

Surname	Centre Number	Candidate Number
Other Names		0



GCSE LINKED PAIR PILOT

4362/01

APPLICATIONS OF MATHEMATICS

UNIT 2: Financial, Business and Other Applications

FOUNDATION TIER

A.M. THURSDAY, 23 January 2014

1 hour 30 minutes

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

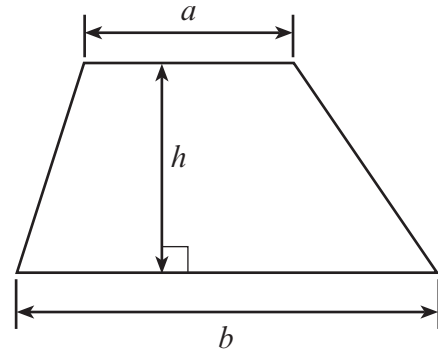
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question 6(a).

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	14	
2.	4	
3.	4	
4.	4	
5.	9	
6.	20	
7.	2	
8.	6	
9.	6	
10.	11	
Total	80	

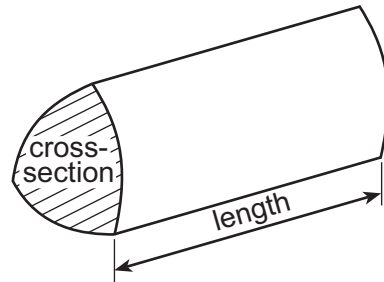
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Formula List

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



Volume of prism = area of cross-section \times length



1. Chris is planning a charity bike ride.

(a) Chris has to buy some new equipment so that he can take part in the bike ride.



He sees the following items on the Internet.

<p>Pair of Shorts £40.50</p> 	<p>Pair of Gloves £22.49</p> 	<p>Water Bottle £6.12</p> 
<p>Pair of Shoes £79.95</p> 	<p>Helmet £56.50</p> 	<p>Sunglasses £20.79</p> 

(i) Chris buys a pair of gloves, 3 water bottles, a pair of shoes and 2 pairs of shorts. Complete the following table to show his bill for these items. [4]

Item	Cost
Pair of gloves	£ 22.49
3 water bottles	£
Pair of shoes	£
2 pairs of shorts	£
Total	£

(ii) The Internet company gives Chris a 5% discount of his total bill. How much discount does the company give Chris? [2]

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(iii) How much does Chris pay for his items after the discount has been given? [1]

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(b) The bike ride has 4 stages.

- Stage 1: Cardiff to Swansea
 Stage 2: Swansea to Aberystwyth
 Stage 3: Aberystwyth to Brecon
 Stage 4: Brecon to Cardiff

The distances, in km, between the places are shown in the following table.

Cardiff			
66	Swansea		
188	121	Aberystwyth	
67	70	102	Brecon

Calculate the total distance of the bike ride.

[2]

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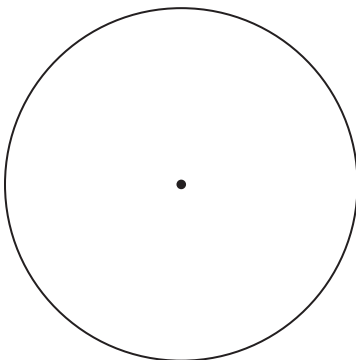
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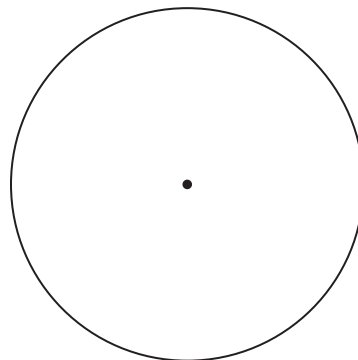
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(c) The wheels of Chris' bike have spokes.
 Each spoke is in the position of a radius.
 The name of the manufacturer of the tyres is on the arc of the tyre.
 Draw a radius and an arc on the circles below.

[2]



Radius



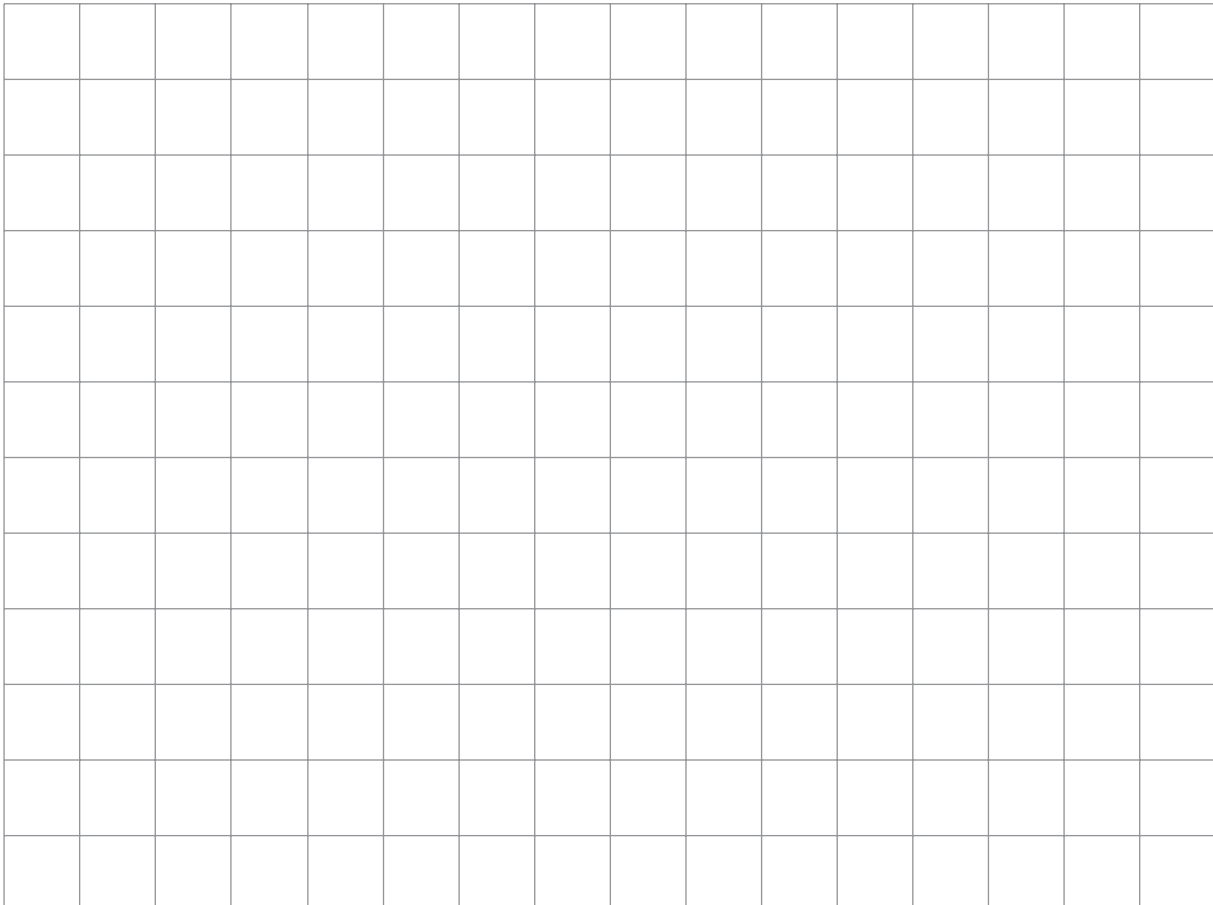
Arc

- (d) All the people who entered the charity bike ride had to state the type of bike that they would be riding. The results are shown below.

Type of bike	Number of people	Frequency
Mountain		3
Touring	 	7
Road	 	11
Hybrid		4

Use this data to draw a suitable bar chart on the squared paper below.

[3]



2.



The above picture shows a train.

Write down an **estimate** for the actual height of a door.

Using this estimate for the height of a door, estimate the **actual length** of the train.
You must show all your working.

[4]

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3. At the end of term, Rhys had tests in four of his subjects.
This is what he said about his results.

In Maths I had 74%

For Welsh I achieved 7 out of 10

I scored $\frac{3}{4}$ of the marks in Science

In English my teacher told me I had
0.67 of the total possible marks

- (a) For Rhys to compare all of his results he needs to write them as percentages.
Change his results into percentages and complete the table below.

[3]

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Subject	Result as a percentage
Mathematics	74%
Welsh	
Science	
English	

- (b) In what subject did Rhys have the highest percentage?

[1]

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4. (a) **Set up** an equation and **solve** it to find the value of x .

[2]

When 15 is added to x , the answer is 21.

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- (b) **Set up** an equation and **solve** it to find the value of y .

[2]

When y is multiplied by 3, the answer is 27.

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5. Joseph went on a 7 day skiing holiday to Sweden.

- (a) Before going on holiday, Joseph changed £700 into Swedish kroner (kr).
 The exchange rate was £1 = 11 kr.
 In Sweden he spent 6194 kr.
 Using the same exchange rate, find how much money, in £, he brought home.
 Give your answer correct to the nearest penny. [6]



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- (b) The mid-day temperature, on the ski slope, was recorded over the seven days of Joseph's holiday.

The recorded temperatures for six of those days are shown below.
 The mid-day temperature on Thursday was 3°C colder than on Wednesday.

- (i) Complete the table for Thursday. [1]

Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Mid-day Temperature°C	-9	-7	-2	-1	1		-5

- (ii) Which day had the lowest mid-day temperature? [1]

- (iii) What was the difference between the highest and lowest mid-day temperatures? [1]

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6. The North Western Spa Hotel has a sport and leisure complex.



- (a) You will be assessed on the quality of your written communication in this part of the question.

The sport and leisure complex offers four types of membership.

Membership	Joining Fee	Cost
Type A	£50	£34.99 per month
Type B	None	£39 per month
Type C	£30	£30 per month for the first 3 months, then £37.99 each month
Type D	None	One payment of £449 for the year

Annie wishes to join the sport and leisure complex for a year.

- Calculate the cost of each type of membership for a year.
- What type of membership is the cheapest for Annie?
- What possible disadvantage could there be with Annie choosing the cheapest type of membership?

You must show all your working.

[9]

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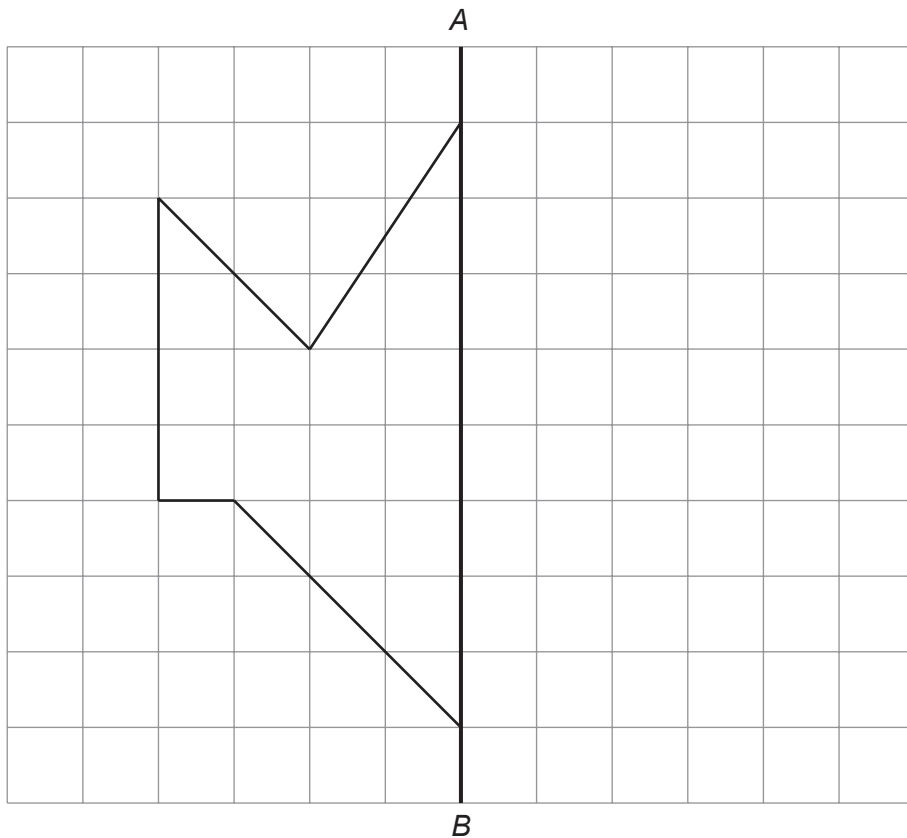
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(b) The hotel has decided to create a new logo that has a line of symmetry. Complete the new logo so that AB is the line of symmetry.

[2]



- (c) The hotel records the number of members who use the sport and leisure complex from Monday to Friday during the morning in one particular week. The following table shows this data.

Day	Number of members
Monday	62
Tuesday	56
Wednesday	38
Thursday	30
Friday	54

Draw a pie chart to illustrate these results.
You should show how you calculate the angles of your pie chart.

[4]

Working:

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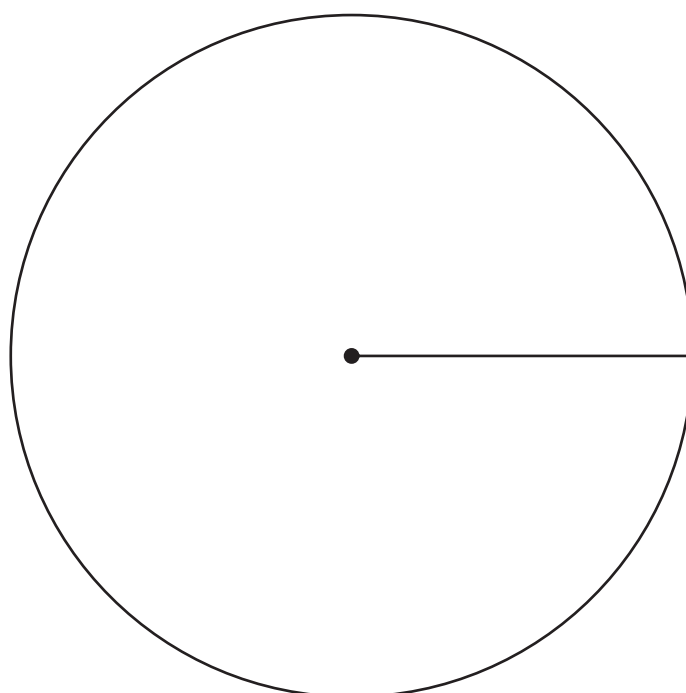
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- (d) Bath salts, for the hotel rooms in the North Western Spa Hotel, are packaged in boxes. Each box is in the form of a cube with all edges 5 cm in length.

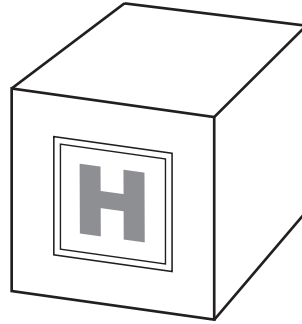


Diagram not drawn to scale

These boxes of bath salts are kept in storage containers.
Each storage container is in the shape of a cuboid with internal measurements
20 cm by 15 cm by 30 cm.

What is the maximum number of boxes of bath salts that can fit into a storage container?
You must show all your working. [5]

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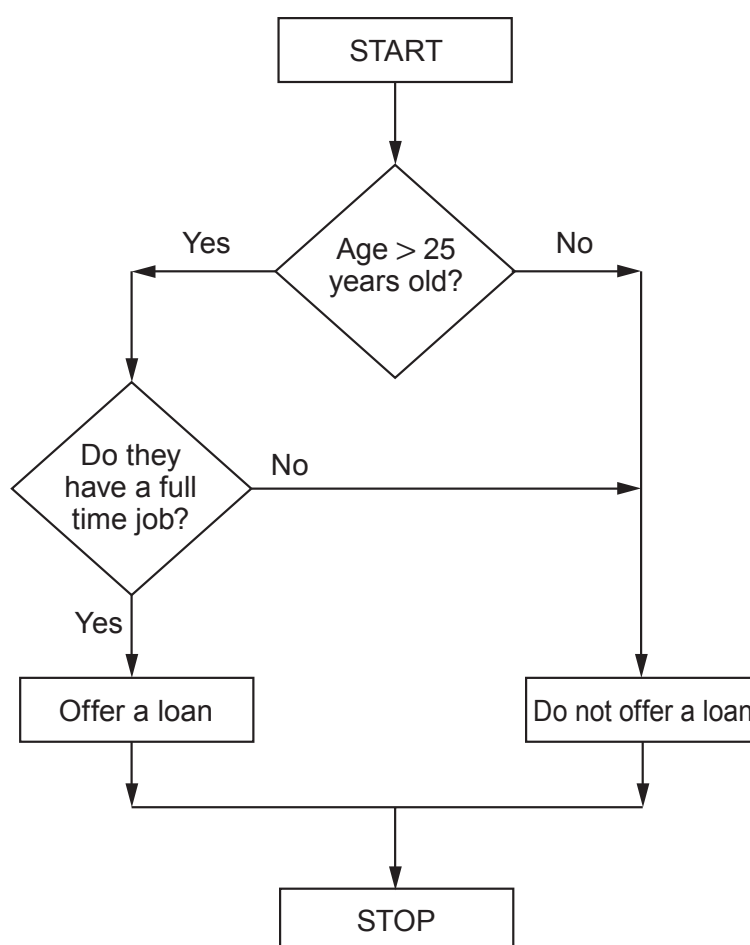
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7. A bank uses this flowchart to decide if a customer would be offered a loan.



Which of the people below would **NOT** be offered a loan by the bank?

[2]

- Mr Roberts, aged 45 working one evening per week as a salesman
- Miss Evans, aged 25 working full time as a nurse
- Mr Thomas, aged 26 working full time as a mechanic
- Miss Abbott, aged 26 working part time as a plumber
- Mr Brett, aged 86 retired
- Miss White, aged 42 working full time as a teacher

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8.

Ingredients to make
4 pancakes



55 g plain flour
1 egg
100 ml milk
37.5 ml water
25 g butter

Useful information, metric and imperial units:

4 ounces is approximately 110 g
25 ml of milk or water is approximately 1 fluid ounce

(a) Using the recipe shown above, calculate the quantity of plain flour needed to make 48 pancakes. **Give your answer in ounces.** [3]

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(b) Jerry works in a school kitchen.
She uses the recipe information for pancakes shown above.
She has measured out the plain flour, milk and butter and placed them with the eggs in a large bowl.
Jerry measures out 150 fluid ounces of water to add to her other pancake ingredients in the bowl.
How many pancakes is Jerry making? [3]

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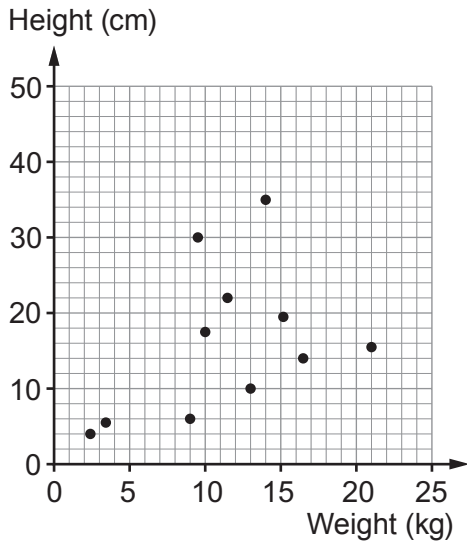
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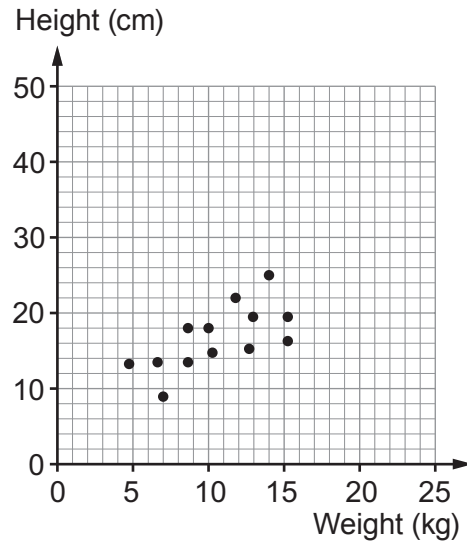
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9. Bethany and Michelle have both completed a project about pets. They weighed and measured the heights of a number of pets. They each drew a scatter diagram showing their results.

Bethany's scatter diagram



Michelle's scatter diagram



- (a) One of the girls' scatter diagrams shows weights and heights of pet cats, dogs and hamsters. The other girl's scatter diagram shows weights and heights of only pet cats.

Which of the girls, Bethany or Michelle, considered only pet cats?
Give a reason for your answer.

[1]

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- (b) Draw a line of best fit, by eye, on Michelle's scatter diagram.

[1]

