

## AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

# Vocational Specialism - Graphics & Construction Studies (240 marks)

Tuesday, 10<sup>th</sup> June 2003  
Morning 9.30 am - 11.00 am.

*For the Superintendent only*

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| Centre Stamp |
|--------------|

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|--|--|--|
| 1.   | Total of end of page totals                            |  |
| 2.   | Aggregate total of all disallowed question(s)          |  |
| 3.   | Total mark awarded (1 minus 2)                         |  |
| 4.   | Bonus mark for answering through Irish (if applicable) |  |
| 5.   | Total mark awarded if Irish Bonus (3+4)                |  |
| Note: The mark in row 3 (or row 5 if an Irish Bonus is awarded) must equal the mark in the <b>Mór-Iomlán</b> box on the script |  |  |

## General Directions

1. Write your examination number in this space:

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|--|
|  |
|--|

2. There are two sections in this paper.

*Section 1* - Answer **both** questions. - 105 marks

**Q1 - Short answer questions**

**Q2 - Graphic Communication**

*Section 2* - Five questions, answer **any three**. - 135 marks

**Q1 - Construction**

**Q2 - Building Services**

**Q3 - Woodcraft**

**Q4 - Design and Manufacture of Educational Toys**

**Q5 - Computer Aided Design**

3. Write your answers in the spaces provided and include sketches as appropriate.

**Section 1**

**COMPULSORY  
QUESTION 1**

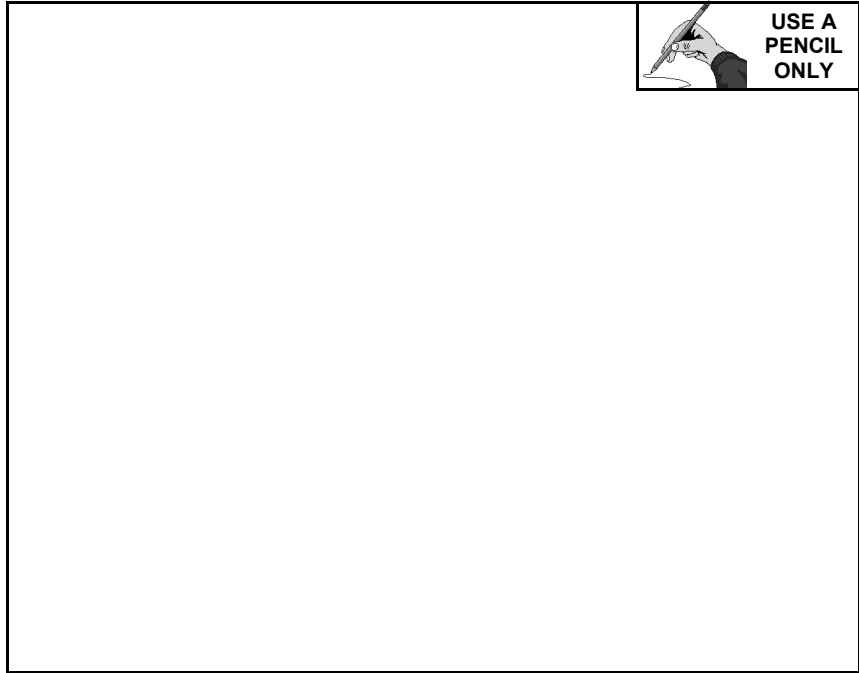
**(60 Marks)**

1. Answer any TWELVE of the following FIFTEEN short questions.

(a) (1) Sketch, in the space provided, **ONE** marking-out tool you used during this course.

(2) Name this tool:

\_\_\_\_\_  
\_\_\_\_\_



(b) What do the letters **M.D.F.** stand for?

**M:** \_\_\_\_\_

**D:** \_\_\_\_\_

**F:** \_\_\_\_\_

(c) Give **ONE** safety precaution to be observed when cutting MDF:

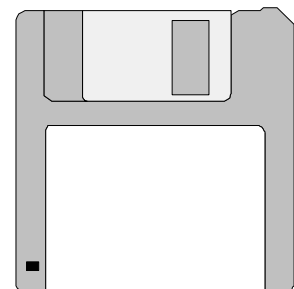
\_\_\_\_\_  
\_\_\_\_\_

(d) (1) Name the computer storage device shown.

\_\_\_\_\_

(2) Name **ONE** other computer storage device.

\_\_\_\_\_



(e) List **TWO** types of research you carried out when designing your final project.

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(f) State **ONE** subject, other than Graphics & Construction Studies, that assisted you when designing and making your final project

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(g) Explain, briefly, how the subject selected above helped with your project.

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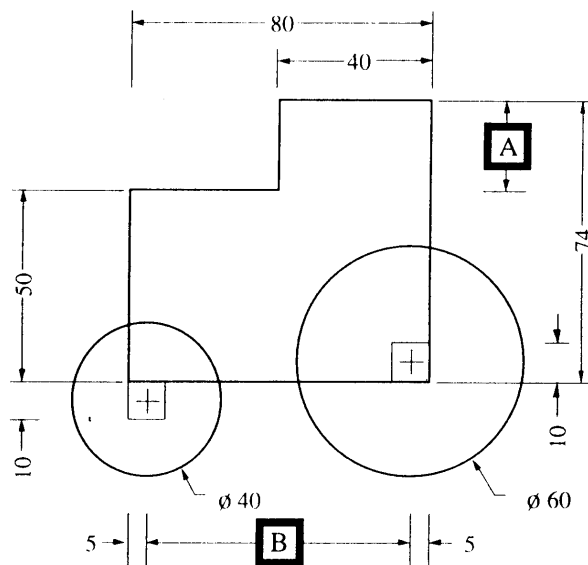
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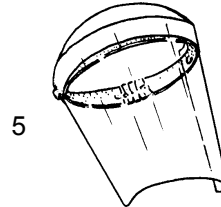
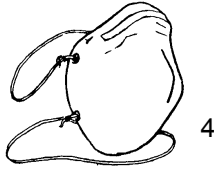
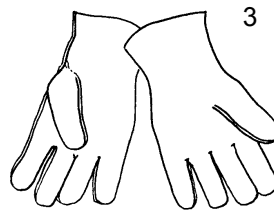
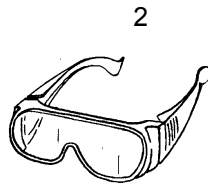
(h) Calculate the missing dimensions 'A' and 'B' in the drawing shown.

A = \_\_\_\_\_

B = \_\_\_\_\_

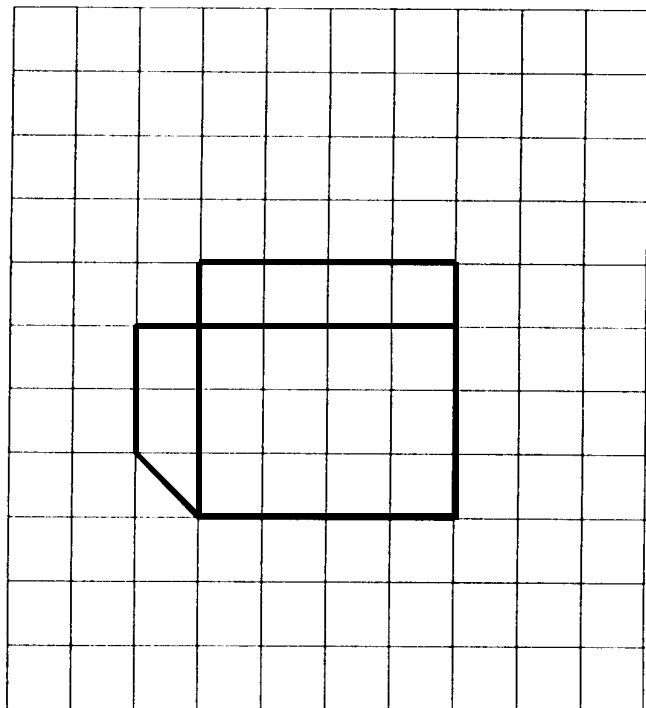
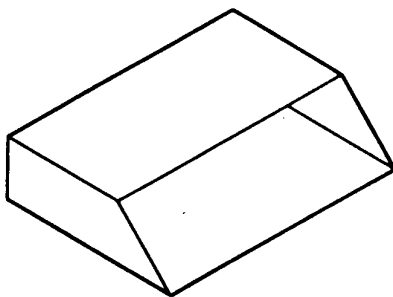


(i) Select any three of the items shown and describe when you would use each item.



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

(j) Complete the development of the dustpan shown.



(k) The stop sign shown is based on a regular polygon.

Name the polygon.

Name: \_\_\_\_\_

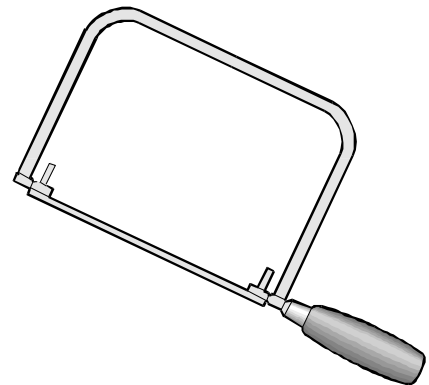


(l) (1) Name the saw shown.

Name: \_\_\_\_\_

(2) Describe where it is usually used.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



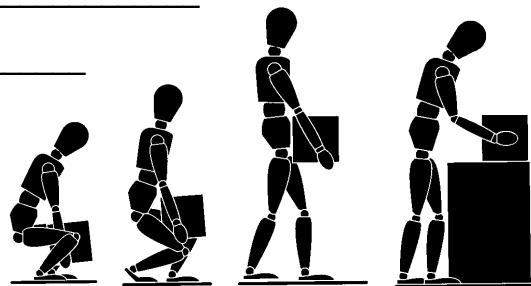
(m) Good handling technique for lifting an object is shown.

(1) Briefly describe the steps shown.

(2) Identify the potential danger if the object is not lifted correctly.

1. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_




\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(n) Choose **ANY TWO** safety warnings and in the spaces below sketch the symbol that represents each safety warning.

| Symbol   | Safety Warnings                         |
|--|---|
| <p>Example</p>  | <p>Hard hat must be worn.</p>           |
|  | <p>Fire hazard.</p>                     |
|  | <p>First Aid.</p>                       |
|  | <p>Water not suitable for drinking.</p> |

(o) (1) Identify **ONE** electrical hazard shown in the picture opposite

(2) Describe how this hazard should be corrected.

1. \_\_\_\_\_

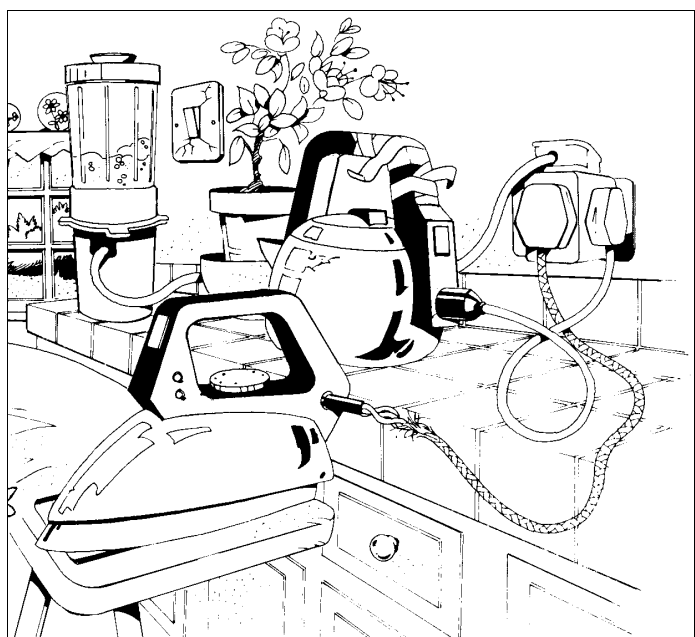
\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



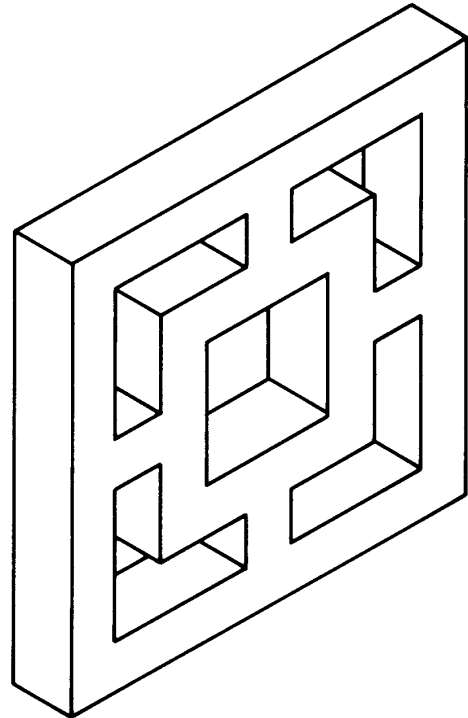
**Section 1**

**COMPULSORY  
QUESTION 2**

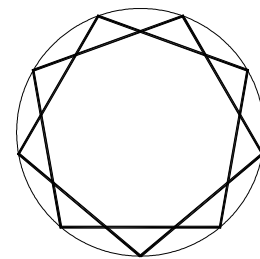
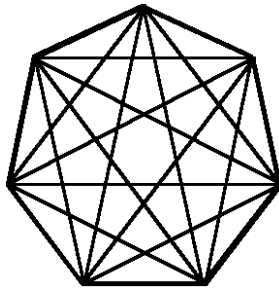
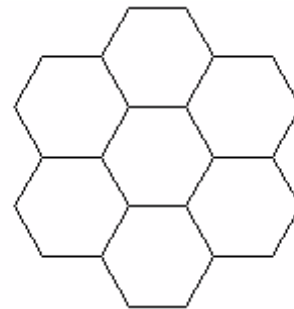
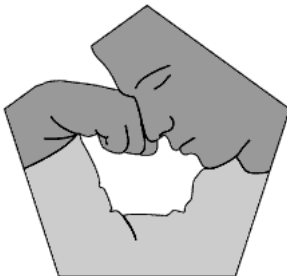
**(45 Marks)**

**2. Graphic Communication**

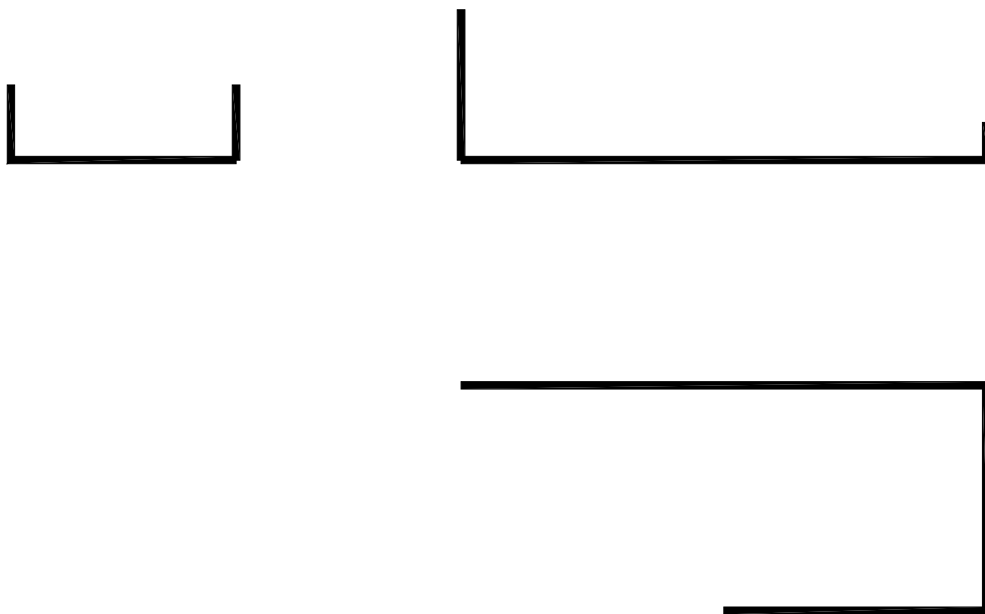
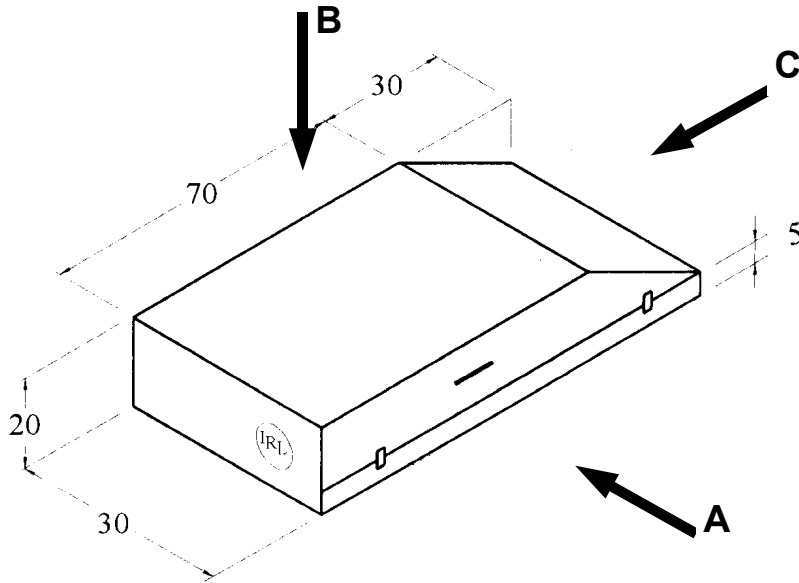
- (a) (1) The outline of a decorative block is shown. Apply suitable shading to the block.



- (a) (2) Four logos based on regular polygons are shown below. Name any **THREE** of the polygons used.

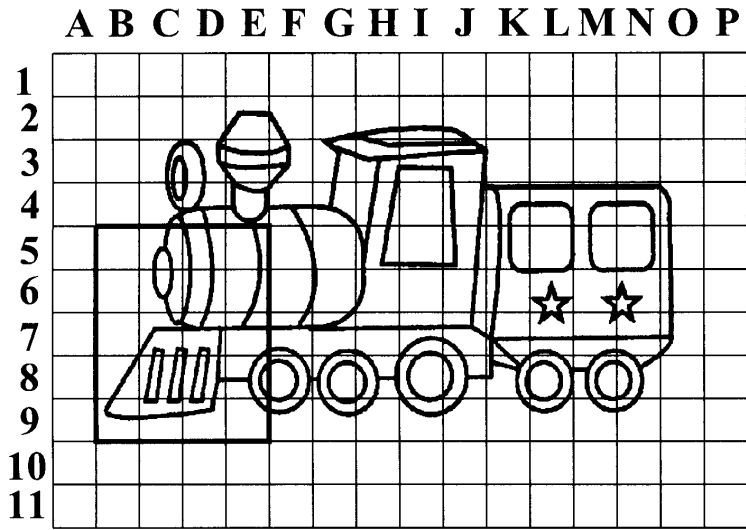


- (b) A model of a car roof-rack is shown. Complete the following orthographic views:
- (1) An elevation looking in the direction of arrow A.
  - (2) A plan projected from the elevation (arrow B).
  - (3) An end view looking in the direction of arrow C.
  - (4) Insert four main dimensions.

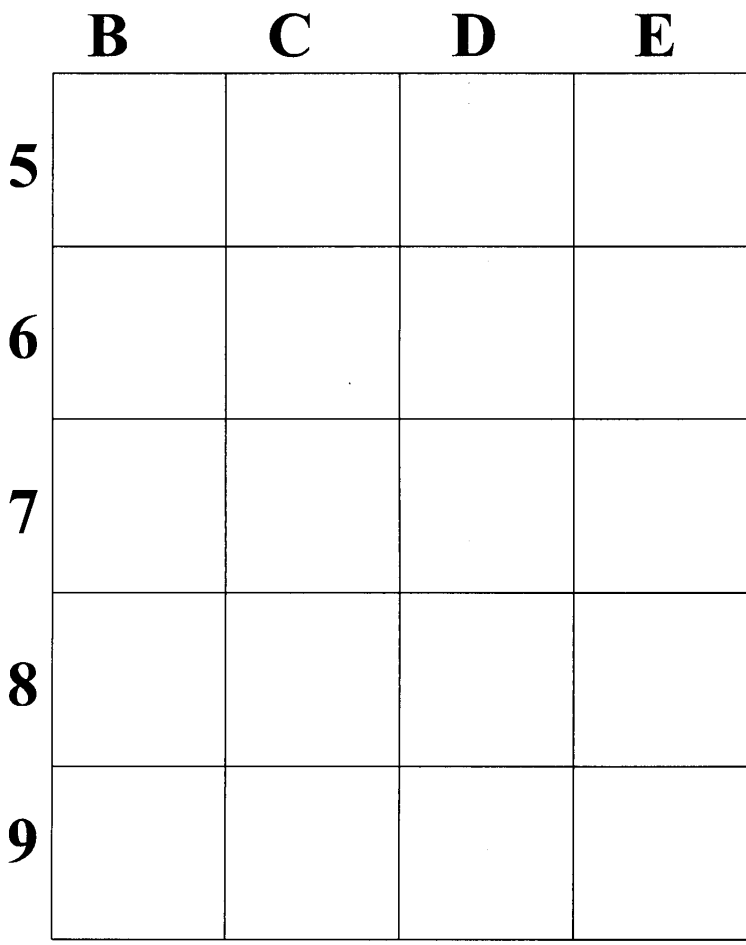




(c) Redraw on the larger grid, the part of the train highlighted from **5B** to **9E**.



USE A  
PENCIL  
ONLY



## Section 2

(135 Marks)

Answer ANY THREE Questions from this section.

### 1. Construction

- (a) **FIVE** steps involved in getting Full Planning Permission are given, but they are not in the correct order. Re-arrange the steps in the correct order.

Place a notice in an appropriate newspaper. Produce six sets of house plans.  
Decide on a house plan. Erect a site notice.  
Complete the application form and send all documents to the Planning Authority.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

- (b) A typical sill detail in a cavity wall is shown opposite.

Name any **THREE** of the parts shown.

1. \_\_\_\_\_

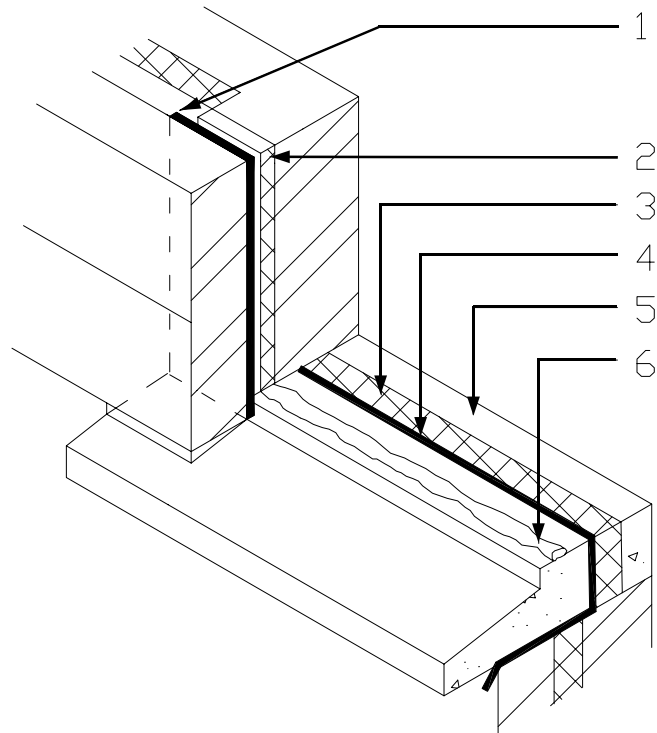
2. \_\_\_\_\_

3. \_\_\_\_\_

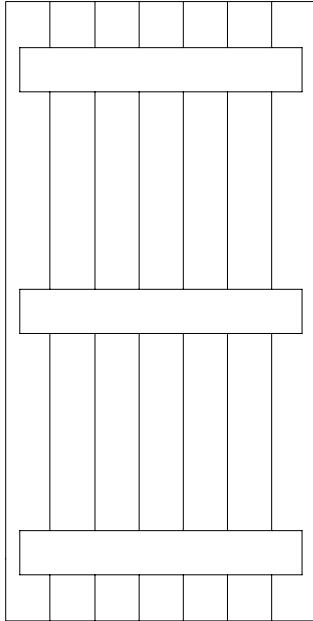
4. \_\_\_\_\_

5. \_\_\_\_\_

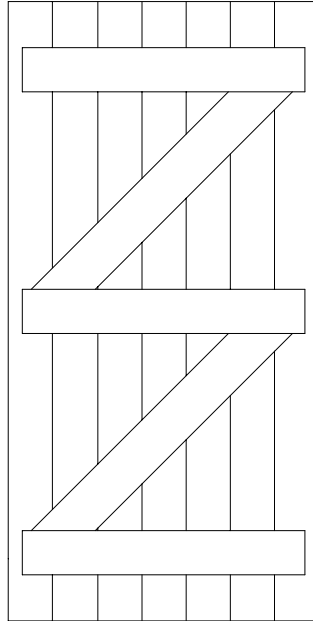
6. \_\_\_\_\_



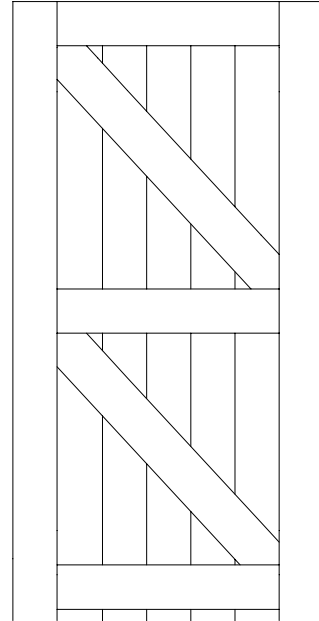
- (c) The rear elevation of three different doors is shown.  
(1) Name each type of door.  
(2) Give **ONE** advantage and **ONE** disadvantage of each type.



**A**



**B**



**C**

**Door A. Name:** \_\_\_\_\_

**Advantage:** \_\_\_\_\_

**Disadvantage:** \_\_\_\_\_

**Door B. Name:** \_\_\_\_\_

**Advantage:** \_\_\_\_\_

**Disadvantage:** \_\_\_\_\_

**Door C. Name:** \_\_\_\_\_

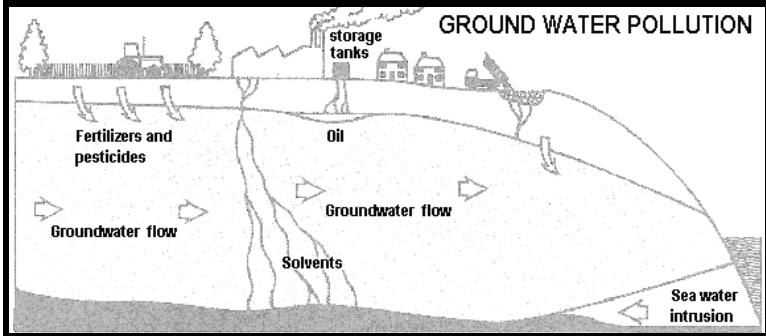
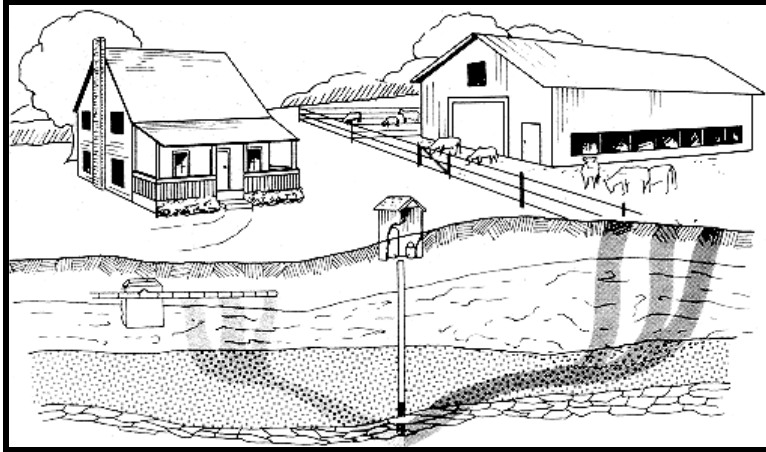
**Advantage:** \_\_\_\_\_

**Disadvantage:** \_\_\_\_\_

## 2. Building Services

(a) The diagrams below show different sources of water pollution.

(1) Identify any **THREE** sources of pollution.



1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(a) (2) Name **TWO** problems that would result from water pollution.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(a) (3) Suggest **ONE** action that would help prevent water pollution.

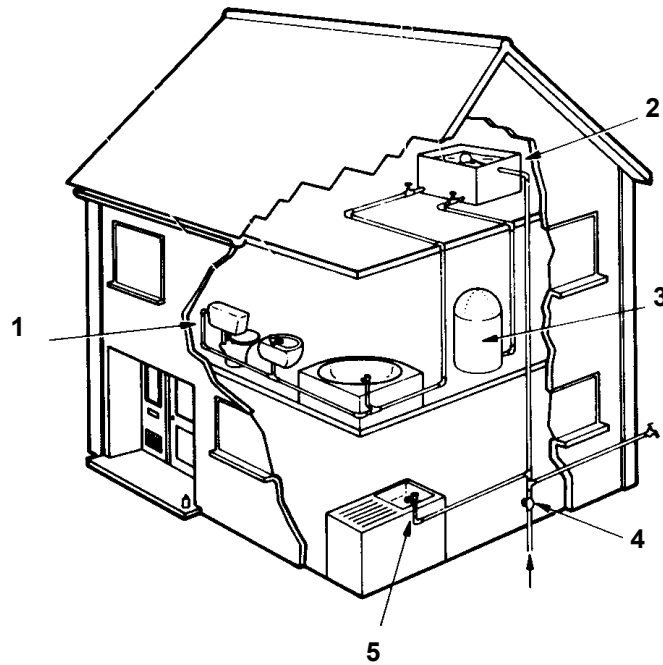
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(b) The diagram shows the **Indirect Cold Water System**.  
Label the **FIVE** items shown.



1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

(c) Describe **THREE** methods that should be used to reduce heat loss in domestic houses.

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### 3. Woodcraft

(a) The following are six stages in the Design Process. Arrange the stages in the correct order. The first stage is done as an example.

**Evaluation. Working Drawing. Making. Analysis of the brief.**  
**Possible solution. Investigation/Research.**

Stage 1: **Analysis of the brief.**

Stage 2:

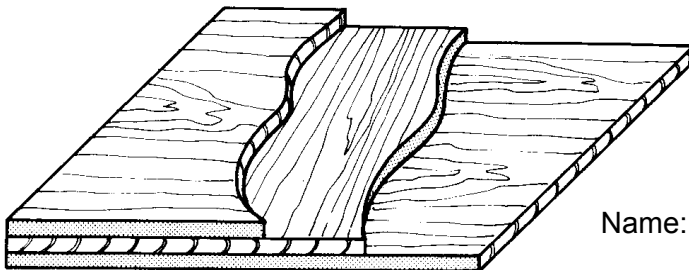
Stage 3:

Stage 4:

Stage 5:

Stage 6:

(b) (1) Name the manufactured board shown in the diagram below.



Name: \_\_\_\_\_

(b) (2) Briefly describe how this board is produced.

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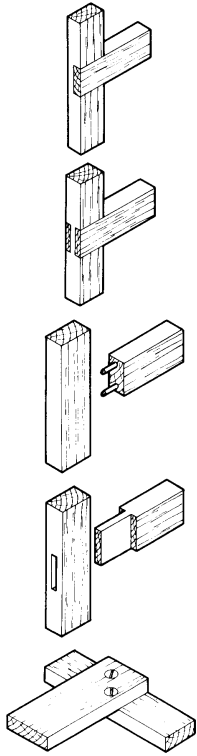
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(c) (1) Name any **THREE** of the five wood joints shown.

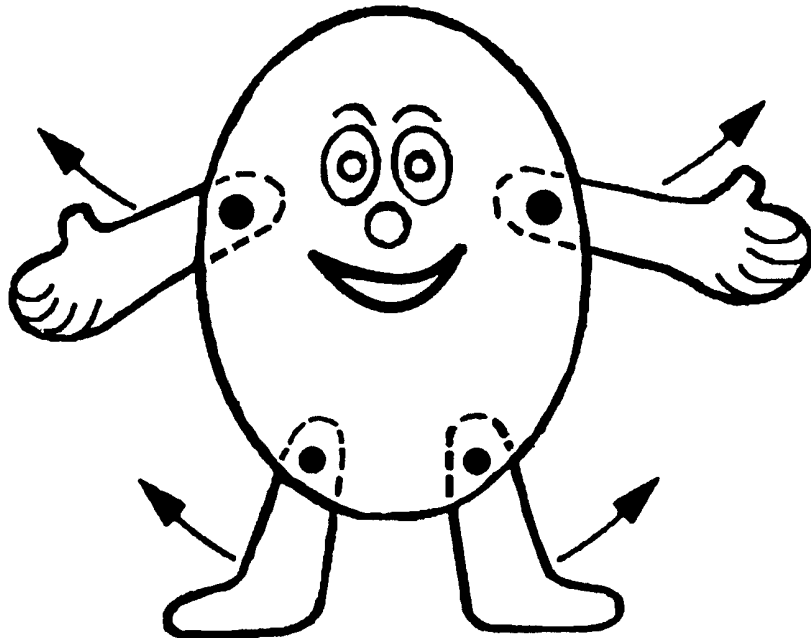


(c) (2) Sketch any **ONE** of the joints in the space below.

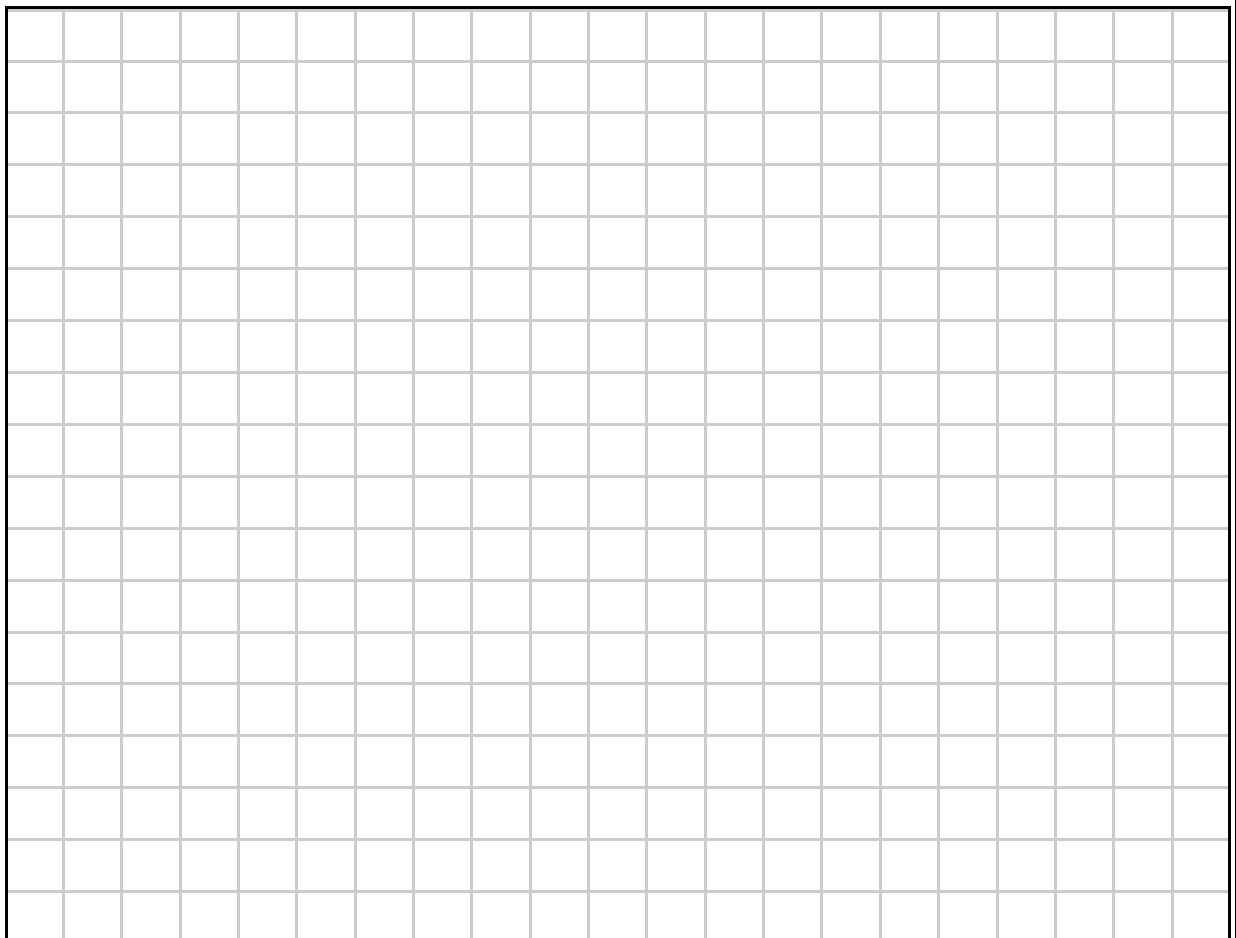


#### 4. Design and Manufacture of Educational Toys

- (a) (1) The drawing shows a design for a toy. Show clearly a means by which the arms and legs can be moved together.

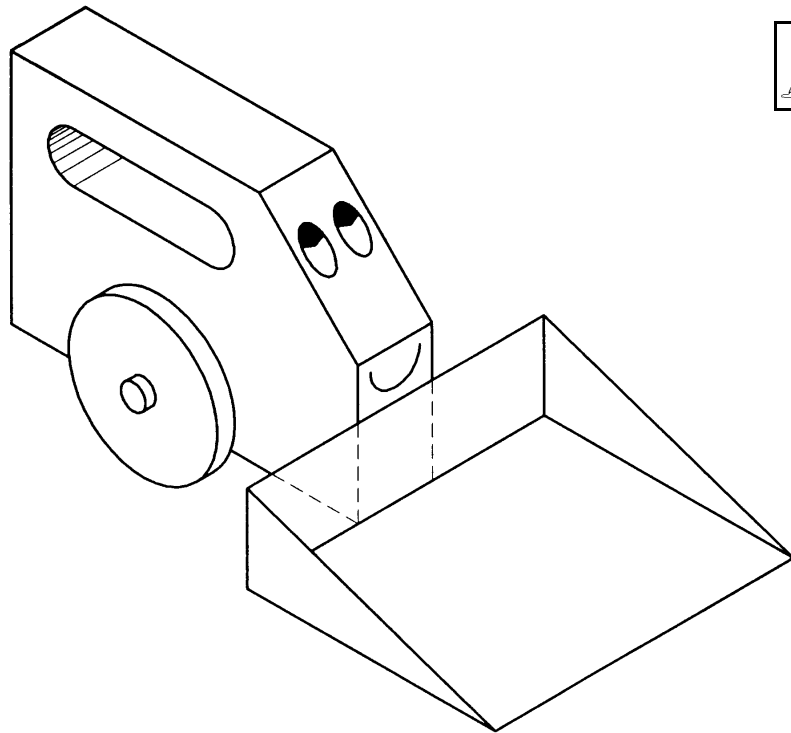


- (a) (2) Sketch details of a joining method that could be used to attach the arms and legs to the body of the toy. Note: The arms and legs will have to move freely when attached.





- (b) The sketch shows a design for a beach toy.  
 When in use the wheels sink too easily in the sand, and the corners of the shovel are found to be unsafe for young children.  
 Show clearly, by drawing on the sketch, how you would correct these **two** design faults.



- (c) Three designs of toy cargo ships are shown below.  
 (1) Select the design you consider to be the most attractive and give one reason for your answer

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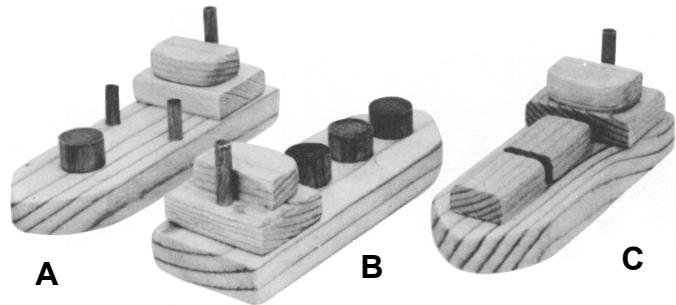
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- (c) (2) Name a suitable material that could be used to make the toy cargo ships.  
 Explain why you consider this material to be suitable.

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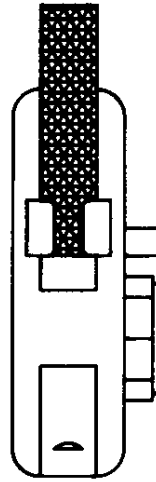
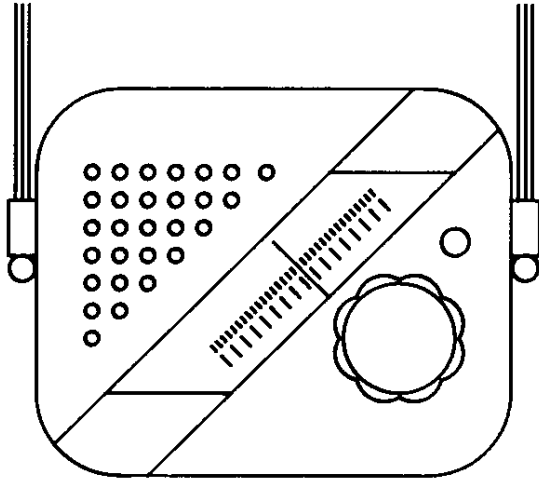
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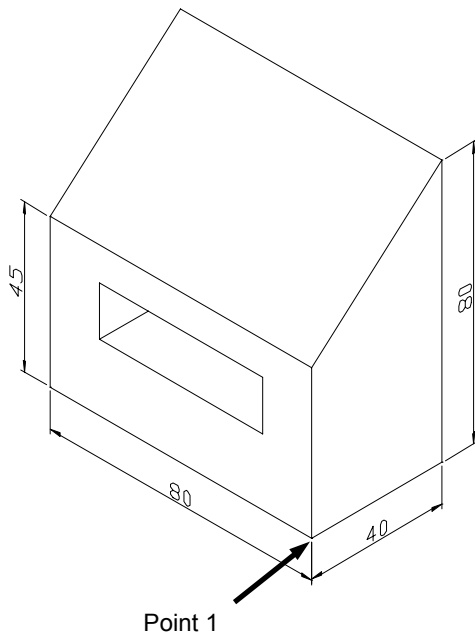
## 5. Computer Aided Design

(a) Name any **FIVE** CAD commands required to draw the portable radio shown below.

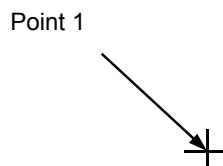


|    |
|----|
| 1. |
| 2. |
| 3. |
| 4. |
| 5. |

(b) A pictorial view of a post box is shown. Starting at point 1 and using the following relative co-ordinates draw the view of the box.

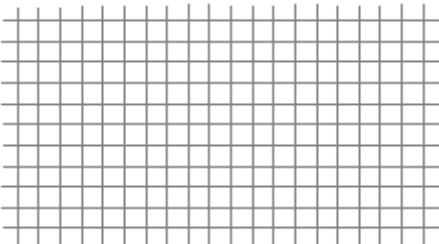
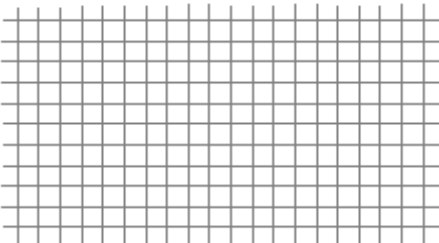
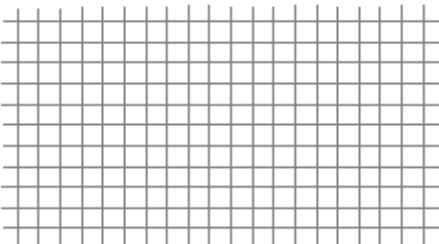
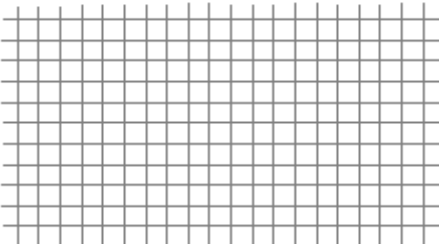
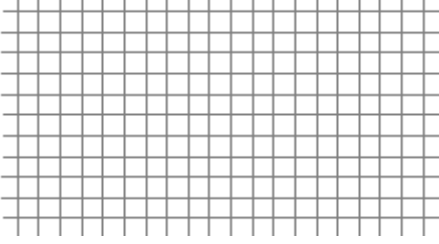
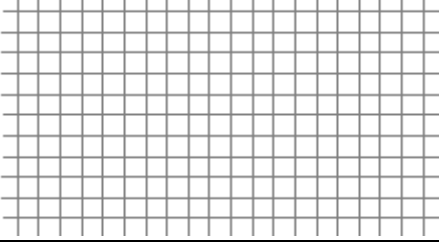


From point 1  
 To point: **@40,0**  
 To point: **@0,80**  
 To point: **@-40,-35**  
 To point: **@0,-45** or  
 C (to close).



(c) Describe, with the aid of notes and sketches, the effect of any **FIVE** of the following CAD commands.



| COMMAND | SKETCH  | DESCRIPTION             |
|---------|---|-------------------------|
| SCALE   |    | <hr/> <hr/> <hr/> <hr/> |
| TRIM    |    | <hr/> <hr/> <hr/> <hr/> |
| EXTEND  |   | <hr/> <hr/> <hr/> <hr/> |
| COPY    |  | <hr/> <hr/> <hr/> <hr/> |
| MIRROR  |  | <hr/> <hr/> <hr/> <hr/> |
| CHAMFER |  | <hr/> <hr/> <hr/> <hr/> |

**For Examiner's use only**

|                         | <b>Marks<br/>Awarded</b> |
|-------------------------|--------------------------|
| <b>Section 1<br/>Q1</b> |                          |
| <b>Section 1<br/>Q2</b> |                          |
| <b>Section 2<br/>Q1</b> |                          |
| <b>Section 2<br/>Q2</b> |                          |
| <b>Section 2<br/>Q3</b> |                          |
| <b>Section 2<br/>Q4</b> |                          |
| <b>Section 2<br/>Q5</b> |                          |
| <b>Total</b>            |                          |