



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied - 2010

Vocational Specialism
Graphics and Construction Studies
(240 marks)

Tuesday, June 15, 2010
Morning, 9.30 - 11.00

For the Superintendent only

<p>Centre Stamp</p>

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) Name the item shown.

Name: _____

What power tool would you use this item with?

Power tool: _____



(b) In the space provided, **sketch** a try square and **label** its parts.



(c) Sort the following list of trees into the headings of **hardwoods** or **softwoods**.

Oak, Ash, Sitka Spruce, Larch, Elm



Softwoods (Coniferous)



Hardwoods (Deciduous)

(d) The diagram shows a Radon Barrier in a new building.

Give **TWO** reasons for using such a barrier?

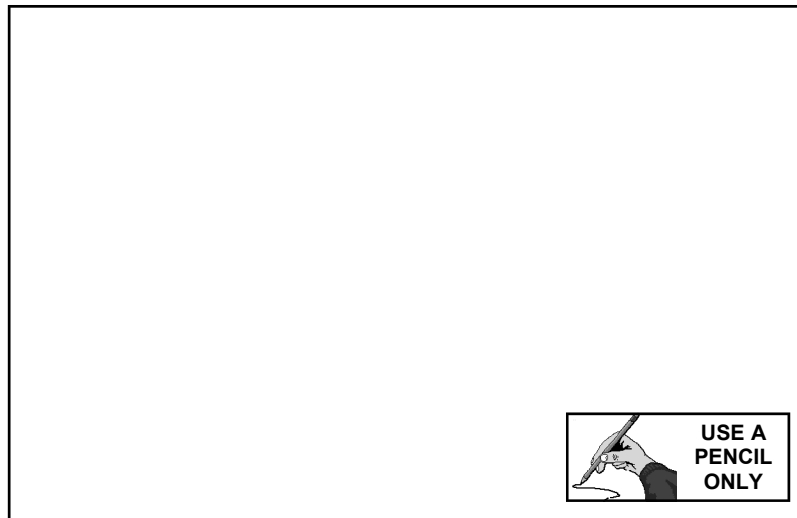
1. _____

2. _____

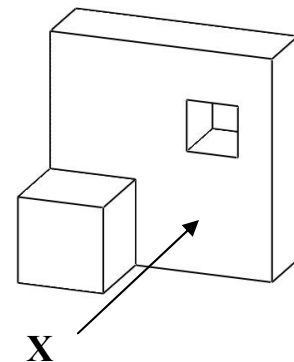
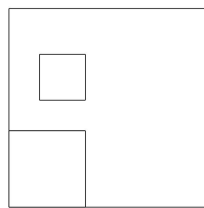
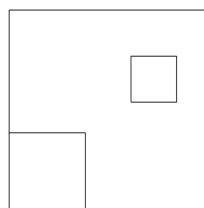
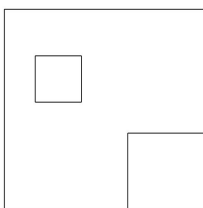


(e) The diagram shows a pillar drill.

Explain, using notes and a sketch, how you would change the speed of this drill.



(f) Indicate, using a tick, which drawing below is the correct elevation of the object on the right when viewed in the direction of arrow 'X' ?



(g) List **TWO** advantages of speed control when using power hand tools.

Advantage 1: _____

Advantage 2: _____

(h) Shown is a wood-turning lathe.

List **TWO** safety precautions to be observed when using a wood turning lathe.

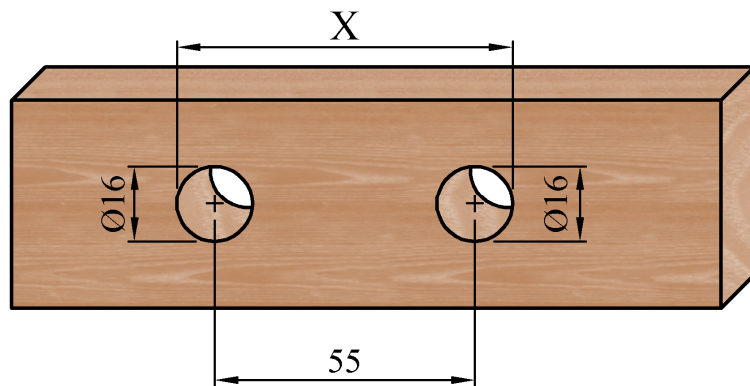
1. _____

2. _____

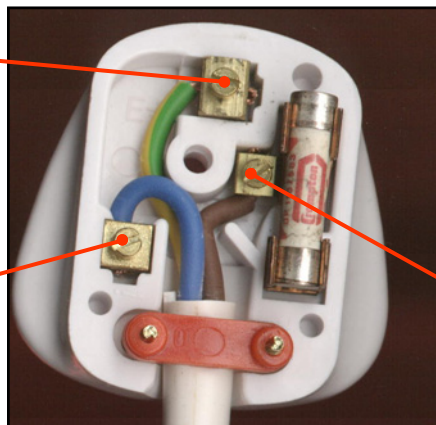


(i) Calculate the value of 'X'.

X = _____



(j) Name the terminals of the plug shown below.



(k) Name the **THREE** main materials which are mixed with water to form concrete.



Water + _____ + _____ + _____ = Concrete.

(l) List **TWO** safety precautions that should be taken when applying a surface finish to a project.

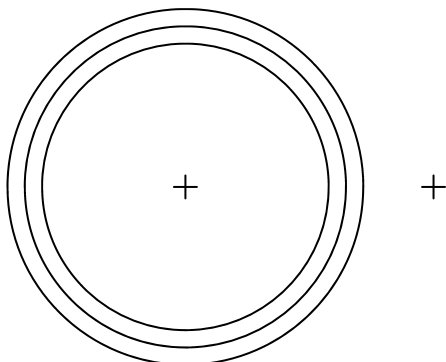
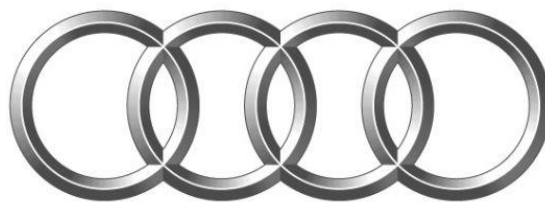
1. _____

2. _____



(m) Explain the term "**Geo-thermal energy**".

(n) Complete the logo, based on circles, using the three given circles and centre points.



(o) Name the type of Light Bulb shown in the diagram.

Name: _____

List **ONE** advantage and **ONE** disadvantage of using this type of bulb.

Advantage: _____

Disadvantage: _____



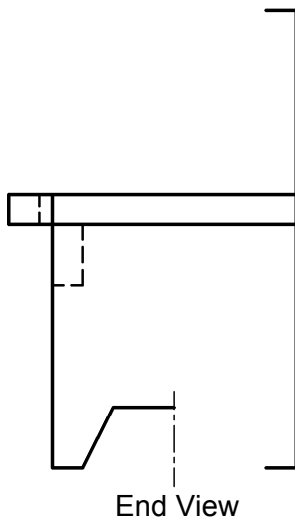
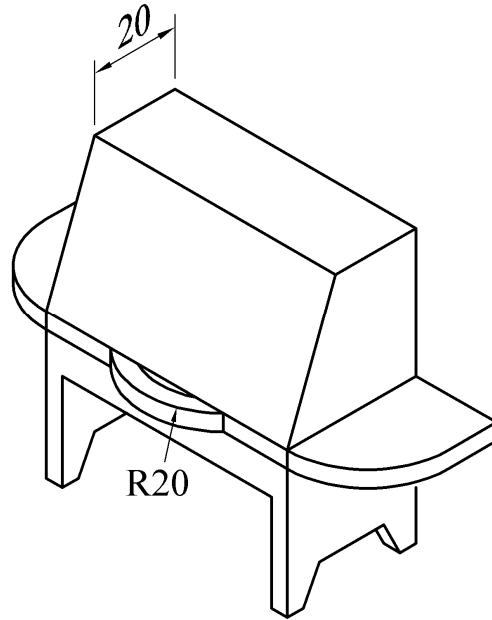
Section 1

**COMPULSORY
QUESTION 2**

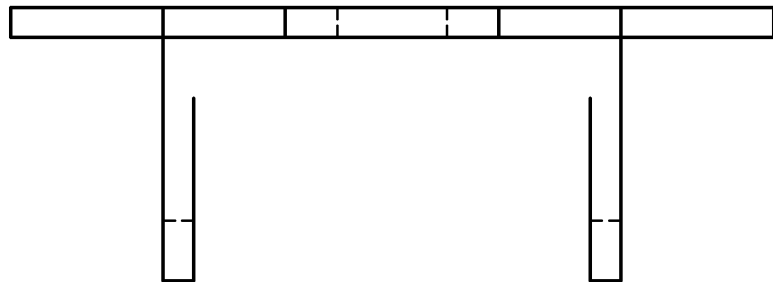
(45 Marks)

2. Graphic Communication

- (a) The graphic on the right shows a pictorial view of a Gas Barbeque.
- (i) Complete the Elevation, Plan and End View of the Barbeque on the drawing below.
- (ii) Apply appropriate colour or shading to the **Elevation** view only.



End View



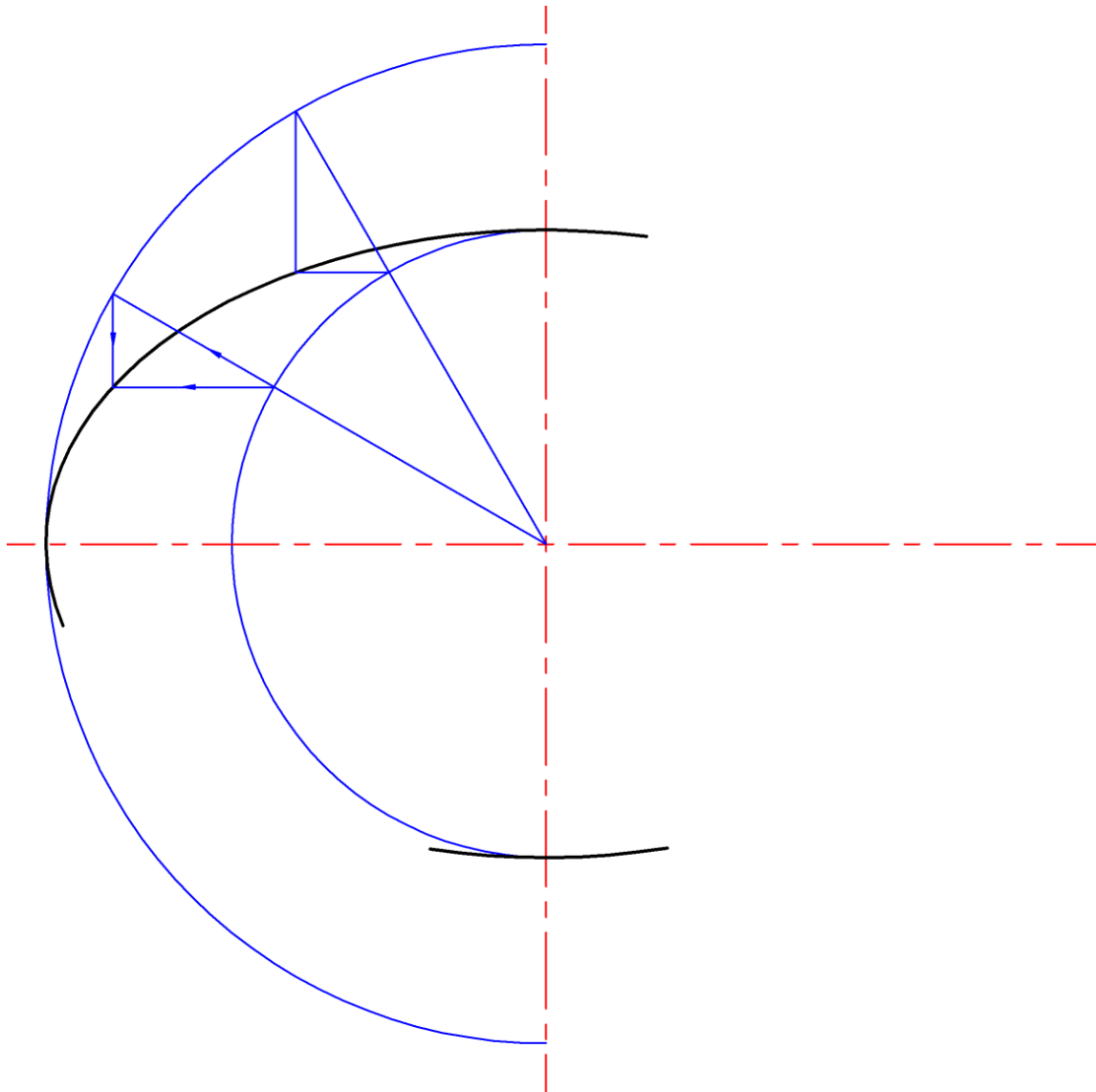
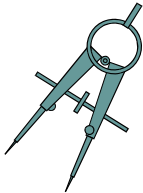
Elevation



Plan

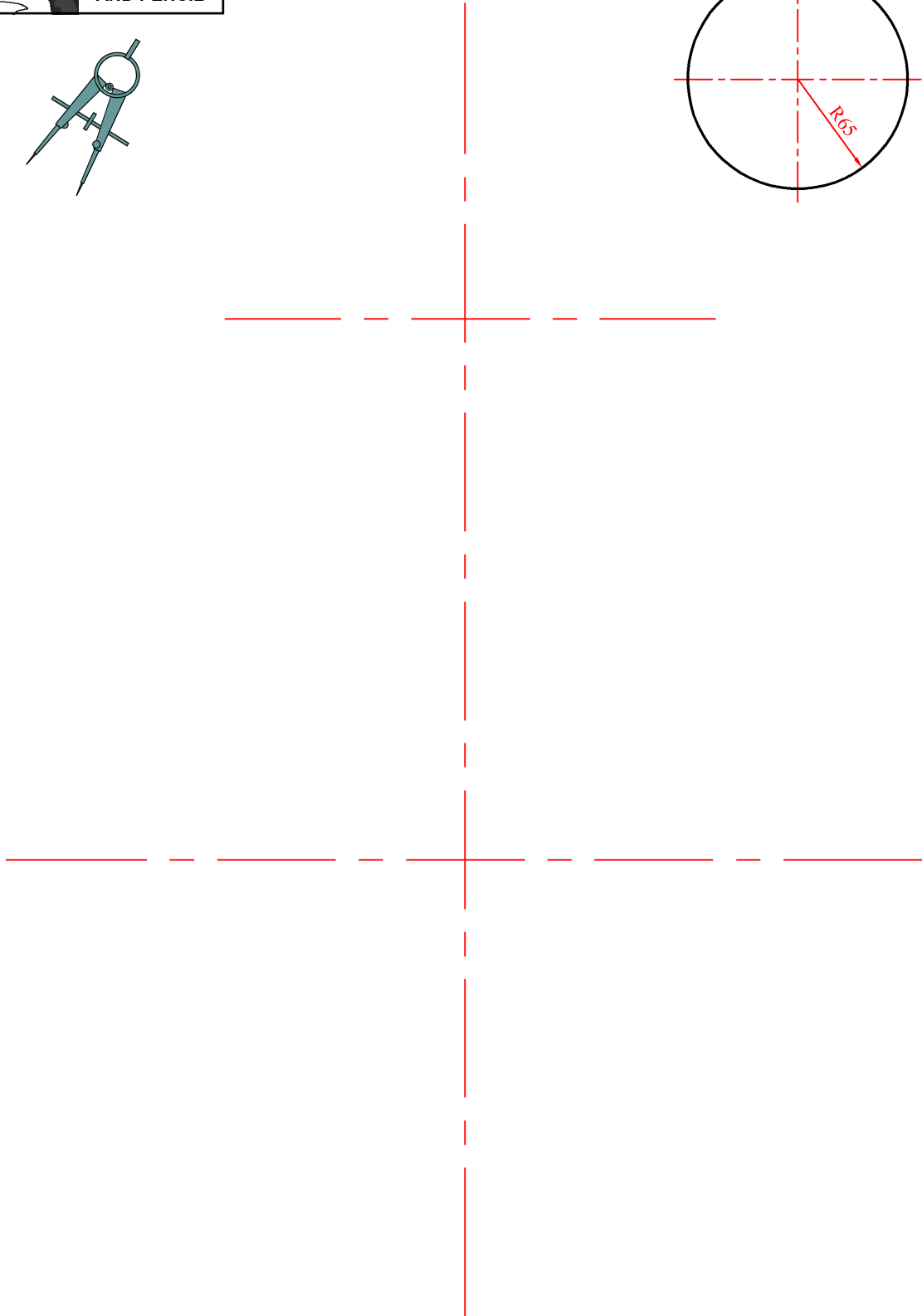
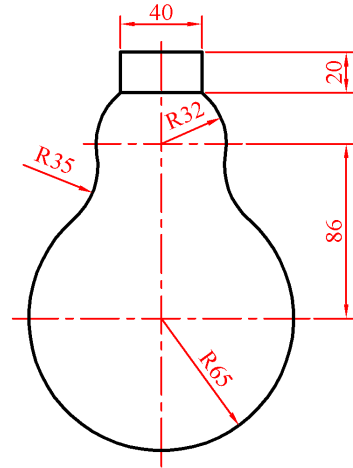
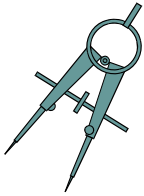
(b) The picture shows a table with an **elliptical** wooden top.

On the drawing below one quarter of an ellipse is drawn. Complete the ellipse.



(c) The drawing on the right shows a light bulb.

Using the given dimensions, complete the drawing of the light bulb on the centrelines below.



Section 2

(135 Marks)

Answer ANY THREE Questions from this section.

1. Construction

(a) (1) Shown is a timber-frame stud-partition.

Identify any **FIVE** of the eight labelled components.

A. _____ E. _____

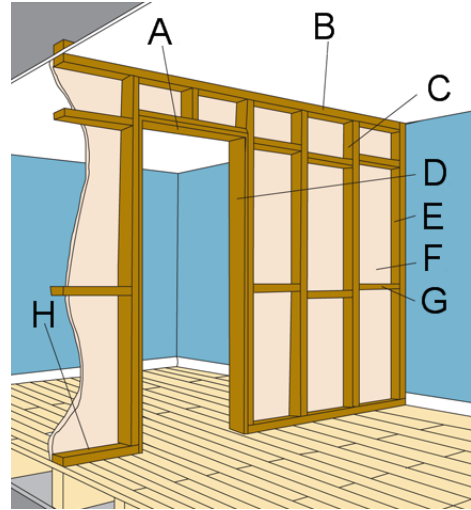
B. _____ F. _____

C. _____ G. _____

D. _____ H. _____

(2) Suggest a different material that can be used for stud partitions.

Name: _____



(b) In the space provided **sketch** a strip foundation of an external wall of a house.

Include the following in your sketch:

1. Steel reinforcement.
2. Bottom of cavity wall.
3. Compacted hardcore filling.
4. Radon Barrier.
5. Insulation.



(c) (1) Shown is a prefabricated timber roof truss.



List **TWO** advantages and **TWO** disadvantages of using this type of roof construction.

Advantage 1: _____

Advantage 2: _____

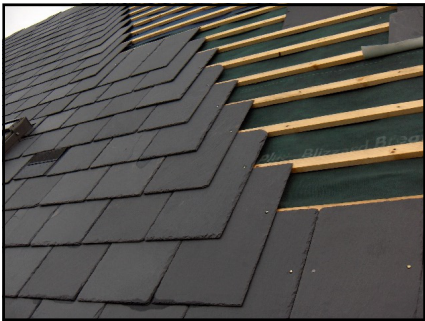
Disadvantage 1: _____

Disadvantage 2: _____

(2) Name a different type of timber roof construction?

Name: _____

(3) Shown are **TWO** different types of roof coverings.
Name each type and suggest a material that each is made from.



Name: _____

Material: _____



Name: _____

Material: _____

2. Building Services

(a) (1) Shown below are **FOUR** main components used in central heating systems. Name the components shown and suggest what each could be used for.



Name: _____

Use: _____



Name: _____

Use: _____



Name: _____

Use: _____



Name: _____

Use: _____

(2) Outline **TWO** ways in which water sources could become contaminated.

1. _____

2. _____



(b) The table below shows an estimate of the annual electricity cost for a typical dishwasher.

Dishwasher Rating	A	B	C	D	E	F	G
Annual Cost €	28	31	40	46	52	58	64

(1) Calculate the annual saving in changing an old G rated dishwasher to a new B rated one.

Saving: € _____

(2) An old dishwasher breaks down and a new one will cost €120 more than the repair cost.
If the old dishwasher is F rated and the new one is A rated what is the payback period, in years, if a new dishwasher is purchased?

Payback Period = _____ years.

(c) (1) Shown are **TWO** devices used to conserve energy in the home.
Name each device and describe how it can conserve energy.



Name: _____

Conserves energy by: _____



Name: _____

Conserves energy by: _____

3. Woodcraft

(a) "Knock-down" fittings may be described as modern methods of jointing.

(1) Name **TWO** "knock-down" fittings and state where each might be used.

1. Name: _____

Use: _____

2. Name: _____

Use: _____

(2) Sketch any one of the "knock-down" fittings named above.



(b) A picture of a outdoor wooden deck is shown.

(1) Name a suitable wood for this deck.

(2) Name a suitable treatment that could be applied to the wooden deck.

(3) Describe a suitable way of attaching the boards to the supporting framework, taking the external environment into consideration.



(c) The diagram shows a power hand-tool.

(1) Name this tool.

Name: _____

(2) Briefly describe the steps involved in safely changing the blade of this tool.



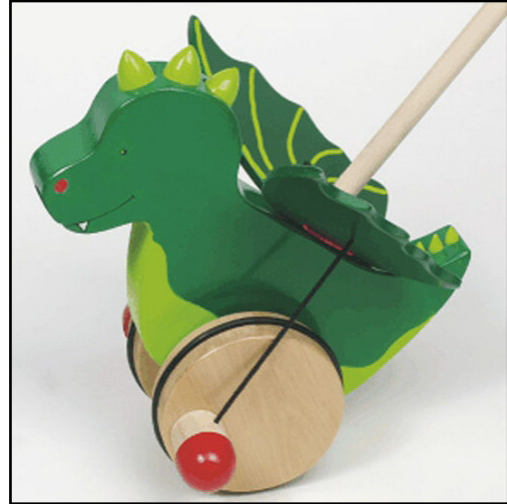
(3) In the space provided sketch how you would securely hold a piece of timber while using this tool.



4. Design and Manufacture of Educational Toys

(a) A child's push-along toy with a secondary movement is shown in the diagram.

(1) Using notes and sketches, describe in detail what will happen when the toy is pushed along.



(2) Suggest a suitable finish to be applied to the wood, taking its use into consideration.

- (b) (1) Shown opposite is a toy helicopter. Name **TWO** tools that would be used in the manufacture of this toy.



1. _____

2. _____

- (2) List **TWO** safety precautions that should be observed when using one of the above tools.

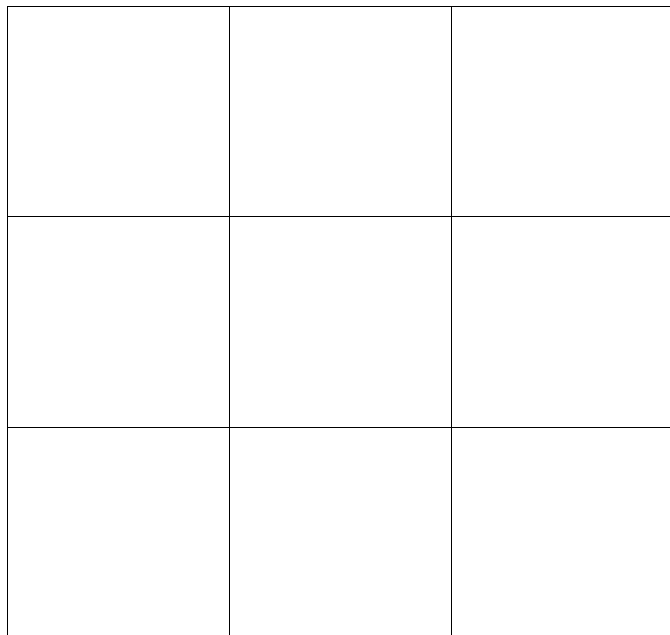
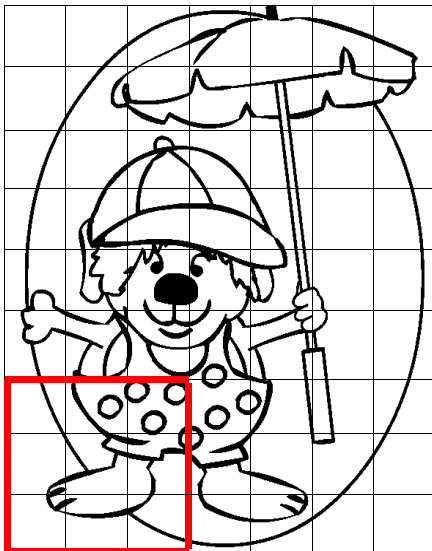
1. _____

2. _____

- (c) The image on the left below is to be enlarged using a grid, and then transferred to a piece of wood.

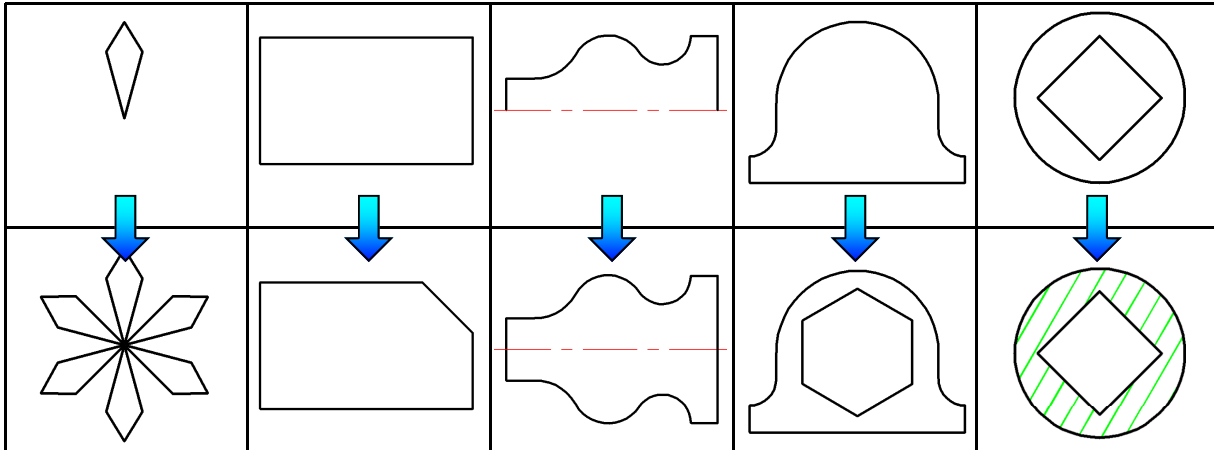
- (1) In the grid on the right below, redraw the portion of the image which is highlighted in red.

- (2) Apply appropriate colour or shading to the enlarged image.



5. Computer Aided Design

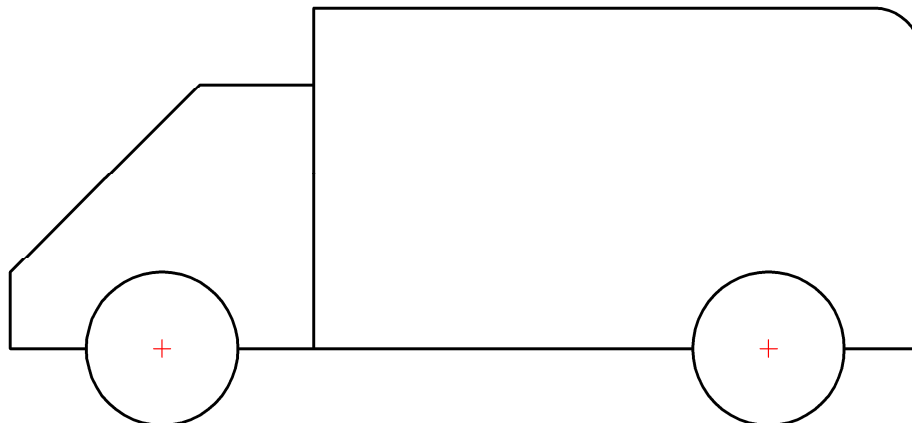
(a) Identify each of the CAD commands/tools required to produce the modified drawing from the original drawing below.



(b) Using a ruler to measure, neatly insert on the CAD drawing below, an example of **EACH** of the following types of CAD dimension:

- (i) Linear Dimension (Horizontal)
- (ii) Linear Dimension (Vertical)
- (iii) Aligned Dimension
- (iv) Angular Dimension
- (v) Diameter Dimension
- (vi) Leader Dimension.

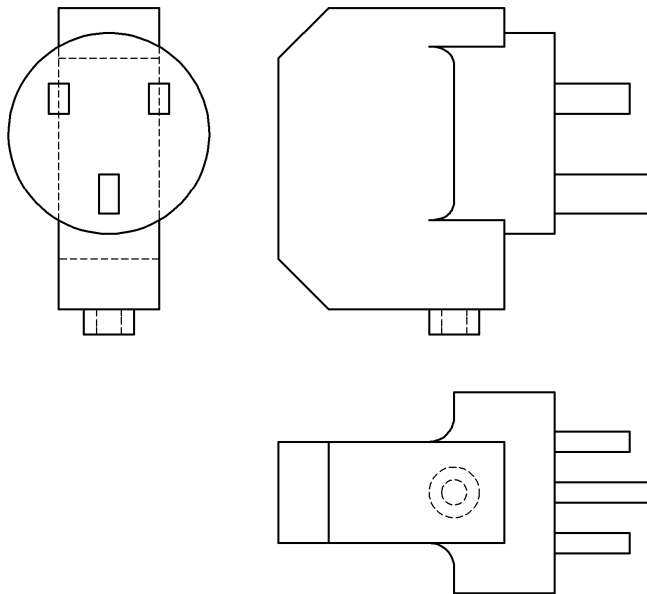
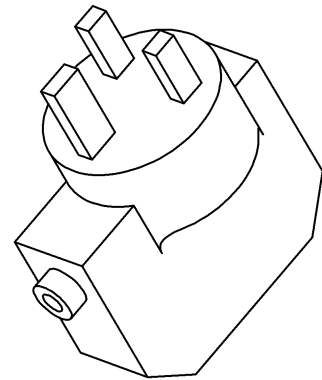
(Arrowheads, Extension lines, text, etc should be neatly included.)



- (c) (1) Name a CAD package that you have used while studying Graphics and Construction Studies.

Package: _____

- (2) The graphic on the right shows a 3D view of a design for a power adapter for a games console. The drawing below shows the plan, elevation and end view of the Power Adapter.



List **FIVE** CAD commands/tools/features that would be used to produce the drawing and briefly explain what each command/tool/feature does.

Command/Tool/Feature		What it does
1	_____	_____ _____
2	_____	_____ _____
3	_____	_____ _____
4	_____	_____ _____
5	_____	_____ _____

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	Marks Awarded
Section 1 Q1	
Section 1 Q2	
Section 2 Q1	
Section 2 Q2	
Section 2 Q3	
Section 2 Q4	
Section 2 Q5	
Total	

1.	Total of end of page totals	
2.	Aggregate total of all disallowed questions	
3.	Total mark awarded (1 minus 2)	
4.	Bonus mark for answering through Irish (if applicable)	
5.	Total mark awarded if Irish bonus (3 plus 4)	
Note: The mark in row 3 (or row 5 if Irish bonus is awarded) must equal the mark in the Total mark box in the table at the top of this flap.		