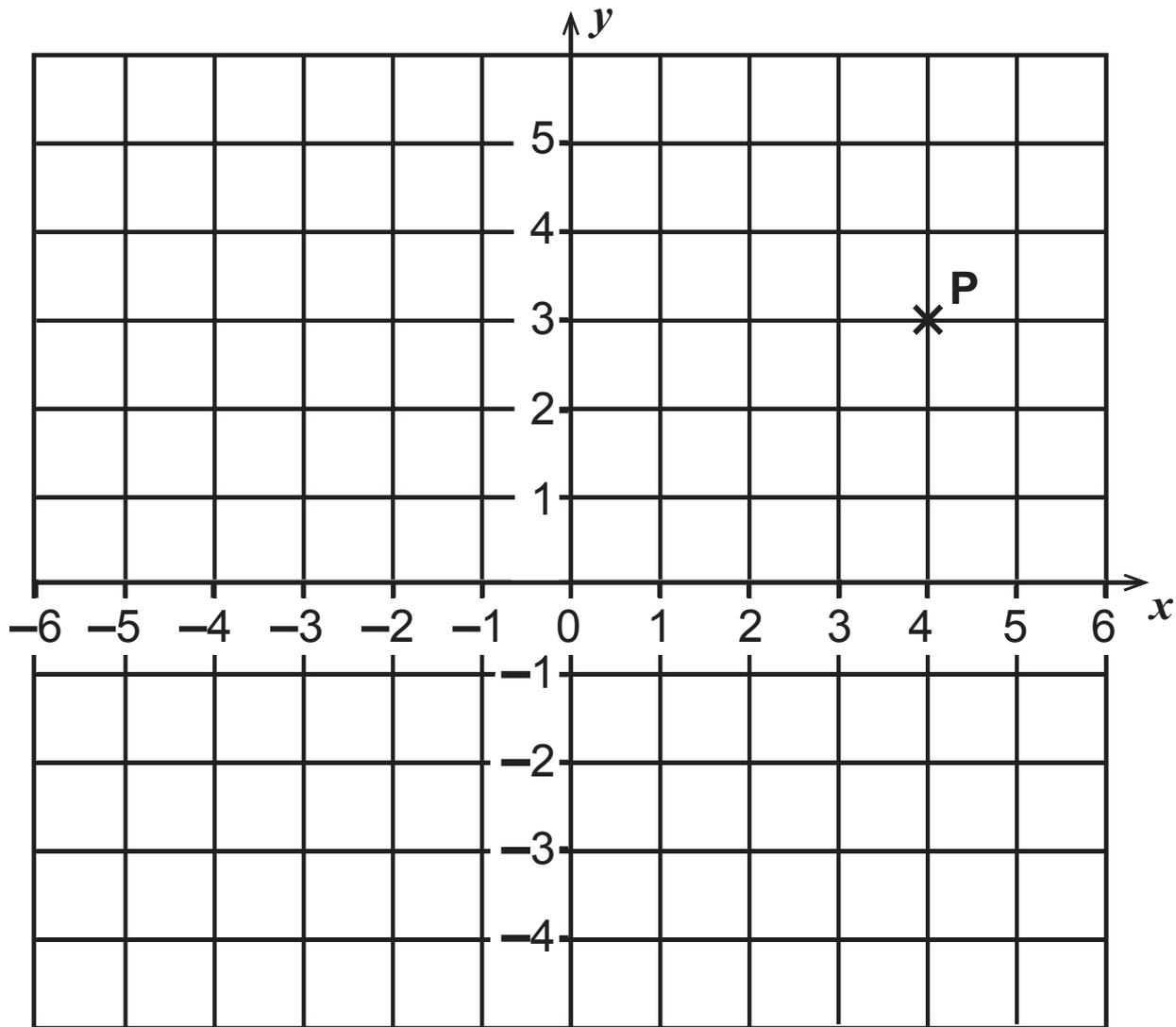
(b) Calculate the number of people who prefer Italian food. [3 marks]

Answer _____

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(Questions continue overleaf)

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]

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

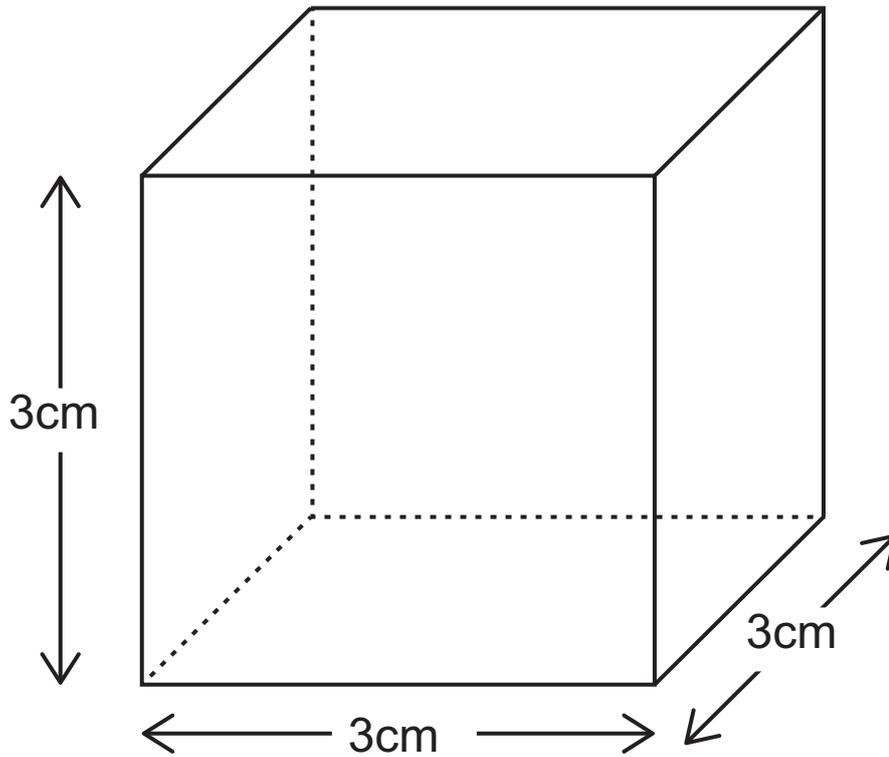
(a) $x - 3 = 15$

Answer $x =$ _____

(b) $4y = 36$

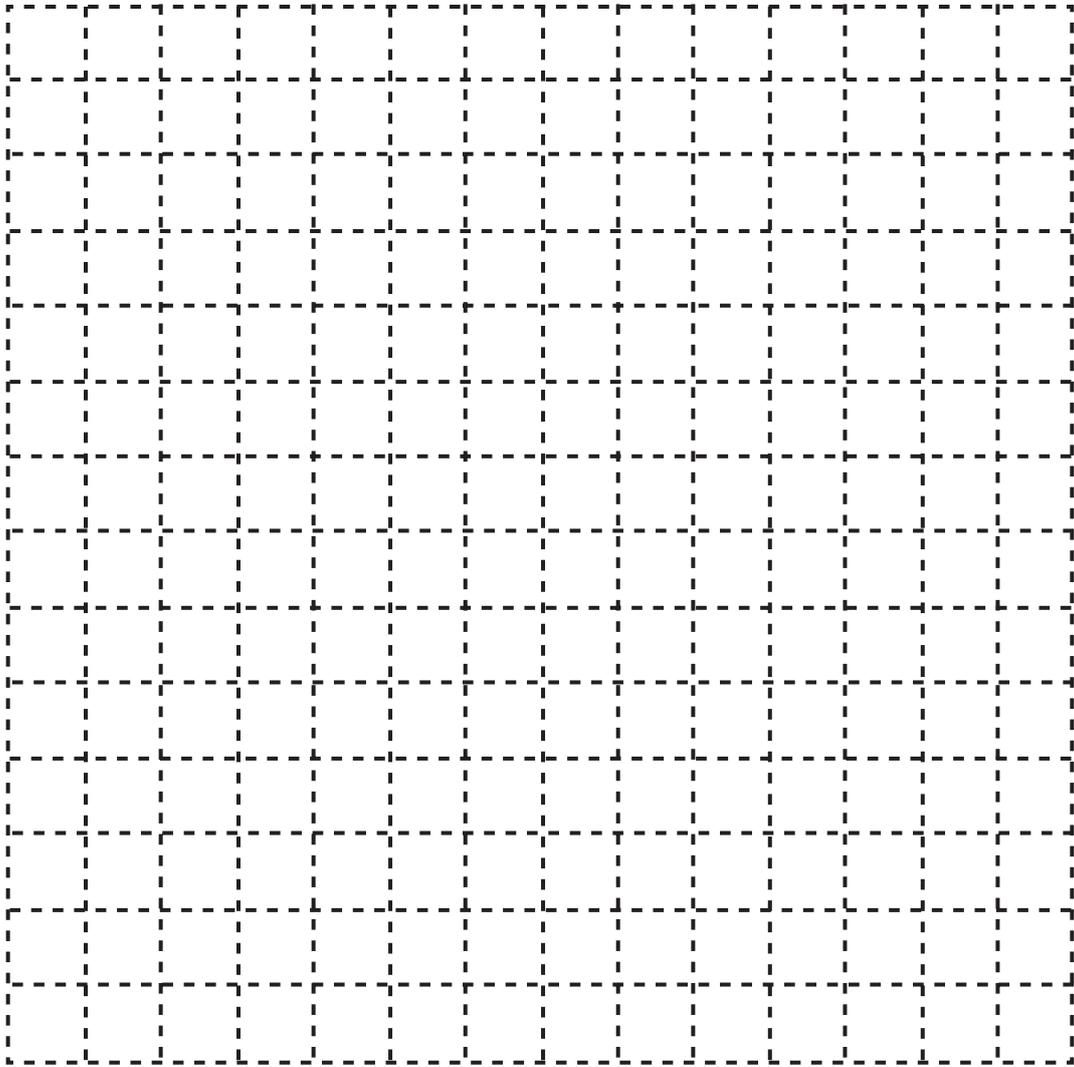
Answer $y =$ _____

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 _____



Key  = 1 cm²

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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(Questions continue overleaf)

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 _____

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

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

Show clearly how you reach your answer.

Answer _____

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 _____

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 £ _____

24

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

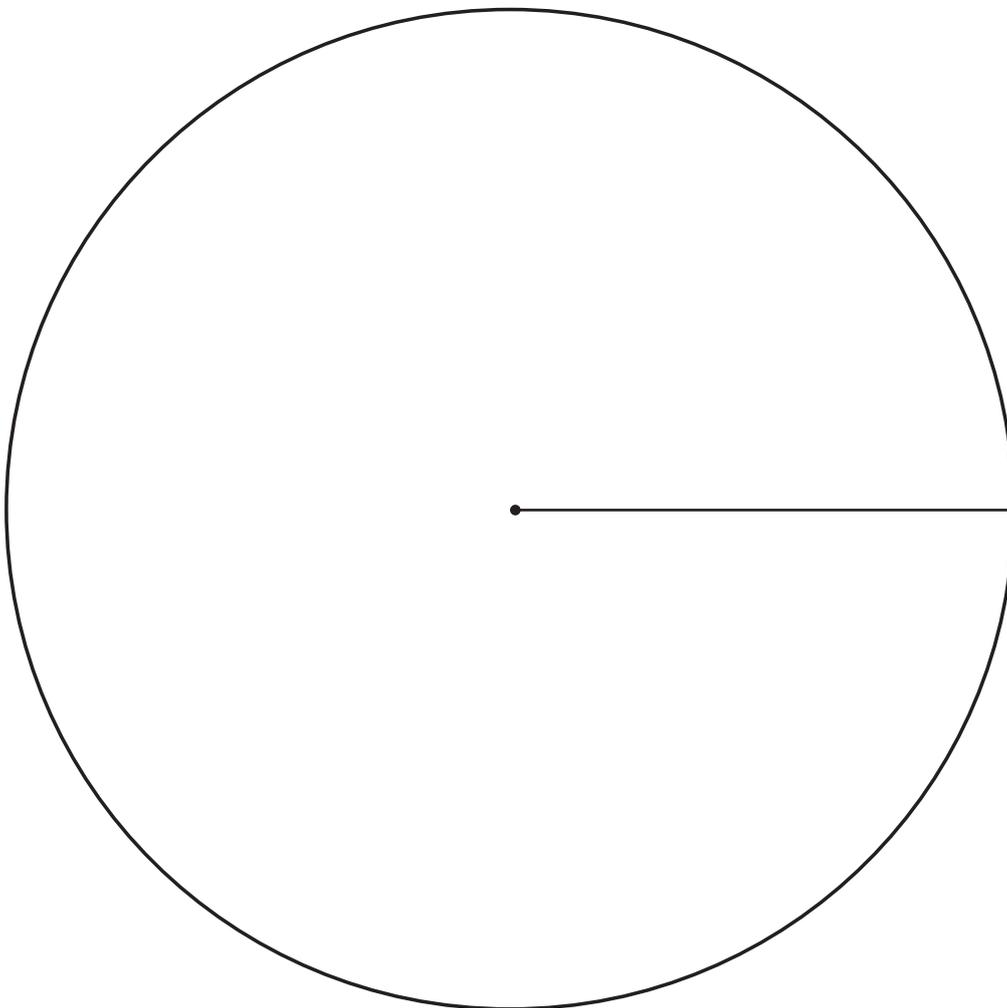
The mean rainfall over these 5 years was 62 cm. What was the rainfall in 2012? [3 marks]

Answer _____ cm

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

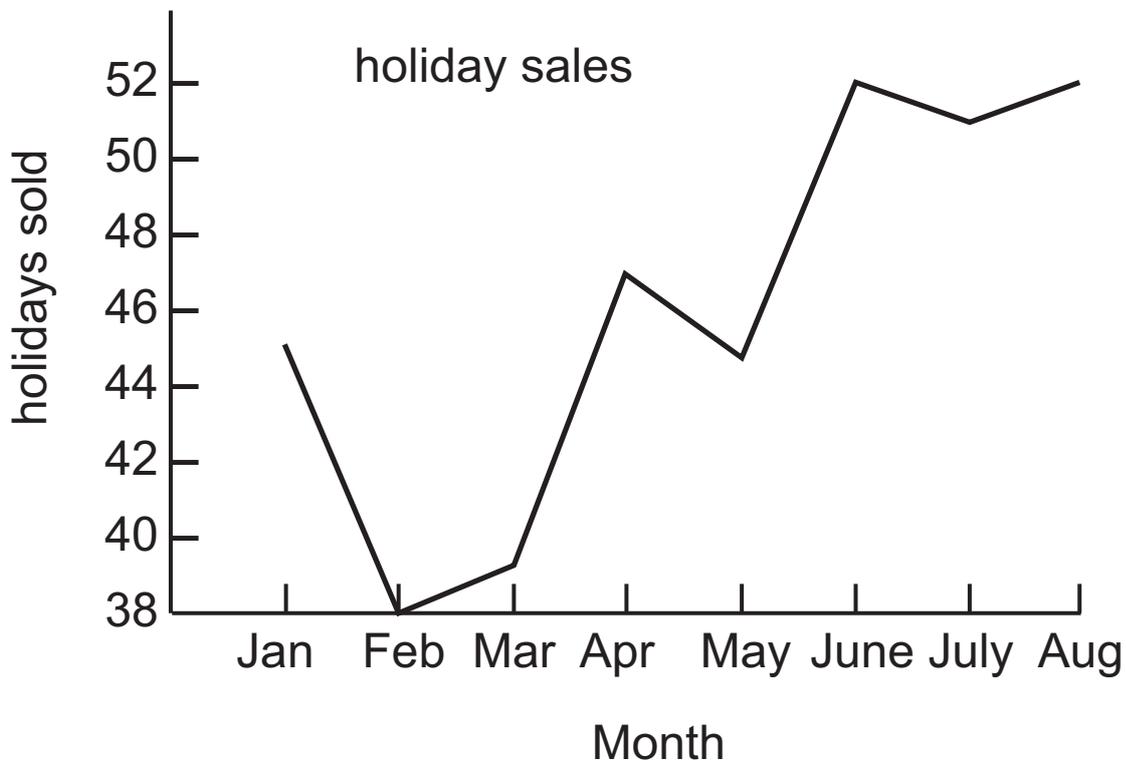
Colour	Black	Brown	Blue	Other
Number	35	20	18	17
Angle				

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

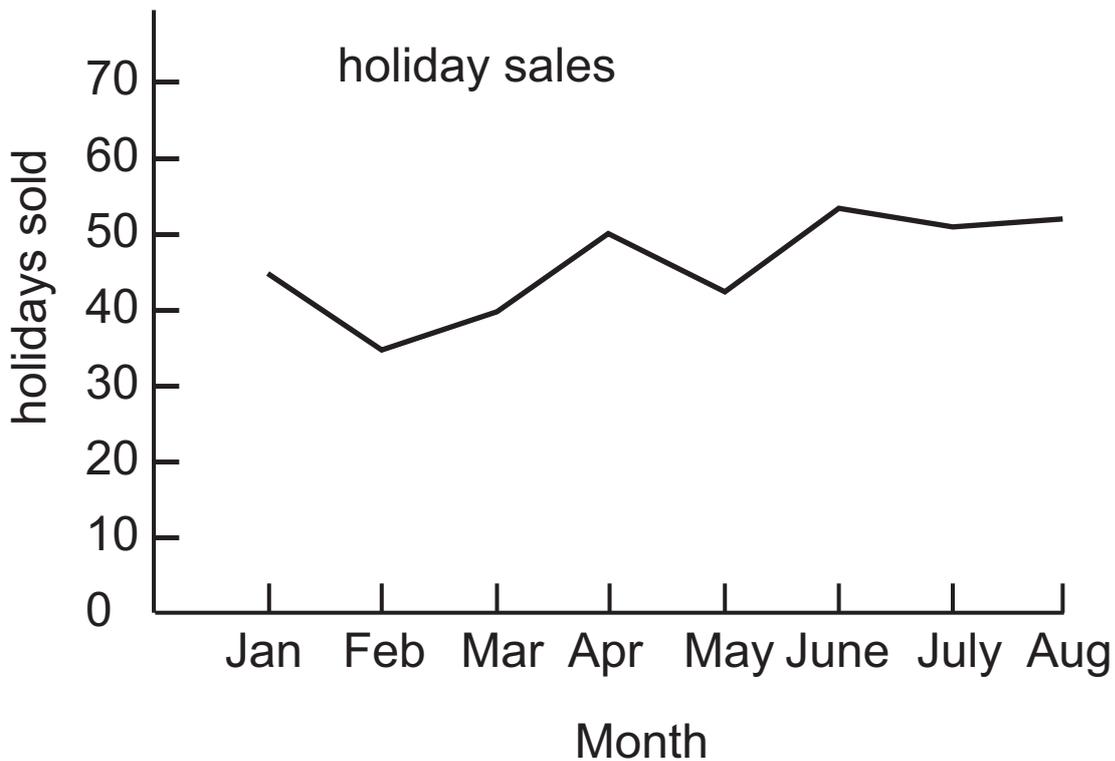


26 The two graphs below show similar information but look different.

Graph A



Graph B



(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 _____

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

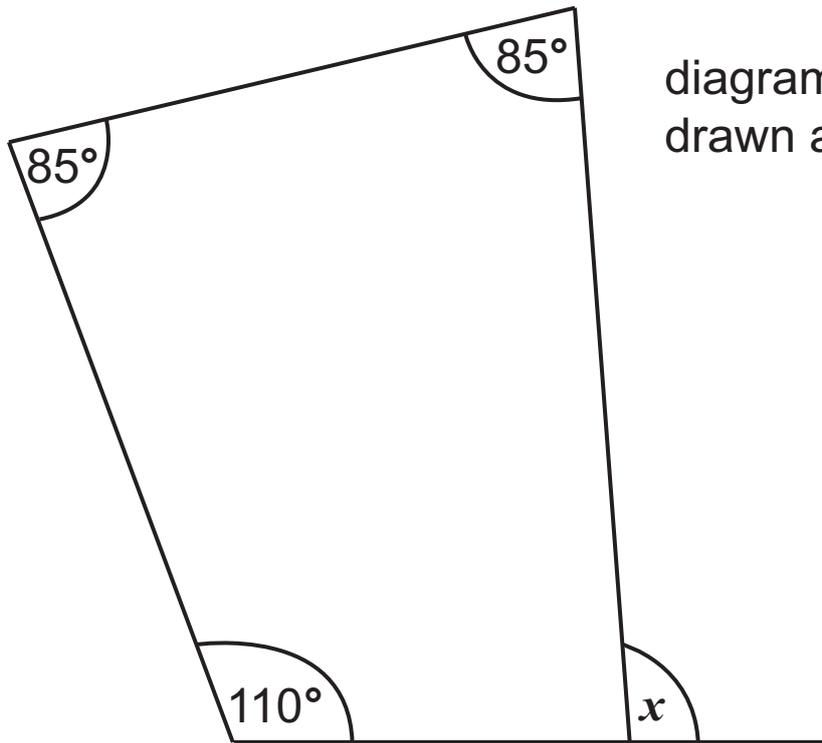


diagram not
drawn accurately

Answer $x =$ _____ $^\circ$

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 _____

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

SOURCES

Q28 Translink Timetable, Source - - - - © Adapted from Translink Timetable (www.translink.co.uk). With kind permission

For Examiner's use only	
Question Number	Marks
1	
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Total Marks	
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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		
Derriaghly	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	0930 1030 1130 1230 1330 1430 1530 1630 1730 1830 1930		
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		
Hollywood	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		