

## Mock Revision F [44]

1.

Mrs Brown's bill for servicing her car is £96 plus VAT.  
VAT is charged at 17.5%.

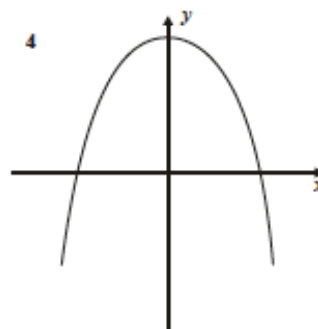
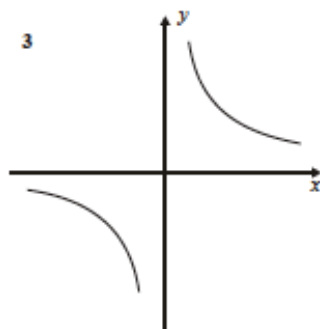
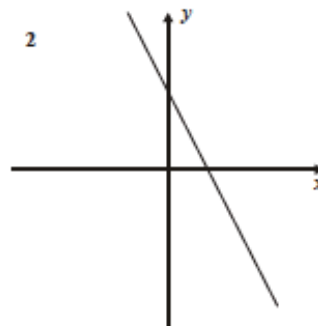
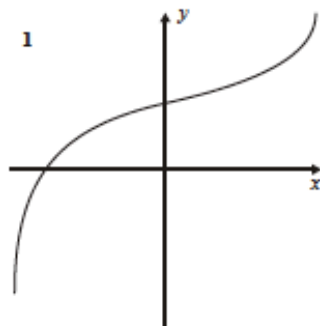
What is her total bill?

(Total 3 marks)

2.

Match each of the sketch graphs to one of these equations.

A  $y = 2 - 2x$       B  $y = 2x + 2$       C  $y = 3 - x^2$       D  $y = x^3 + 4$       E  $y = \frac{2}{x}$



(Total 4 marks)

3.

The table gives information about the number of people staying in a hotel each quarter in 2011 and in 2012.

Year	2011				2012			
Quarter	1	2	3	4	1	2	3	4
Number of people	261	353	372	290	193	309	292	202

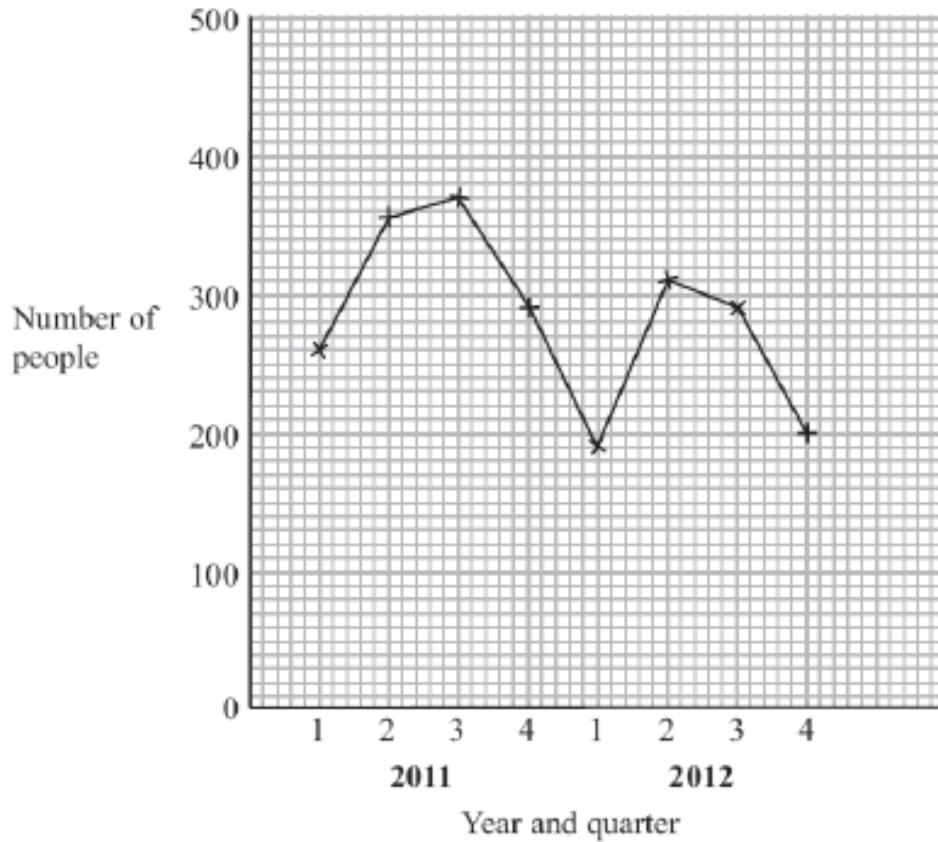
(a) Calculate the 4-point moving averages for this information.

The first three have been done for you.

319, 302, 291, ....., .....

(2)

The information in the table is shown on the grid.  
 (b) On the grid, plot the 4-point moving averages.



(2)

(c) Describe what the moving averages show about the trend in the number of people staying at the hotel over this period.

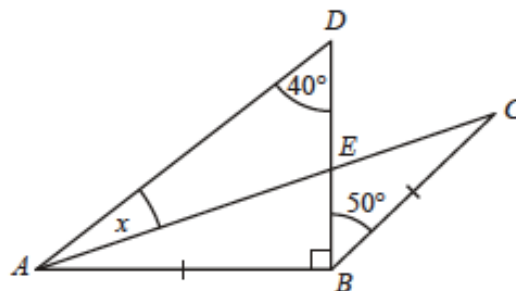
(1)

(Total 5 marks)

4.

$ABC$  is an isosceles triangle.  
 Triangle  $ABD$  has a right angle at  $B$ .  
 Angle  $ADB = 40^\circ$   
 Angle  $CBE = 50^\circ$

Not drawn accurately

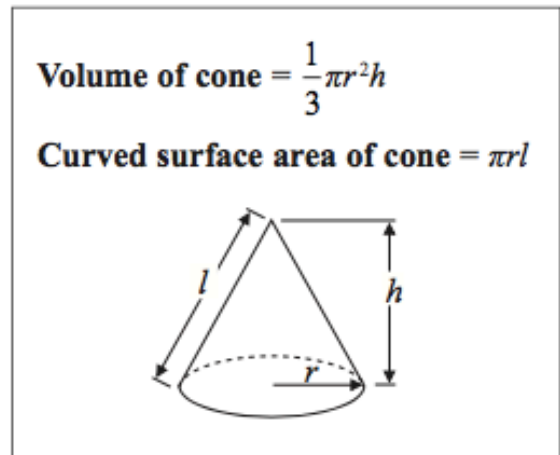
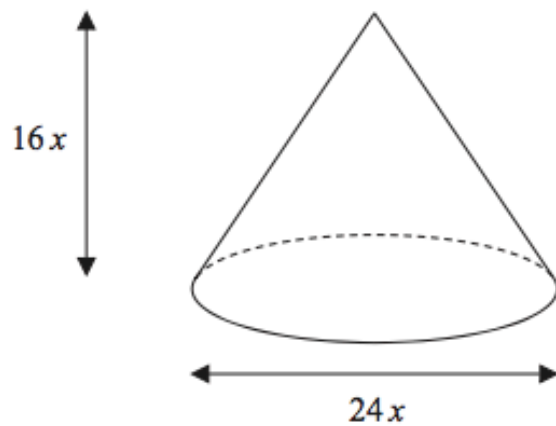


Work out the size of angle  $x$ .

(Total 3 marks)

5.

The diagram shows a solid cone.



The diameter of the base of the cone is  $24x$  cm.

The height of the cone is  $16x$  cm.

The curved surface area of the cone is  $2160\pi$  cm<sup>2</sup>.

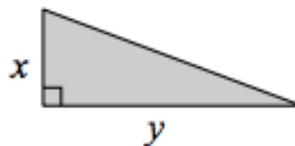
The volume of the cone is  $V\pi$  cm<sup>3</sup>, where  $V$  is an integer.

Find the value of  $V$ .

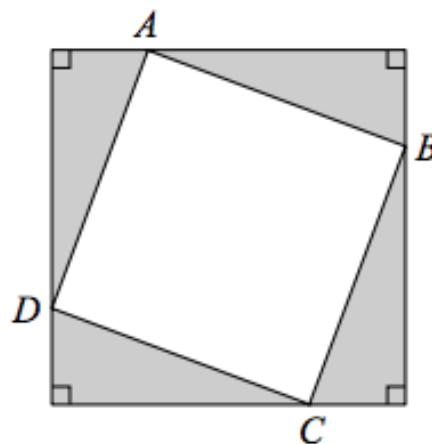
(Total 5 marks)

6.

Here is a right-angled triangle.



Four of these triangles are joined to enclose the square  $ABCD$  as shown below.

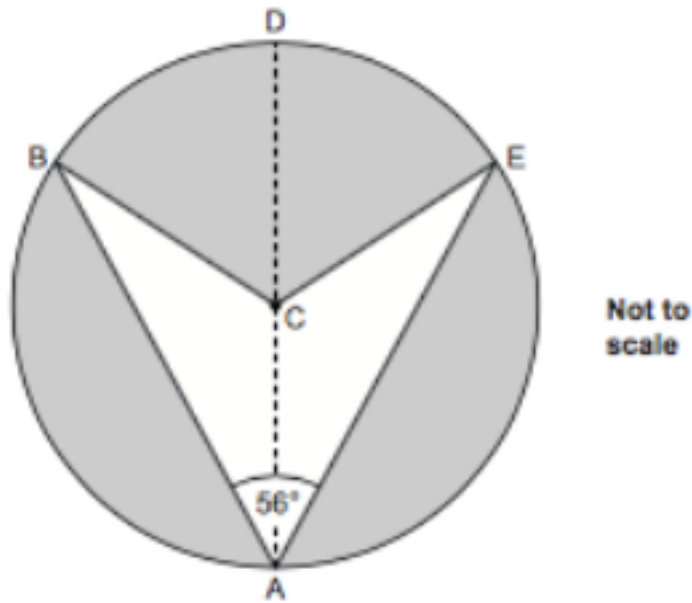


Show that the area of the square  $ABCD$  is  $x^2 + y^2$

(Total 3 marks)

7.

A white arrowhead is painted on a grey circle.



Points A, B, D and E are on the circumference of the circle, centre C.  
AD is a line of symmetry.  
Angle BAE is  $56^\circ$ .

Calculate the percentage of the circle that is painted white.

(Total 6 marks)

8.

(a) Copy and complete the table of values for  $y = 2x^2 - 4x - 1$

$x$	-2	-1	0	1	2	3
$y$	15		-1		-1	5

(2)

(b) On a grid  $-2 \leq x \leq 3$  (2 cm = 1 unit),  $-3 \leq y \leq 15$ , draw the graph of  $y = 2x^2 - 4x - 1$ .

(2)

(c) An approximate solution of the equation  $2x^2 - 4x - 1 = 0$  is  $x = 2.2$

(i) Explain how you can find this from the graph.

(1)

(ii) Use your graph to write down another solution of this equation.

(1)

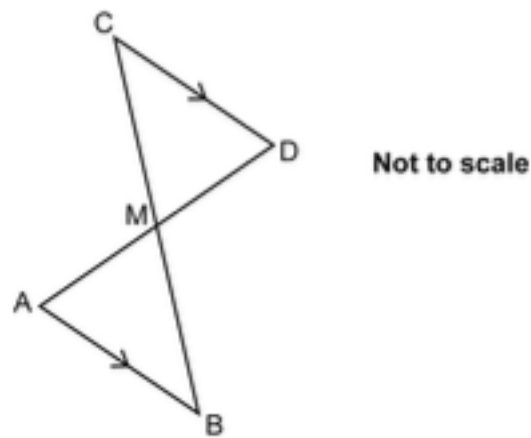
(Total 6 marks)

9.

In the diagram AB is parallel to CD.

AD and BC are straight lines.

M is the midpoint of AD.



Prove that triangle AMB is congruent to triangle DMC.

(Total 4 marks)

10. **Non-calculator**

There are 10 pens in a box.

There are  $x$  red pens in the box.

All the other pens are blue.

Jack takes at random two pens from the box.

Find an expression, in terms of  $x$ , for the probability that Jack takes one pen of each colour.

Give your answer in its simplest form.

(Total 5 marks)