

# JUNIOR LYCEUM ANNUAL EXAMINATION 2005

Educational Assessment Unit – Education Division

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**FORM 4 (4<sup>th</sup> year)                      TECHNICAL DESIGN                      Time 2 hours**

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## Instructions

- Write your name and class on all sheets.
- Attempt ALL questions.
- All answers are to be drawn accurately, with instruments, unless otherwise stated.
- All construction lines **MUST** be left on each solution to show the method employed.
- Drawing aids may be used.
- Colour / shading should be used where appropriate.

## Information

- All dimensions are in millimetres.
- Estimate any missing dimensions not given.
- Marks will be awarded for accuracy, clarity and appropriateness of construction.

NAME \_\_\_\_\_

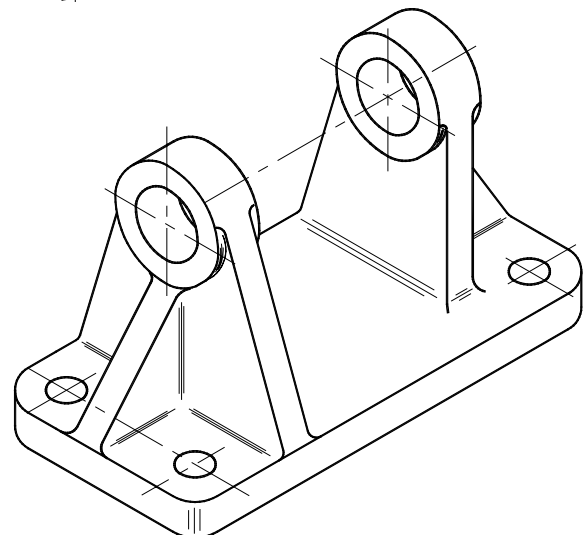
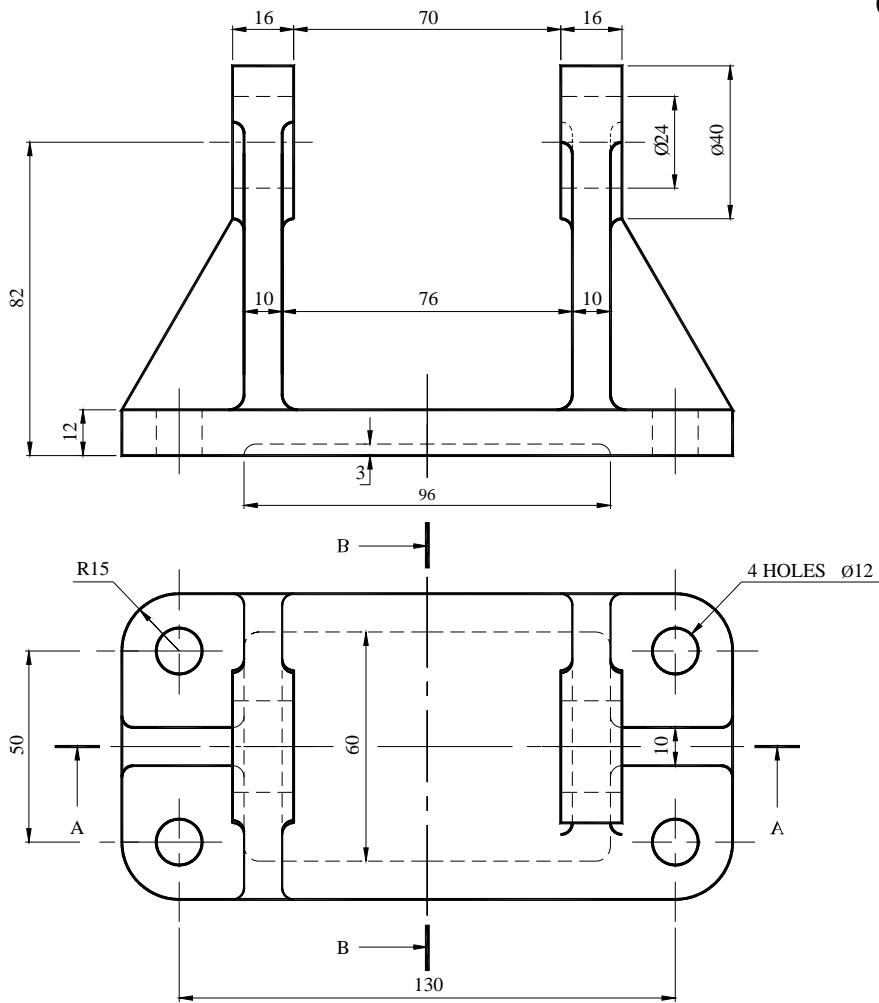
CLASS \_\_\_\_\_

Question	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Max. mark	<b>35</b>	<b>10</b>	<b>15</b>	<b>22</b>	<b>18</b>
Mark					

1. The figure below shows a **SUPPORT BRACKET**

- (a) Draw, using first angle projection the following views
- (i) a sectional front elevation on plane **A - A** 18 marks
  - (ii) a sectional end elevation on cutting plane **B-B** 12 marks
- (b) Add the following to your drawing
- (i) the appropriate symbol to indicate the projection angle 5 marks
  - (ii) the scale

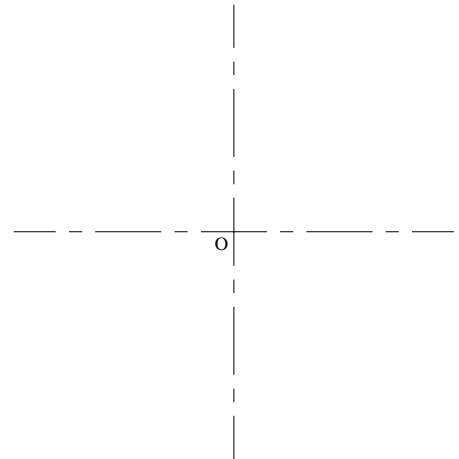
(Total 35 marks)



2. The foci of an ellipse are 90mm apart and the minor axis is 80mm long.

- Determine the length of the major axis
- Draw the ellipse using the concentric-circles method.
- Draw a tangent to the ellipse at a point on it 30mm above the major axis.

(10 marks)

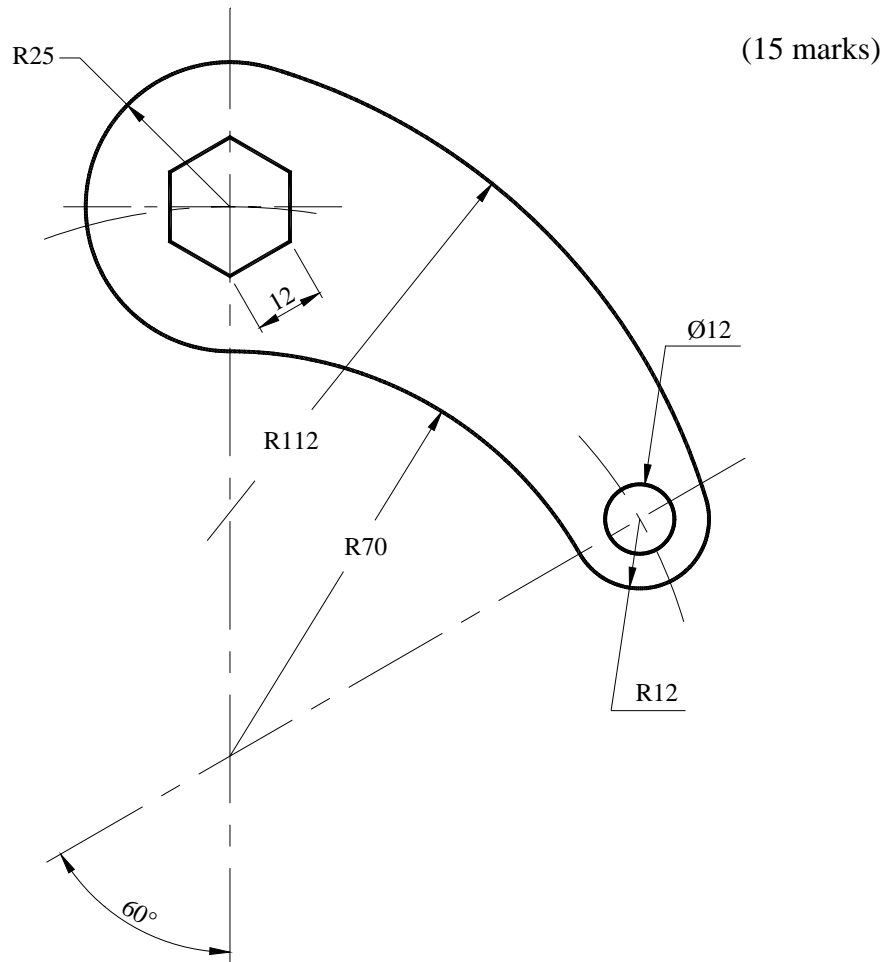


3. The figure below shows a drawing outline of a rocker-arm.

- Copy the outline, full size, using geometrical methods to determine the centers of the arcs.
- Indicate the exact points of tangency by drawing short lines across the outline at these points.

The construction lines for the centres of the arcs and the points of tangency must be clearly shown.

A uniform thickness and darkness of outline is required throughout.

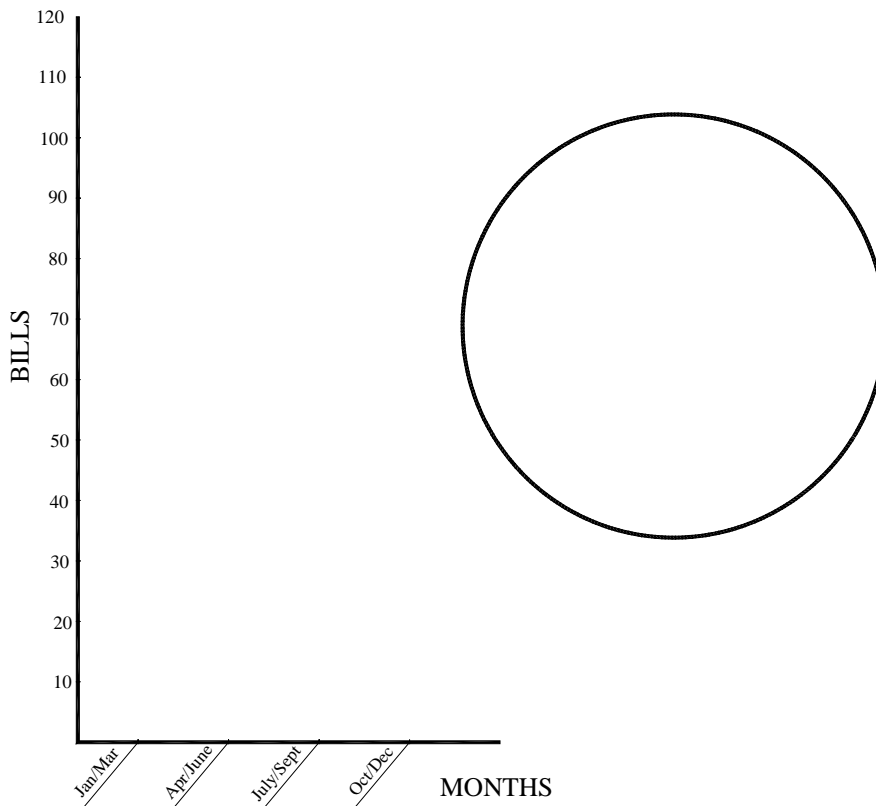


4. The table shows the quarterly bills for a family.

- (a) Draw a pie chart to show a comparison for the quarter **July / September** of the **five** bill items.
- (b) Draw line graphs to show a comparison throughout the year of the bills for **Electricity, Petrol and Telephone**.
- (c) Add suitable colour and notation to your graphs.

(22 marks)

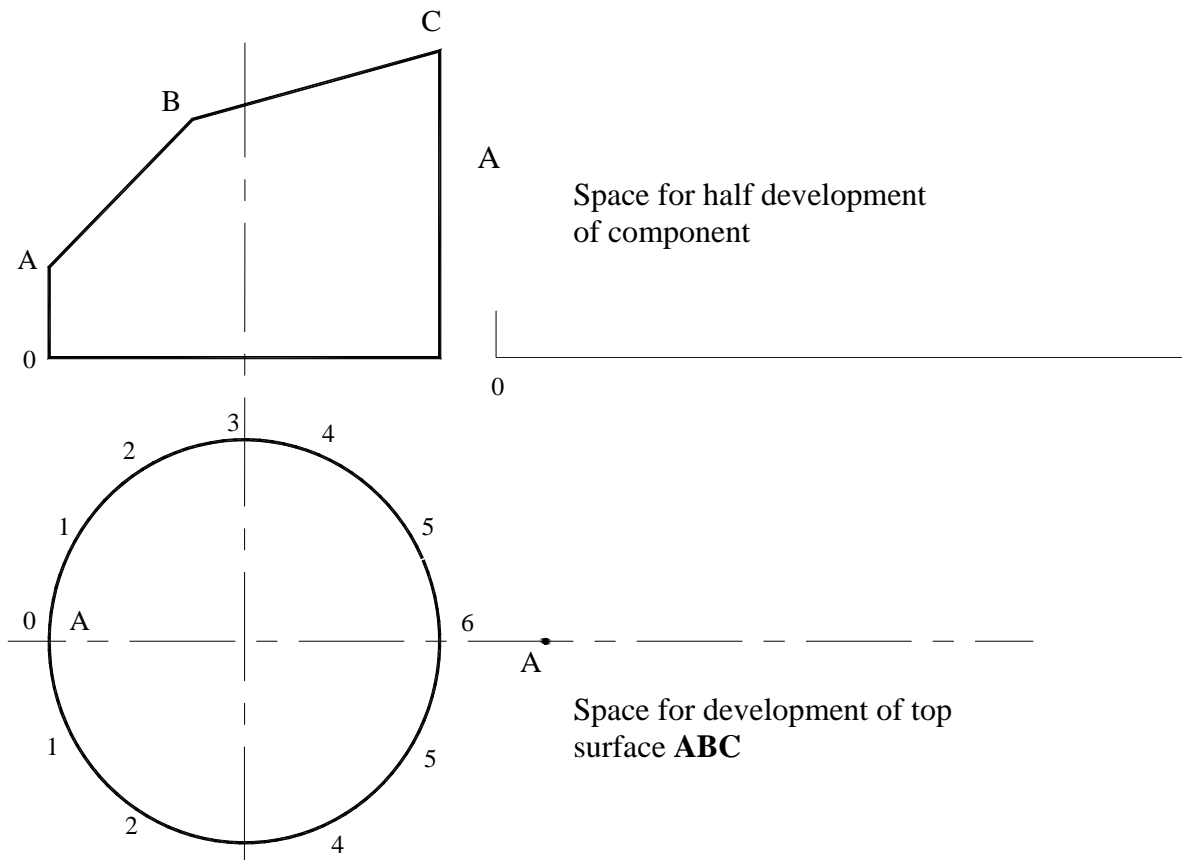
BILL ITEM	JAN/MAR	APR/JUNE	JULY/SEPT	OCT-DEC
ELECTRICITY	100	85	80	85
WATER	40	50	100	60
PETROL	80	70	110	65
GAS	15	10	15	15
TELEPHONE	40	25	55	35



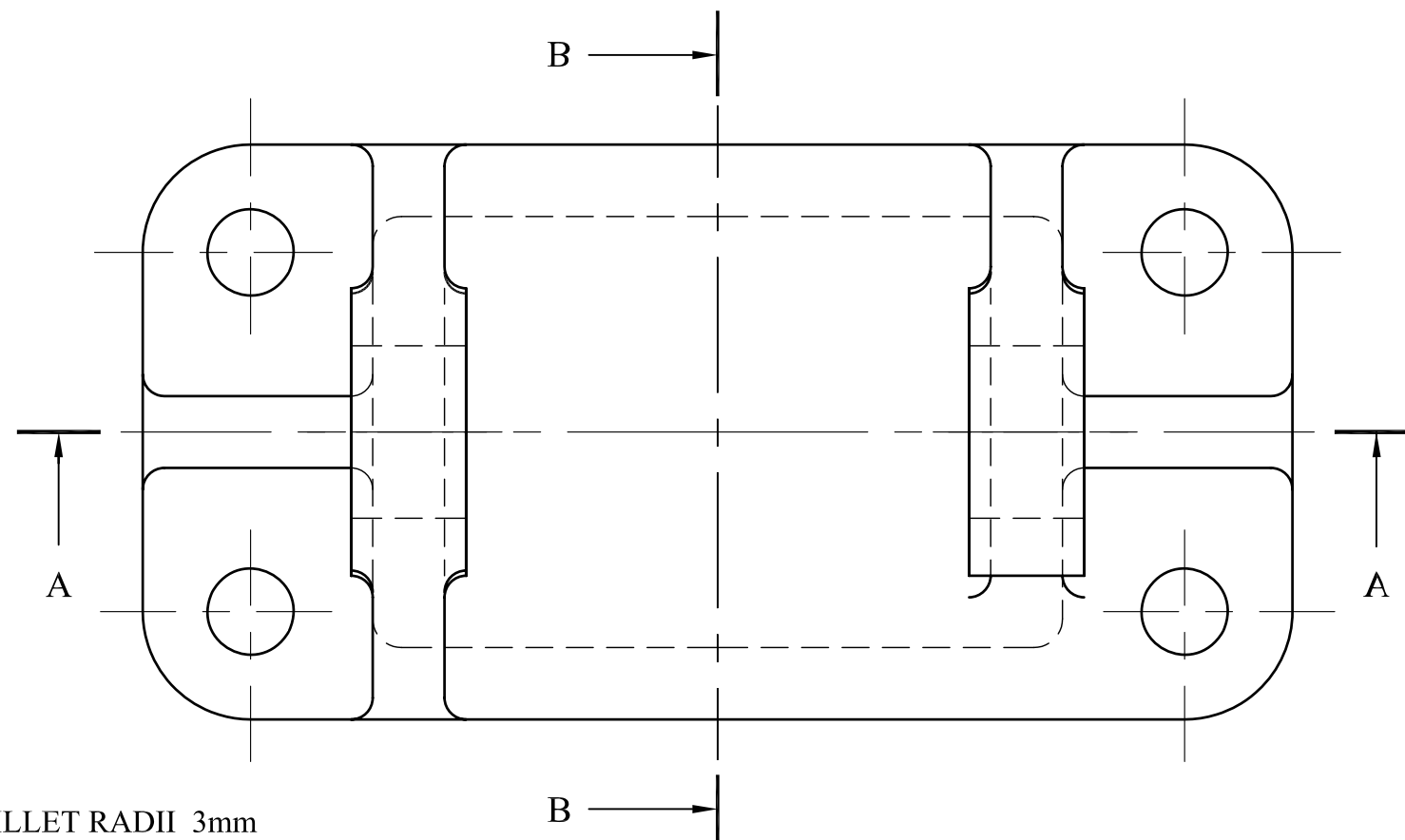
5. The figure below shows an elevation and plan details of a tubular component produced from thin sheet metal with the joint at **OA**.

- (a) Construct in the space shown a **half development** of this component with the joint at **OA**.
- (b) Draw in the space indicated a separate one piece development, (known as the true shape of **ABC**), of the top surface shown as **ABC** in the front view.

(18 marks)

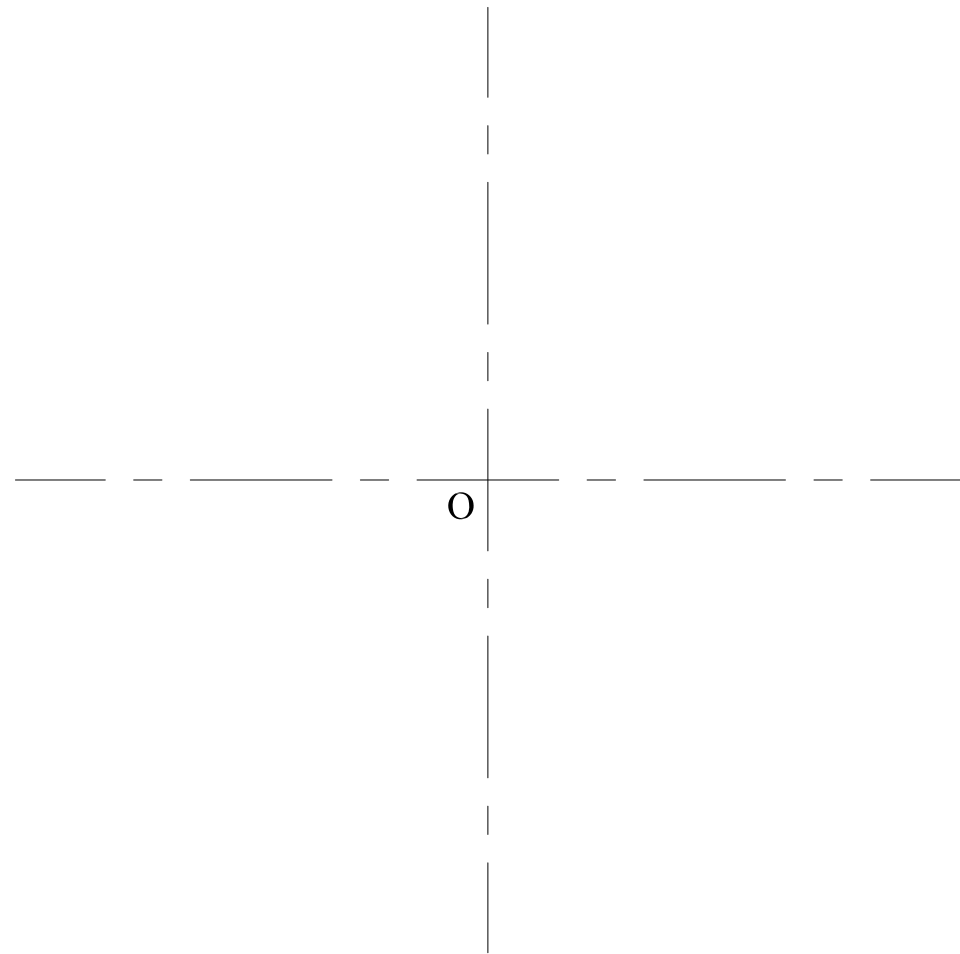


QUESTION No.1

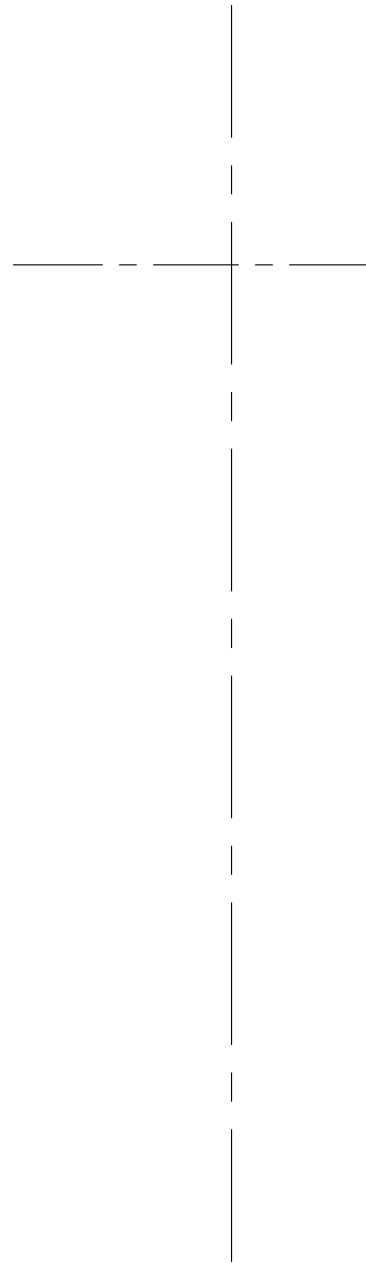


ALL FILLET RADII 3mm

QUESTION No.2

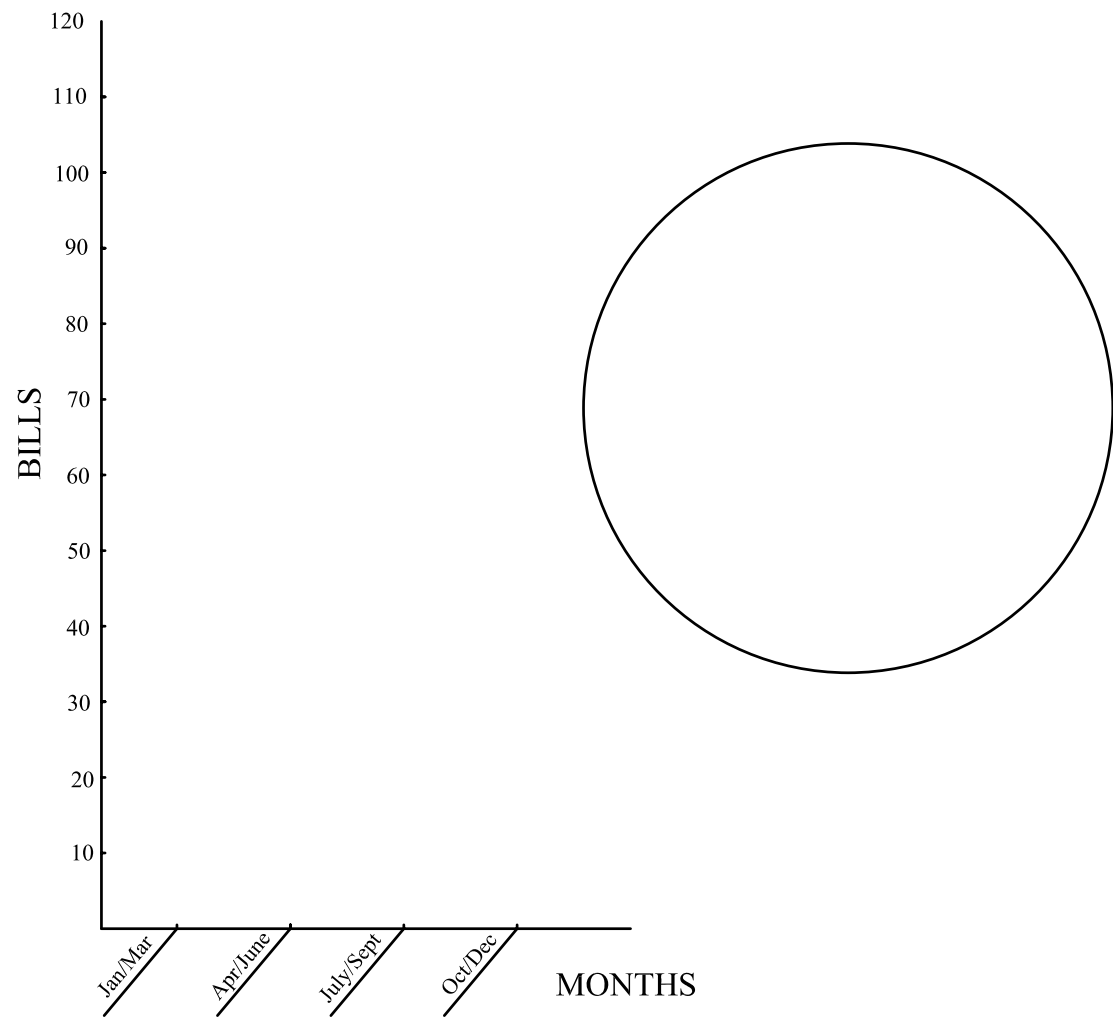


QUESTION No.3



QUESTION No.4

BILL ITEM	JAN/MAR	APR/JUNE	JULY/SEPT	OCT-DEC
ELECTRICITY	100	85	80	85
WATER	40	50	100	60
PETROL	80	70	110	65
GAS	15	10	15	15
TELEPHONE	40	25	55	35



QUESTION No.5

