

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2015

Marking Scheme

Graphics and Construction Studies

Common Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.



Coimisiún na Scrúduithe Stáit

State Examinations Commission

Leaving Certificate Applied, 2015

Vocational Specialism

Graphics and Construction Studies

(240 marks)

Sample solutions shown are presented as example answers.
All other valid solutions are acceptable and are marked accordingly.

Tuesday, 9th June, Morning, 9:30 - 11:00

General Directions

1. Write your examination number in this space:

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.

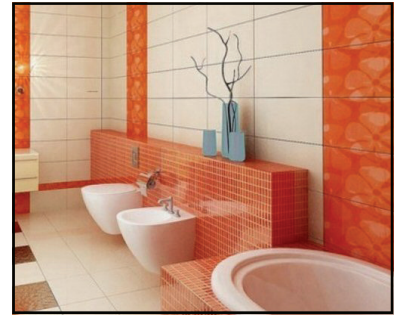
For the Examiner only		
1.	Total of end of page totals	
2.	Aggregate total of all disallowed question(s)	
3.	Total mark awarded (1 minus 2)	
4.	Bonus mark for answering through Irish (if applicable)	
5.	Total mark awarded if Irish Bonus (3 plus 4)	
Note: The mark in row 3 (or row 5 if Irish bonus is awarded) must equal the mark in the Total mark box on the script.		

For the Superintendent only			
Centre Stamp			
Section		Question	Mark
1	(Both)	1	
		2	
2	(Any 3)	1	
		2	
		3	
		4	
		5	
Total			

(d) A bathroom requires 24m^2 of wall tiles.

(i) If tiles can be purchased in boxes of 3m^2 , calculate how many boxes of tiles will be required for the bathroom.

(ii) A box of tiles costs €18.50 plus VAT at 23%. Calculate the total cost to the customer for the above order.



(i) $24/3 = 8$

1 Mark

Answer: 8 Boxes.

(ii) $8 \times €18.50 = €148$ **1 Mark**

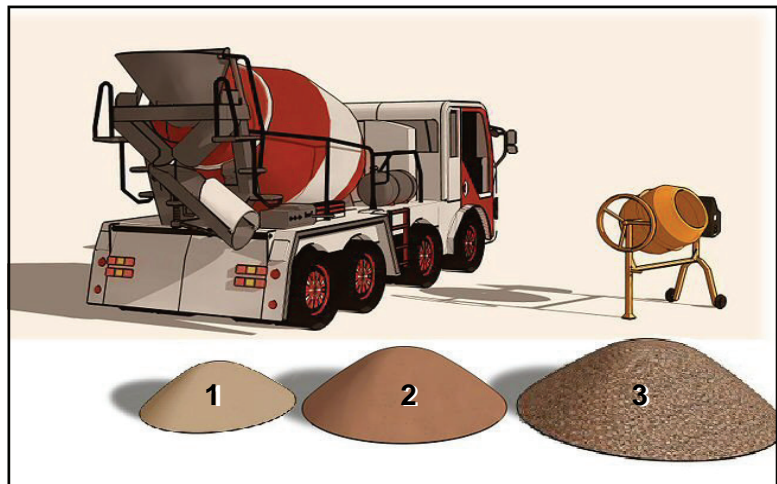
$€148 \times 0.23 = €34.04$ **2 Marks**

$€148 + €34.04 =$

Total Cost: € 182.04 **1 Mark**

(e) When making concrete it is batched in a ratio.

If the ratio is 1:2:3 as shown in the image, name each of the constituents in the boxes below.



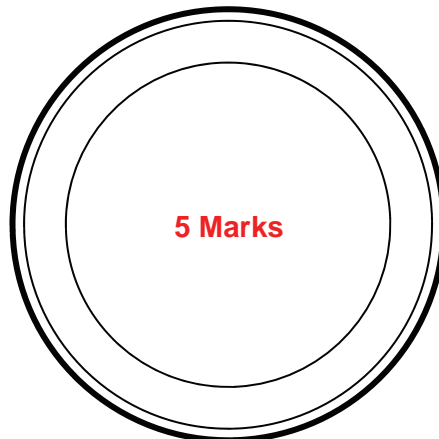
Cement - 2 Marks

Sand - 2 Marks

Gravel - 1 Mark

(f) Two prohibitive signs are shown on the right.

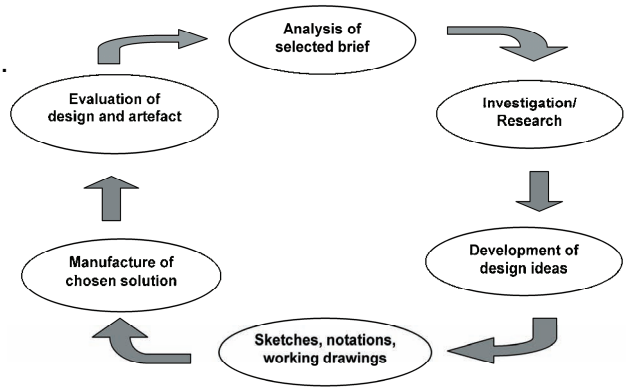
Using the circles below, design a similar sign which conveys the message: 'Drinking of this water is prohibited'.



(g) A design process is shown.
Explain any **TWO** stages in the process.

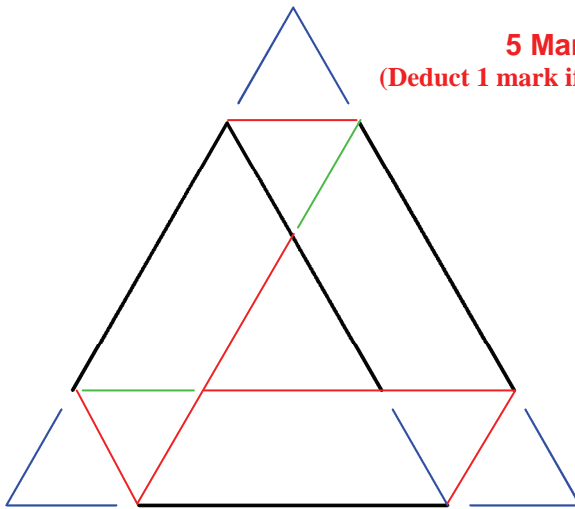
1. _____ **3 Marks**

2. _____ **2 Marks**



(h) The logo shown on the right is based on an equilateral triangle.
Complete the drawing of the logo below.
(You need not include the text or colour.)

5 Marks
(Deduct 1 mark if not in pencil)



(i) A metal used in the construction of houses is shown.

Name the metal: **Lead - 2 Marks** _____

Explain, using notes and sketches, where this material might be used.



3 Marks
(Deduct 1 mark if not in pencil)



(j) The image shows a wooden mallet.
 What wood are mallets normally made from?

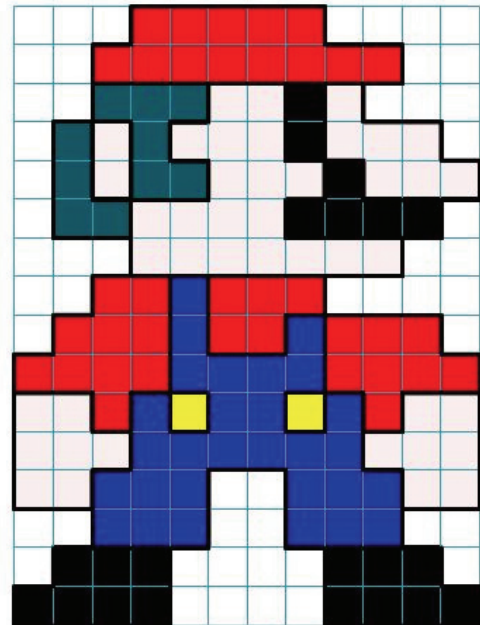
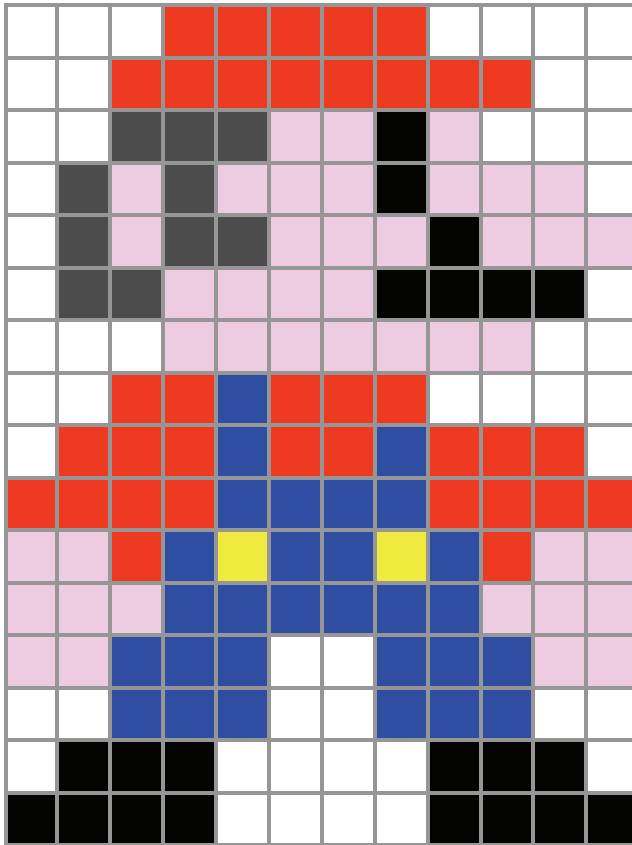
Wood: **Beech (or a justified alternative) 2**

Why is this wood suitable for making mallets?

3 Marks



(k) Complete the "Mario" logo below using the grid provided.
 Apply appropriate colour or shading to the completed logo.



5 Marks
 (Deduct 1 mark if not in pencil)

(l) Name **THREE** materials used to make window frames.

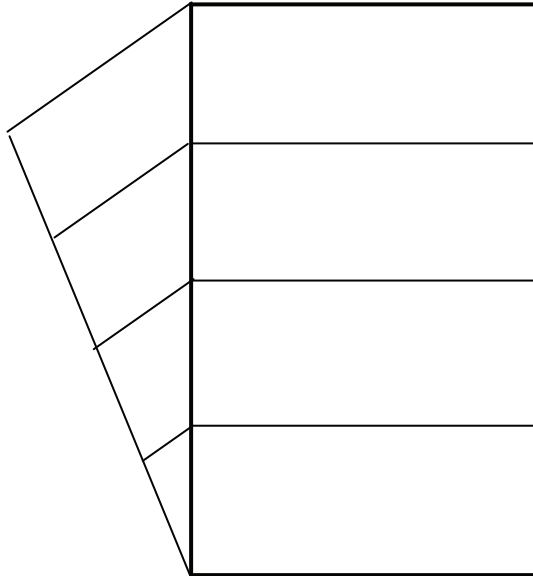
1. **2 Marks**

2. **2 Marks**

3. **1 Mark**



(m) The image on the right shows a bookcase which has three internal shelves. The rectangle below shows the outline frame of the bookcase. Use a graphic construction to divide the frame so that the three shelves are equally spaced.



5 Marks
(Deduct 1 mark if not in pencil)



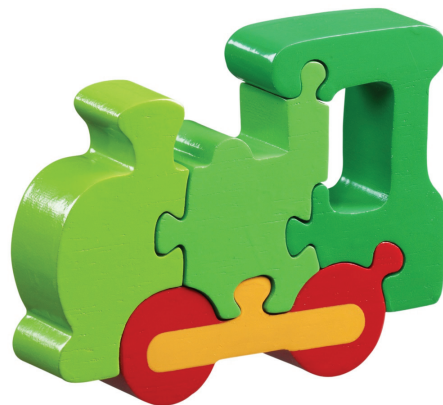
(n) The image shows a puzzle in the shape of a train. Name a suitable tool for cutting out the curves.

Tool: _____ **1 Mark**

Identify **TWO** factors that should be considered when choosing a surface finish for such a toy.

1. _____ **2 Marks**

2. _____ **2 Marks**



(o) Identify **TWO** problems that may occur when pipes are exposed in frosty weather.

1. _____ **3 Marks**

2. _____ **2 Marks**



Section 1

**COMPULSORY
QUESTION 2**

(45 Marks)

2. Graphic Communication

(a) The graphic on the right shows a pictorial view of a wooden stool.

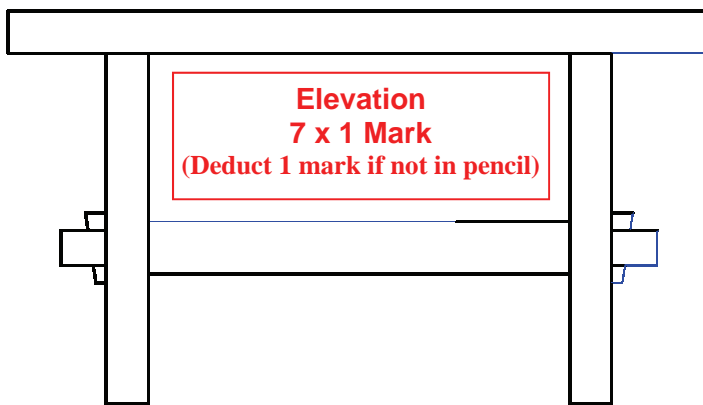


(1) Complete the Elevation, Plan and End View of the stool on the drawing below.

(Some hidden detail has been omitted for clarity. Hidden detail is not necessary.)

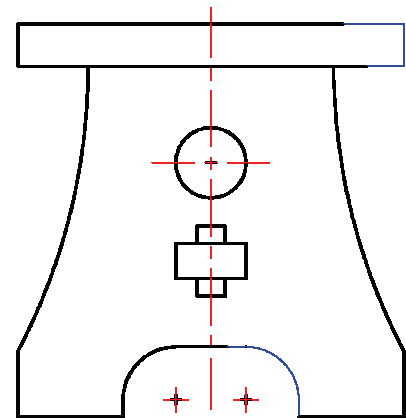
(2) Apply appropriate colour or shading to the **completed views** to enhance the drawing.

2 Marks for Colour/Shading



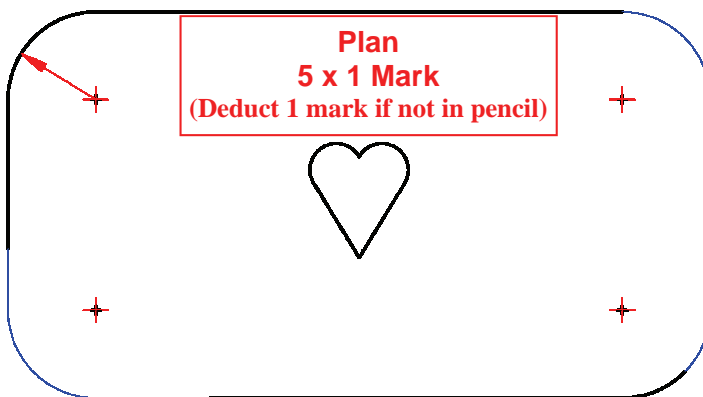
**Elevation
7 x 1 Mark
(Deduct 1 mark if not in pencil)**

Elevation



**End View
6 x 1 Mark
(Deduct 1 mark if not in pencil)**

End View



**Plan
5 x 1 Mark
(Deduct 1 mark if not in pencil)**

Plan

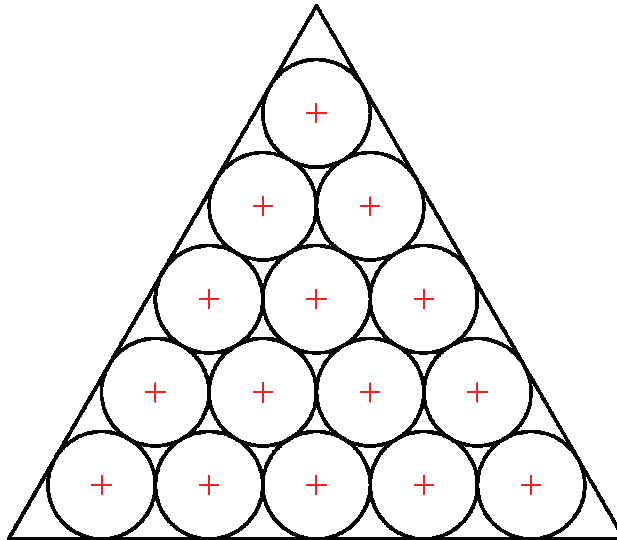


- (b) The image on the right shows a set of pool balls and a triangular box to store them.

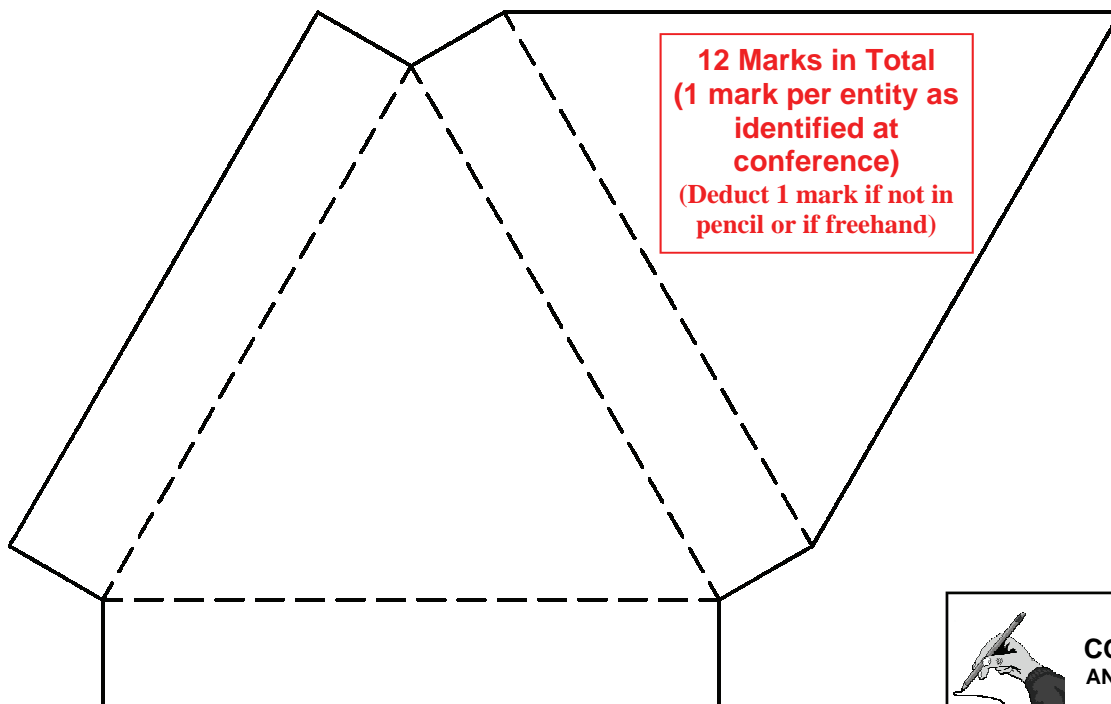
The drawing below shows the plan of the fifteen balls.



- (1) On the drawing below, draw the outline of the smallest possible triangular box that will hold the balls.

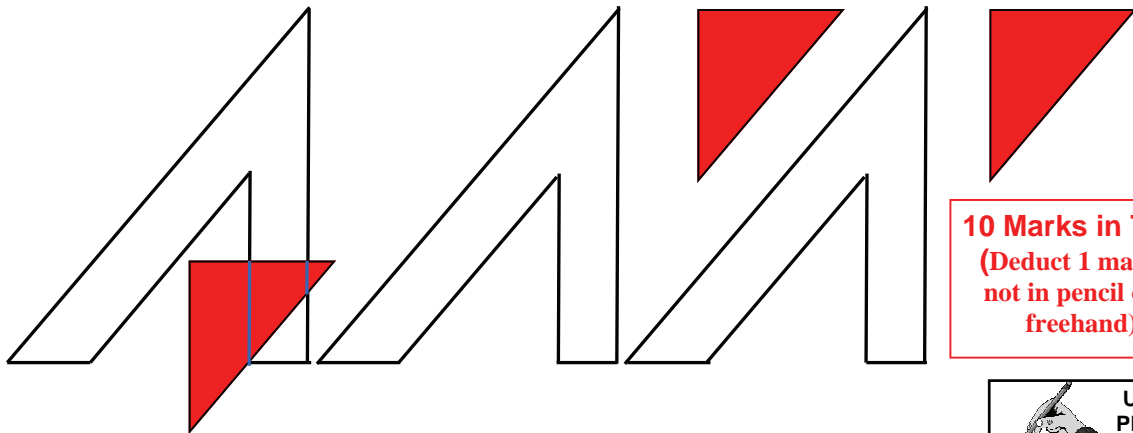


- (2) Complete the surface development of the box below. Two sides have already been drawn for you.



(c) (1) The image on the right shows a logo for a News channel.

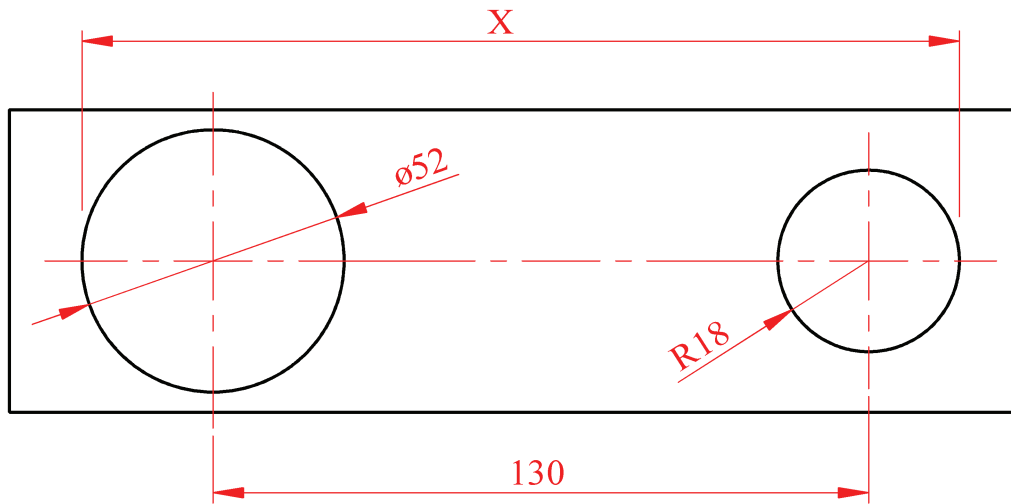
A drawing of the logo, which is based on triangles, has been started below. Complete the logo and apply appropriate colour to the drawing.
(You need not include the text.)



10 Marks in Total
(Deduct 1 mark if not in pencil or if freehand)



(2) Using the measurements given on the scale drawing below, calculate the distance 'X'.



Calculate X:

3 Marks

Section 2

(135 Marks)

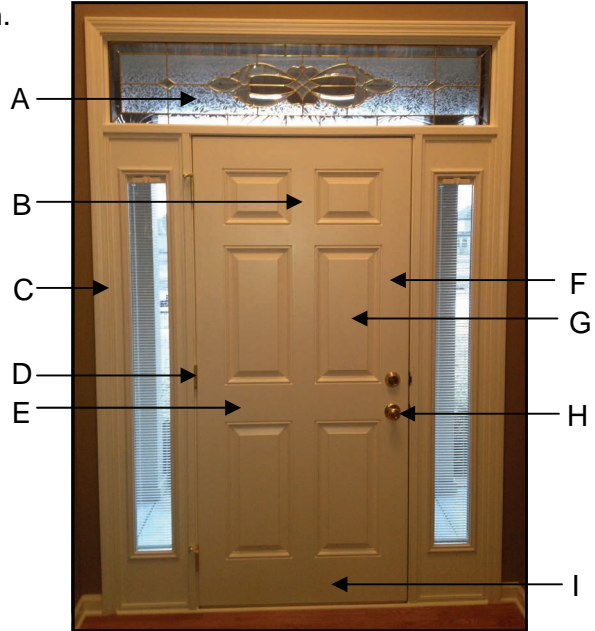
Answer ANY THREE questions from this section.

1. Construction

(a) (1) Name any **FIVE** parts of the door shown.

5 x 2 Marks

- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____
- H. _____
- I. _____



(2) Building regulations require that external doors be wheelchair accessible. This means that the threshold must be flat. Using notes and sketches show how this can be achieved while preventing water from entering the building.

3 Marks
(Deduct 1 mark if not in pencil)



2 Marks

15

(b) (1) Carpenters use the item shown when fitting architrave around doors.

Name the item: **4 Marks** _____







(2) Explain why this item is used.

8 Marks



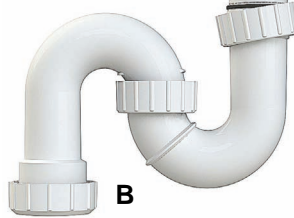
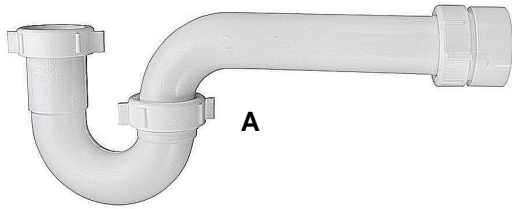
12

(c) The table below shows some items used by a plasterer.
Name **each** item and state what it is used for.

	Item	Use
1		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____
2		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____
3		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____
4		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____
5		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____
6		Name. _____ 1 Mark Use. _____ 2 Marks _____ _____

2. Building Services

- (a) (1)
 (i) Name the **THREE** types of plumbing trap shown below.



A: **2 Marks** B: **2 Marks** C: **2 Marks**

- (ii) Select **ONE** of the above and, using notes and sketches, suggest where this trap would properly be used.

1 Mark

3 Marks
 (Deduct 1 mark if not in pencil)



- (2) The diagram shows a blocked sink.
 (i) Explain how a sink may become blocked.

2 Marks



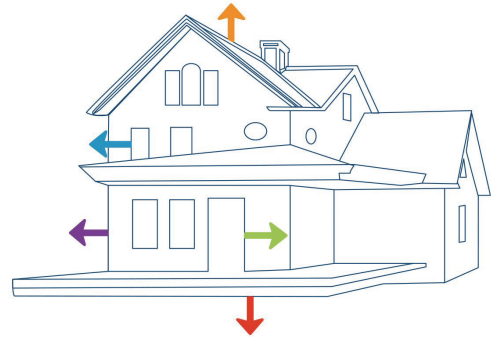
- (ii) Explain how you would clear the blockage.

3 Marks

(b) (1) Name **TWO** materials used in the construction of a house, to prevent heat loss.

1. _____ **3 Marks**

2. _____ **3 Marks**



(2) Identify **THREE** areas in the home where insulation materials are used and with the aid of notes and sketches, explain how the insulation is fitted to ensure maximum efficiency.

Area 1. _____ **1 Mark**

Explanation: _____ **2 Marks**

2 Marks
(Deduct 1 mark if not in pencil)

Area 2. _____ **1 Mark**

Explanation: _____ **2 Marks**

2 Marks
(Deduct 1 mark if not in pencil)

Area 3. _____ **1 Mark**

Explanation: _____ **2 Marks**

2 Marks
(Deduct 1 mark if not in pencil)



21

(c) Name **THREE** ways of reducing water use in the home.

1. _____ **3 Marks**

2. _____ **3 Marks**

3. _____ **3 Marks**



9

3. Woodcraft

(a) Four items used for joining wood are shown.

(1) Name **each** item.



1. **2 Marks**



2. **2 Marks**



3. **2 Marks**



4. **2 Marks**

(2) Describe, using notes and sketches, where **and** how each of the above items would be used.



1.

2 Marks
(Deduct 1 mark if not in pencil)

1 Mark

2.

2 Marks
(Deduct 1 mark if not in pencil)

1 Mark

3.

2 Marks
(Deduct 1 mark if not in pencil)

1 Mark

4.

2 Marks
(Deduct 1 mark if not in pencil)

1 Mark

(b) (1) The graphic shows a cordless drill.

Name **and** explain the function of **each** labelled part.



	Name	Function
A	1 Mark	1 Mark
B	1 Mark	1 Mark
C	1 Mark	1 Mark
D	1 Mark	1 Mark
E	1 Mark	1 Mark
F	1 Mark	1 Mark

(2) The images below show two types of drill chuck. Name **each** type.



1. _____ 1 Mark



2. _____ 1 Mark

(3) Briefly explain how a drill bit is changed in each of the above chucks.

1. _____ 3 Marks

2. _____ 2 Marks

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(c) Name the **THREE** drill bits shown in the images below and give an appropriate use for each bit.



Name: _____ 1 Mark

Use: _____ 1 Mark



Name: _____ 1 Mark

Use: _____ 1 Mark



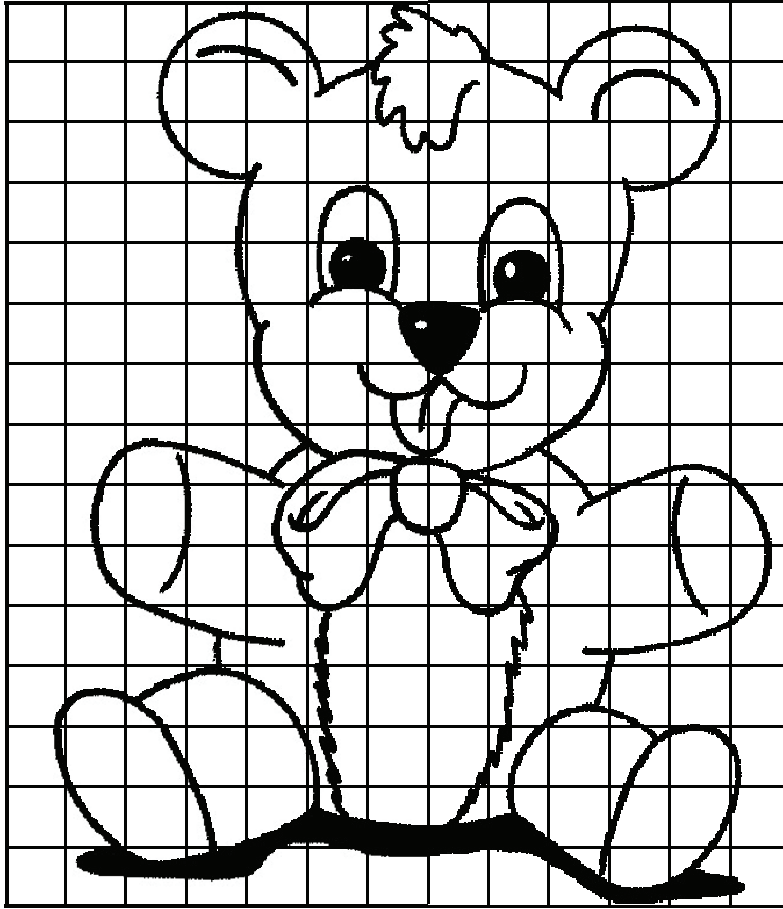
Name: _____ 1 Mark

Use: _____ 1 Mark

6

4. Design and Manufacture of Educational Toys

(a) (1) On the grid below, draw the other half of the teddy bear as a mirror image.

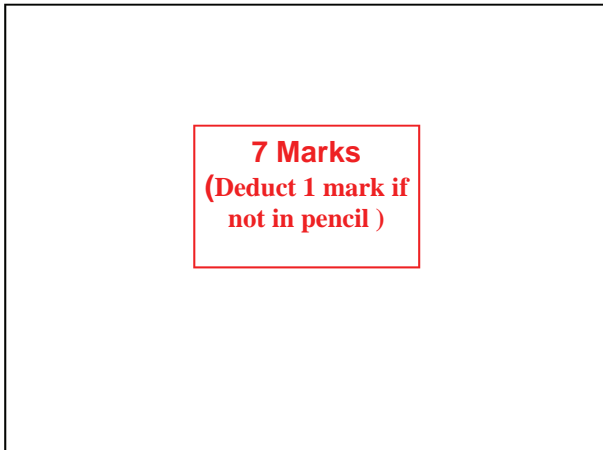


10 Marks
(Deduct 1 mark if not in pencil)

(2) The image on the right shows a book-end.

Name a suitable joint for the area circled and make a neat freehand sketch of the joint in the space provided.

Name: _____ **3 Marks**



7 Marks
(Deduct 1 mark if not in pencil)



(b) Explain **THREE** benefits of having a sample toy, such as the one shown opposite, when you are planning to make a similar toy.

1. **3 Marks**

2. **3 Marks**

3. **3 Marks**



9

(c) (1) A non-toxic finish on wooden toys is an important safety consideration.

Give **TWO** reasons why this is of particular importance in the case of the toy shown in the image on the right.

1. **4 Marks**

2. **4 Marks**



(2) A remote control model airplane is shown in the image below.

The body of the toy is to be made from wood. Name a wood suitable for this part of the toy.

Name: **4 Marks**

Why is this wood a suitable choice for this particular toy?

Reason: **4 Marks**



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5. Computer Aided Design

- (a) (1) Name any **FIVE** of the Computer Aided Design related items shown in the images.

5 x 1 Mark



1. _____ 2. _____



3. _____ 4. _____ 5. _____ 6. _____

- (2) 3D printers are becoming increasingly popular in the CAD industry. Briefly explain how a 3D printer works.

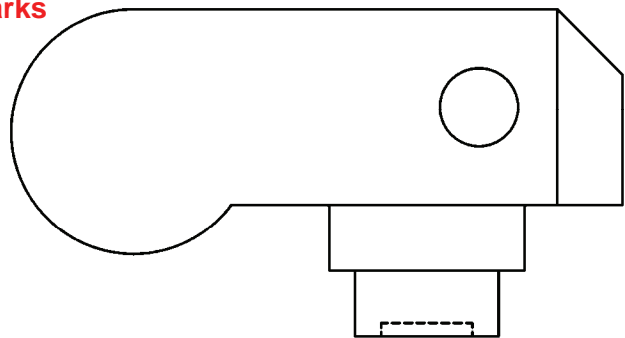
4 Marks



9

- (b) The CAD drawing on the right shows the plan of a digital camera. Using a ruler to measure, neatly insert on the drawing, an example of **EACH** of the following types of CAD dimension:

- (i) Linear Dimension (Horizontal) **3 Marks**
- (ii) Linear Dimension (Vertical) **3 Marks**
- (iii) Leader Dimension **3 Marks**
- (iv) Aligned Dimension **3 Marks**
- (v) Radius Dimension. **3 Marks**

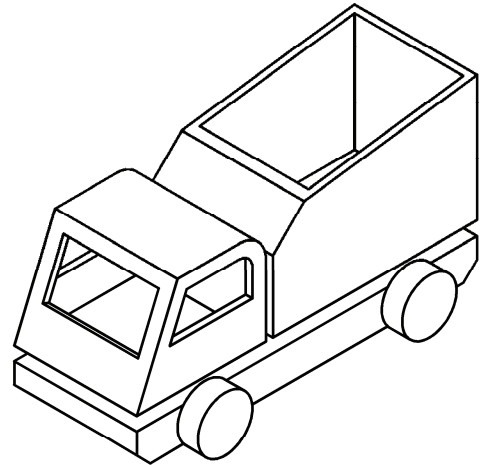
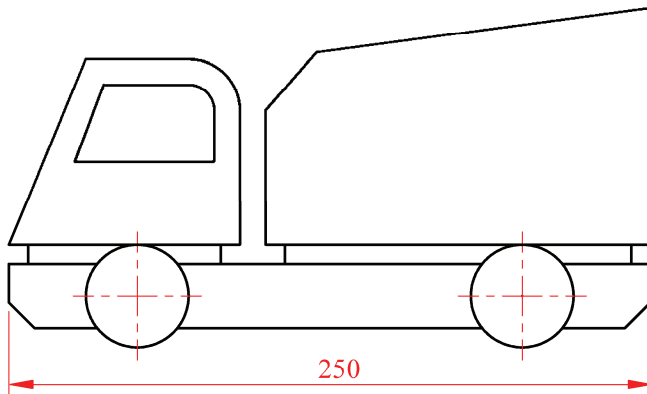


15

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

Package: _____ **2 Marks**

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



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

(3) Identify **ONE** career associated with the CAD industry and briefly describe what the job involves doing.

Career: _____ **2 Marks**

Job Description: _____ **2 Marks**

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