FOR OFFICIAL USE

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| Q1 | | Q4 | |
| Q2 | | Q5 | |
| Q3 | | Q6 | |

Total Mark

# 0600/31/01

NATIONAL QUALIFICATIONS 2012

THURSDAY, 17 MAY
1.00 PM – 2.00 PM

# CRAFT AND DESIGN
## STANDARD GRADE
Credit Level

**Fill in these boxes and read what is printed below.**

Full name of centre

Town

Forename(s)

Surname

Date of birth
Day Month Year

Scottish candidate number

Number of seat

1 Answer all the questions.

2 Read every question carefully before you answer.

3 Write your answers in the spaces provided.

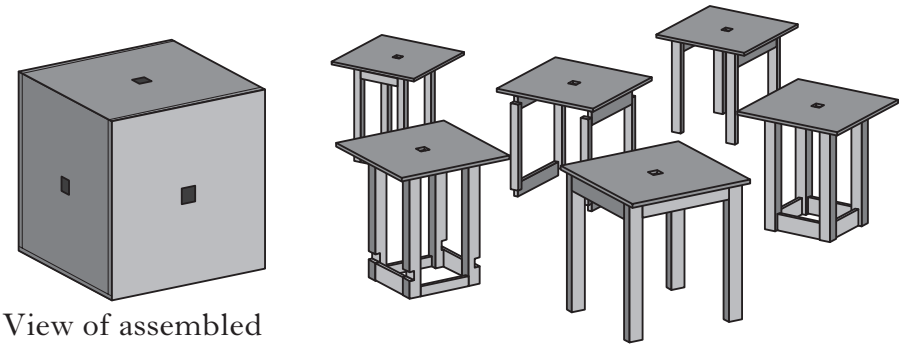
4 Do **not** write in the margins.

5 All dimensions are given in millimetres.

6 Before leaving the examination room you must give this book to the Invigilator. If you do not, you may lose all the marks for this paper.

## ATTEMPT ALL QUESTIONS

**1.** The stools shown below can be assembled to form a cube.

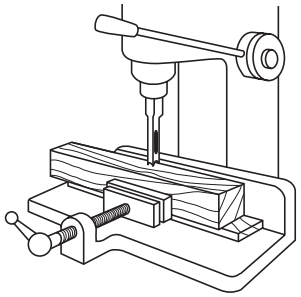


View of assembled stools

(*a*) State a functional reason for the square hole on the top of each stool.

_____ **10**

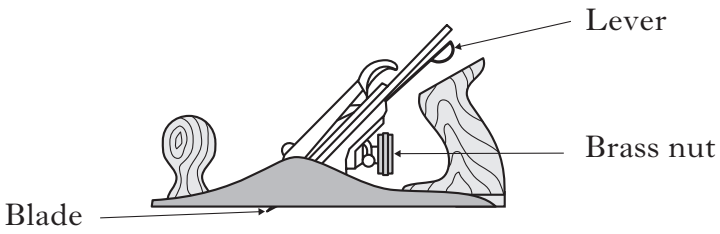
(*b*) The machine shown below was used during the manufacture of the stools.



State the name of this machine.

Name of machine _____ **10**

(*c*) The plane shown below was used during the manufacture of the stools.




State the effect of the following on the blade.

(i) Turning the brass nut _____

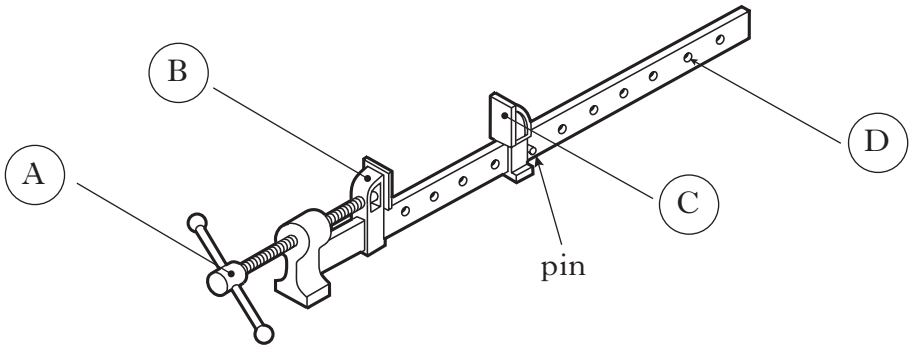
_____ **10**

(ii) Adjusting the lever _____

_____ **10**

**1. (continued)**

(*d*) The sash cramp shown below was used during the manufacture of the stools.




State **two** adjustments that could be made to this tool.

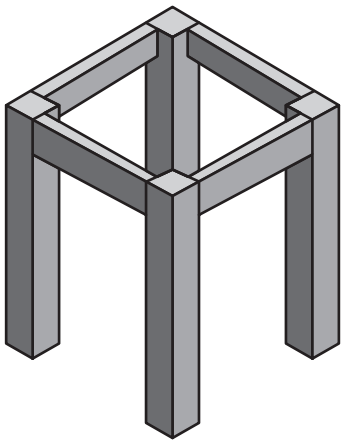
Adjustment 1 _____ **1 0**

_____

Adjustment 2 _____ **1 0**

_____

(*e*) A stool frame is shown below.



State **two** methods of ensuring the frame is "square".

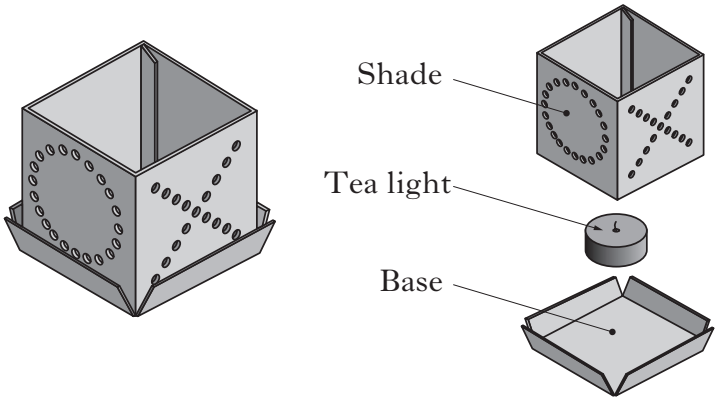
1 _____ **1 0**

2 _____ **1 0**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

**2.** A tea light holder made from sheet aluminium is shown below.




(*a*) Manufacturing and aesthetics were considered during the design of the tea light holder.

(i) State a manufacturing reason for using aluminium.

_____ **10**

(ii) State an aesthetic reason for using aluminium.

_____ **10**

(*b*) A circle was scribed during the marking out of the aluminium shade.

(i) State the name of the metal working tool used.

_____ **10**

(ii) A line was drawn parallel to an edge during the marking out of the aluminium base.

State the name of the metal working tool used.

_____ **10**

(*c*) Holes were drilled in the aluminium shade.

(i) State the name of a suitable drill bit.

_____ **10**

(ii) The drill slipped on the aluminium.

State a method of preventing the drill from slipping.

_____ **10**

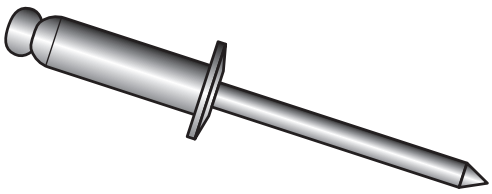
(iii) During drilling a ragged edge formed on the under edge of the aluminium.

State how this edge could be removed.

_____ **10**

**2. (continued)**

The fixing shown below was used in the manufacture of the tea light holder.



(*d*) State the full name of this fixing.

_____ **10**

(*e*) Aluminium can be annealed.

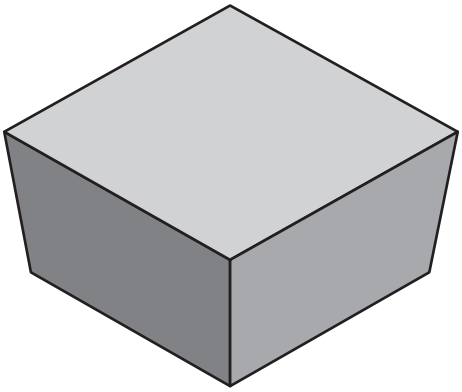
(i) State a reason for annealing aluminium.

_____ **10**

(ii) State a method of testing that the aluminium has been heated to the correct temperature when annealing.

_____ **10**

The hardwood former shown below was used during the manufacture of the base.



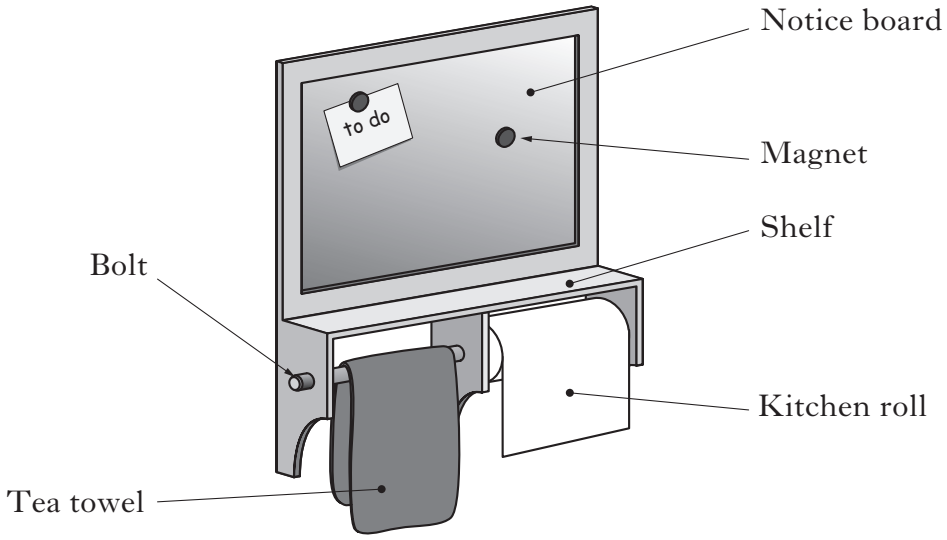
(*f*) State the purpose of the former.

_____ **10**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

**3.** A kitchen unit is shown below.




(*a*) The notice board is magnetic.

(i) State the name of a metal that could be used for the notice board.

_____ **1 0**

(ii) The shelf was made from a hardwood.

State the name of a suitable hardwood.

_____ **1 0**

(*b*) The aluminium parts shown below were manufactured using a metalwork lathe.


(i) A change of speed can be required when using a metalwork lathe.

State **three** general reasons why a change in speed may be necessary.

1 _____ **1 0**

2 _____ **1 0**

3 _____ **1 0**

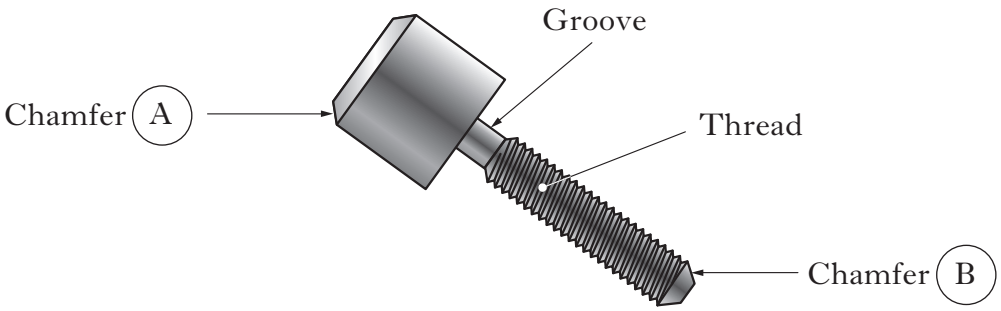
(ii) The turning tool was slightly below centre when facing the bolt.

State what effect this would have.

_____ **1 0**

**3. (*b*) (continued)**

A bolt is shown below.




The ends of the bolt were chamfered.

(iii) State the reason for:

Chamfer (A) _____ **10**

Chamfer (B) _____ **10**

(iv) State the name of the slide that is adjusted to 45° to enable the chamfer to be cut.

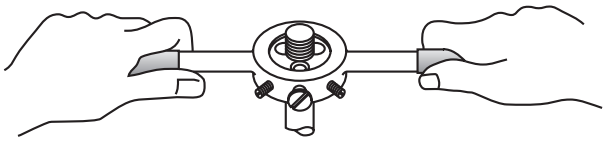
_____ **10**

(v) A groove was cut in the bolt.

State the name of the turning tool used to cut the groove.

_____ **10**

One end of each bolt was threaded.



(*c*) State the diameter of metal required for an M6 thread to be cut.

_____ **10**

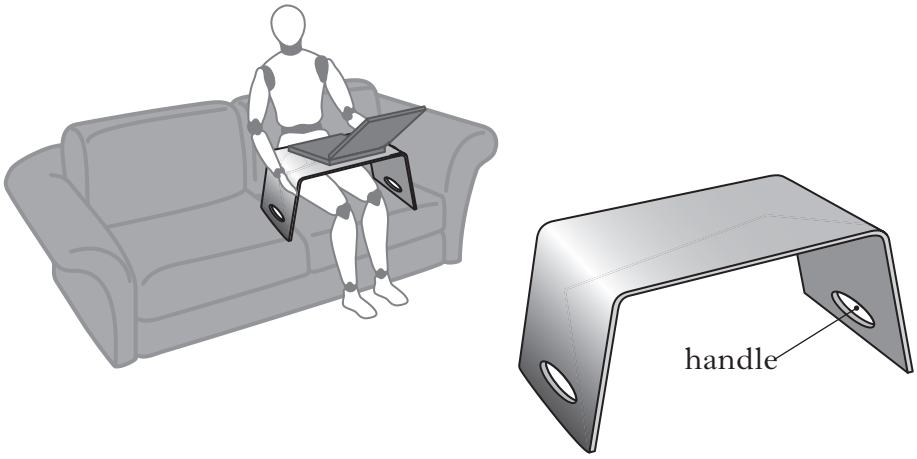
(*d*) The bolt was difficult to tighten.

State a modification to the bolt head to improve finger grip.

_____ **10**

**[Turn over**

**4.** A portable laptop table made from acrylic is shown below.




Enlarged view of laptop table

A variety of graphic techniques were used during the design of the laptop table.

(*a*) State the stage in the design process where the following graphics were used.

(i) Quick, rough sketches.

_____ **10**

(ii) Dimensioned drawing showing details of construction.

_____ **10**

(iii) Fully rendered 3D drawing.

_____ **10**

(*b*) Data tables of human dimensions were used during the design of the laptop table.

(i) State the name of this type of data. _____ **10**

(ii) State **two** human dimensions which may be considered when designing the laptop table.

1 _____ **10**

2 _____ **10**

The laptop table was designed to suit a range of users.

(*c*) State the percentage of the population that should comfortably be able to use the laptop table.

_____ **10**

**4. (continued)**

During the design process a scale model of the laptop table was produced.

(*d*) State **two** reasons for producing a scale model.

1 _____ **1 0**

2 _____ **1 0**

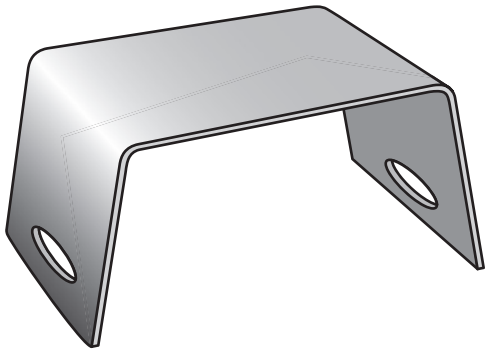
Environmental issues were considered during the design of the laptop table.

(*e*) State **two** environmental issues that could have been considered.

1 _____ **1 0**

2 _____ **1 0**

Acrylic was removed to form the handles.



(*f*) State how the waste material could be removed.

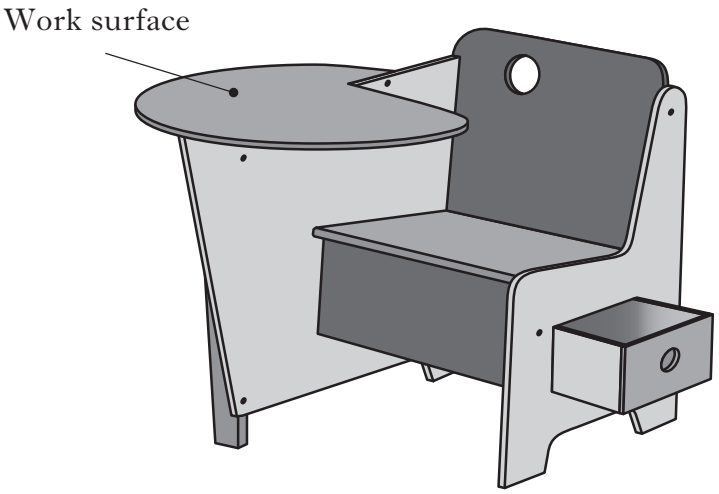
_____

_____ **2 1 0**

_____

**[Turn over**

**5.** A child's desk made from plywood is shown below.




(*a*) The primary function of the desk is to provide a seat.

State **two** further functions of the desk.

1 _____ **1 0**

2 _____ **1 0**

(*b*) Designers use various techniques to generate ideas.

Name **two** idea generating techniques.

1 _____ **1 0**

2 _____ **1 0**

(*c*) A cutting list was produced.

(i) State **two** pieces of information other than sizes that could be found in a cutting list.

1 _____ **1 0**

2 _____ **1 0**

**5. (*c*) (continued)**

(ii) Plywood is a manufactured board.

Describe how plywood is constructed to give it strength. Sketches may be used.

_____

_____

_____

_____

_____

_____ **10**

(*d*) The circular work surface was cut out using a **machine** saw.

State the name of a suitable **machine** saw.

_____ **10**

(*e*) Knock down fittings were used in the assembly of the desk.

State **one** advantage of using knock down fittings over traditional joints.

_____ **10**

(*f*) Two colours of paint were used in the finishing of the desk.

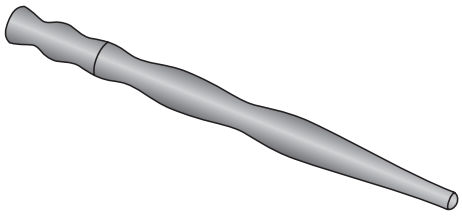
State a method that would prevent the colours from running together.

_____ **10**

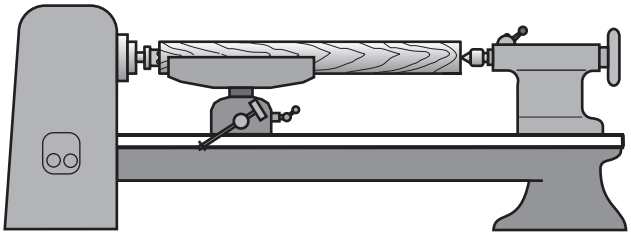
**[Turn over for Question 6 on *Page twelve***

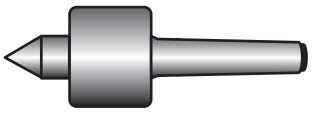
DO NOT WRITE IN THIS MARGIN

**6.** A wooden kitchen utensil is shown below.



(*a*) The utensil was manufactured on the machine shown below.





Revolving centre

Dead centre

(i) State **one** advantage of using a revolving centre instead of a dead centre.

_____ **10**

(ii) State the name of the tool used to turn the blank into a cylinder.

_____ **10**

(iii) State the name of the tool used to check the diameters when turning.

_____ **10**

(*b*) The utensil was sanded before removal from the wood lathe.
State **two** adjustments that should be carried out before sanding.

1 _____ **10**

2 _____ **10**

(*c*) Vegetable oil was applied as a finish to the utensil.
State a reason why this type of finish is important.

_____ **10**

[*END OF QUESTION PAPER*]