



FOR OFFICIAL USE

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National
Qualifications
2026

Mark

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X819/75/01**Design and Manufacture**

WEDNESDAY, 13 MAY

1:00 PM – 2:45 PM



* X 8 1 9 7 5 0 1 *

Fill in these boxes and read what is printed below.

Full name of centre

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Town

--

Forename(s)

--

Surname

--

Number of seat

--

Date of birth

Day

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Month

--	--

Year

--	--

Scottish candidate number

--	--	--	--	--	--	--	--	--

Total marks — 80**SECTION 1 — 60 marks**

Attempt ALL questions.

SECTION 2 — 20 marks

Attempt ALL questions.

Write your answers clearly in the spaces provided in this booklet. Additional space for answers is provided at the end of this booklet. If you use this space you must clearly identify the question number you are attempting.

Use **blue** or **black** ink.

Do not remove any exam materials. You must leave this booklet on your desk; if you do not, you could lose all the marks for this paper.



* X 8 1 9 7 5 0 1 0 1 *

SECTION 1 — 60 marks

Attempt ALL questions

1. A design proposal for a coffee station is shown below.



- (a) A softwood was considered for the back, base and side.
- (i) State **two** benefits of using softwoods in the manufacture of the coffee station.

2

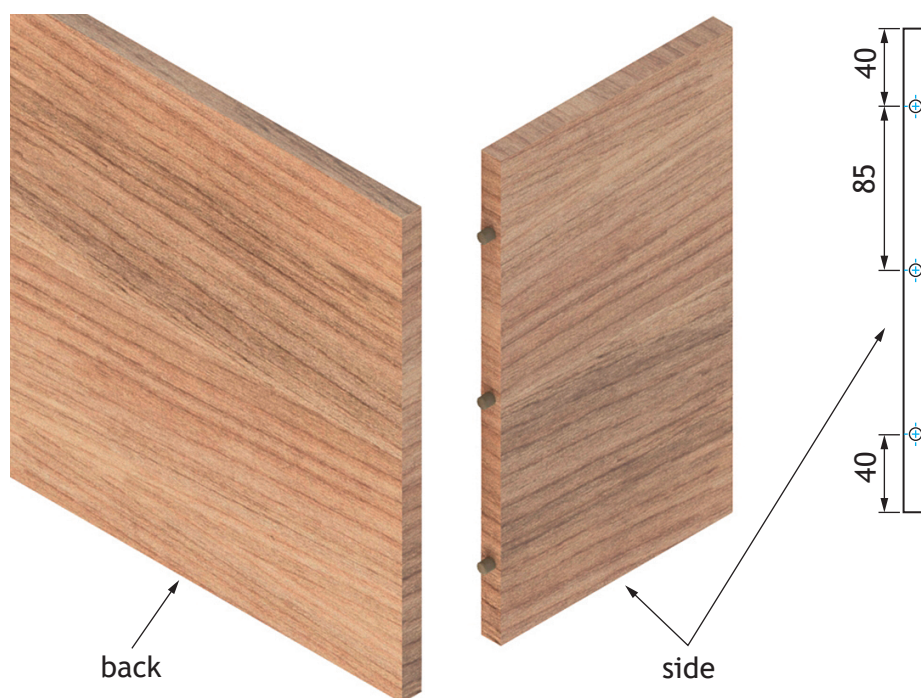
Benefit 1 _____

Benefit 2 _____



1. (a) (continued)

The back and side of the coffee station were assembled using a dowel joint.



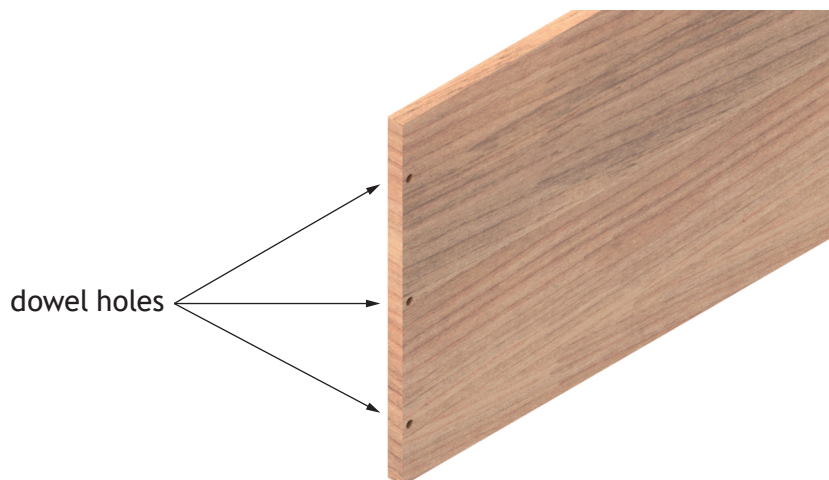
- (ii) Describe how to **mark out** the position of the dowels on the side, with reference to workshop tools.

2

You may use sketches to illustrate your answer in the box below.

1. (a) (continued)

The dowel holes in the back were drilled to a depth of 6 mm.



(iii) Name a suitable drill bit that could be used to make the holes.

1

(iv) Outline one way of ensuring the holes are drilled to the correct depth.

1

All wooden parts were prepared before a finish was applied.

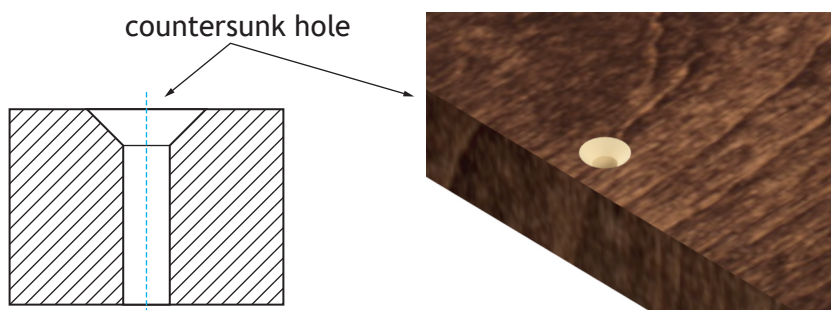
(v) Describe **three** stages in the preparation of the wood before applying a finish.

3



1. (a) (continued)

The base was stained then joined to the side and back using screws in countersunk holes.



(vi) State **two** reasons why wood stain is a suitable finish for the base.

2

Reason 1 _____

Reason 2 _____

The holes on the underside of the base were countersunk.

(vii) Explain why the holes were countersunk.

1

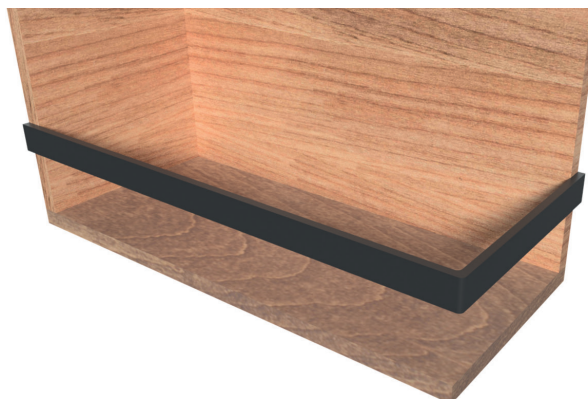
[Turn over



1. (continued)

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- (b) Aluminium was used for the rail shown below, as it is a strong and durable material.



- (i) State **two other** reasons why aluminium is a suitable material for the rail. 2

The edges of the aluminium rail were finished before bending.

- (ii) Outline **two** stages in finishing the edges of the aluminium rail. 2
You may use sketches to illustrate your answer in the box below.

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1. (b) (continued)

The aluminium rail was formed to a right angle.

- (iii) Describe how the right-angle could be formed accurately, with reference to workshop tools.

You may use sketches to illustrate your answer in the box below.

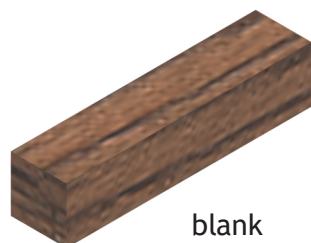
[illegible]

[Turn over



1. (continued)

- (c) The peg was made from a hardwood blank and turned into the shape shown below.



blank



turned peg

- (i) Name a suitable hardwood for the peg.

1

- (ii) Outline **four** stages in preparing the blank before fitting it on the wood lathe, with reference to workshop tools.

4

You may use sketches to illustrate your answer in the box below.

[illegible]

1. (c) (continued)

The peg was finished while on the wood lathe.

- (iii) Outline **two** ways of ensuring a high-quality finish on the peg when using the wood lathe.

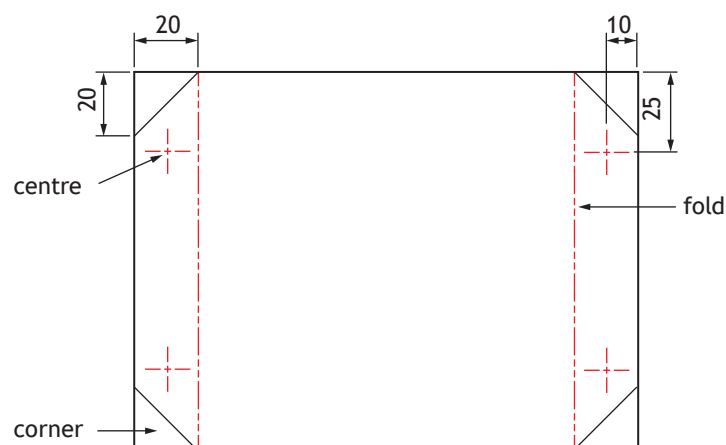
2

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1. (continued)

(d) The spoon holder was marked out on a mild steel sheet as shown below.



- (i) Describe **three** stages in marking out the mild steel sheet metal, with reference to workshop tools.

You may use sketches to illustrate your answer in the box below.

No.	Name	Age	Sex	Religion	Marital Status	Occupation
1	Abdullah	35	Male	Muslim	Married	Teacher
2	Ali	42	Male	Muslim	Married	Farmer
3	Ahmed	28	Male	Muslim	Single	Student
4	Ahmed	38	Male	Muslim	Married	Engineer
5	Ahmed	45	Male	Muslim	Married	Businessman
6	Ahmed	52	Male	Muslim	Married	Retired
7	Ahmed	58	Male	Muslim	Married	Retired
8	Ahmed	65	Male	Muslim	Married	Retired
9	Ahmed	72	Male	Muslim	Married	Retired
10	Ahmed	78	Male	Muslim	Married	Retired
11	Ahmed	85	Male	Muslim	Married	Retired
12	Ahmed	92	Male	Muslim	Married	Retired
13	Ahmed	98	Male	Muslim	Married	Retired
14	Ahmed	105	Male	Muslim	Married	Retired
15	Ahmed	112	Male	Muslim	Married	Retired
16	Ahmed	118	Male	Muslim	Married	Retired
17	Ahmed	125	Male	Muslim	Married	Retired
18	Ahmed	132	Male	Muslim	Married	Retired
19	Ahmed	138	Male	Muslim	Married	Retired
20	Ahmed	145	Male	Muslim	Married	Retired
21	Ahmed	152	Male	Muslim	Married	Retired
22	Ahmed	158	Male	Muslim	Married	Retired
23	Ahmed	165	Male	Muslim	Married	Retired
24	Ahmed	172	Male	Muslim	Married	Retired
25	Ahmed	178	Male	Muslim	Married	Retired
26	Ahmed	185	Male	Muslim	Married	Retired
27	Ahmed	192	Male	Muslim	Married	Retired
28	Ahmed	198	Male	Muslim	Married	Retired
29	Ahmed	205	Male	Muslim	Married	Retired
30	Ahmed	212	Male	Muslim	Married	Retired
31	Ahmed	218	Male	Muslim	Married	Retired
32	Ahmed	225	Male	Muslim	Married	Retired
33	Ahmed	232	Male	Muslim	Married	Retired
34	Ahmed	238	Male	Muslim	Married	Retired
35	Ahmed	245	Male	Muslim	Married	Retired
36	Ahmed	252	Male	Muslim	Married	Retired
37	Ahmed	258	Male	Muslim	Married	Retired
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46	Ahmed	318	Male	Muslim	Married	Retired
47	Ahmed	325	Male	Muslim	Married	Retired
48	Ahmed	332	Male	Muslim	Married	Retired
49	Ahmed	338	Male	Muslim	Married	Retired
50	Ahmed	345	Male	Muslim	Married	Retired
51	Ahmed	352	Male	Muslim	Married	Retired
52	Ahmed	358	Male	Muslim	Married	Retired
53	Ahmed	365	Male	Muslim	Married	Retired
54	Ahmed	372	Male	Muslim	Married	Retired
55	Ahmed	378	Male	Muslim	Married	Retired
56	Ahmed	385	Male	Muslim	Married	Retired
57	Ahmed	392	Male	Muslim	Married	Retired
58	Ahmed	398	Male	Muslim	Married	Retired
59	Ahmed	405	Male	Muslim	Married	Retired
60	Ahmed	412	Male	Muslim	Married	Retired
61	Ahmed	418	Male	Muslim	Married	Retired
62	Ahmed	425	Male	Muslim	Married	Retired
63	Ahmed	432	Male	Muslim	Married	Retired
64	Ahmed	438	Male	Muslim	Married	Retired
65	Ahmed	445	Male	Muslim	Married	Retired
66	Ahmed	452	Male	Muslim	Married	Retired
67	Ahmed	458	Male	Muslim	Married	Retired
68	Ahmed	465	Male	Muslim	Married	Retired
69	Ahmed	472	Male	Muslim	Married	Retired
70	Ahmed	478	Male	Muslim	Married	Retired
71	Ahmed	485	Male	Muslim	Married	Retired
72	Ahmed	492	Male	Muslim	Married	Retired
73	Ahmed					

3



1. (d) (continued)

The corners were removed from the mild steel sheet metal before forming.

- (ii) Name a suitable tool that could be used to cut the corners.

1

After forming the curve on the spoon holder, a finish was applied.

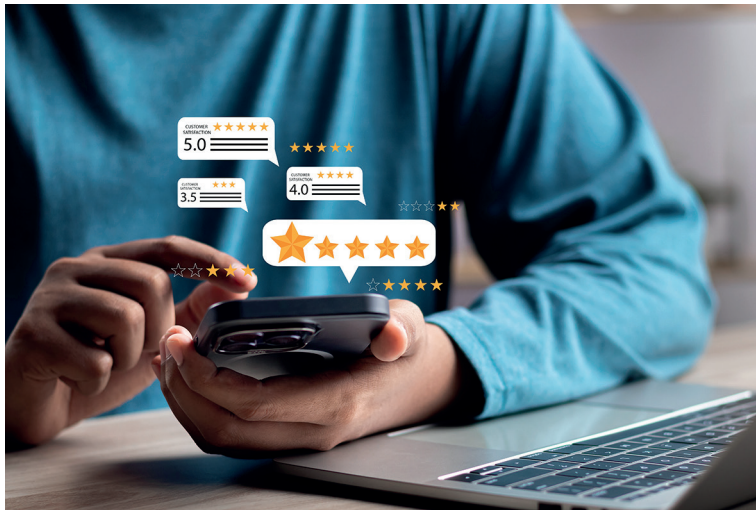


- (iii) Name a suitable finish for the spoon holder.

1

[Turn over

2. User trips and questionnaires are research techniques often used by designers.



- (a) Outline **three** key stages of a user trip.

3

- (b) Outline **three** benefits of using a questionnaire to carry out research.

3

3. Idea generation techniques are often used by designers.

Outline the key stages of morphological analysis.

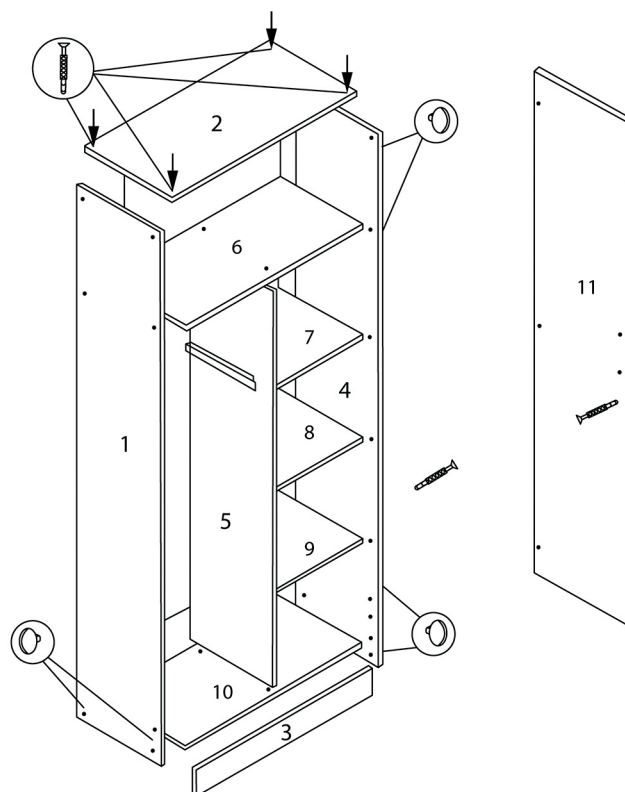
You may use sketches to illustrate your answer in the box below.

3

[Turn over



4. Different graphic techniques can be used throughout the design process.
An exploded view is shown below.



You must give different responses in (a) and (b).

- (a) Outline **two** pieces of information that can be gained from an exploded view.

2

4. (continued)

A rendered pictorial is shown below.



You must give different responses in (a) and (b).

(b) Outline **two** reasons for using rendered pictorials in the design process.

2

5. Models are often used during the design process.

Describe the benefits of using models within the design process.

2



6. (a) A treadmill is shown below.



You must give different responses for (a)(i), (ii) and (iii).

Describe how the following design factors may have influenced the design of the treadmills:

(i) Ergonomics.

4

[illegible]

6. (a) (continued)

(ii) Function.

3

(iii) Safety.

3



6. (continued)

A water bottle is shown below.



(b) Describe the aesthetic aspects of the water bottle.

3

6. (continued)

(c) Products related to the fitness industry are often influenced by technology push and market pull.

(i) Describe what is meant by technology push.

1

(ii) Describe what is meant by market pull.

1

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SECTION 2 — 20 marks
Attempt ALL questions

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7. A toy car and packaging are shown below.



SJBright/Shutterstock.com



plastic packaging

Different reasons must be given for the suitability of each material.

- (a) Polystyrene was used to make the plastic packaging shown above.
- (i) State **two** reasons why polystyrene is a suitable material for the plastic packaging.

2

A metal alloy was used to make the body of the car.

- (ii) State **two** reasons why the metal alloy is a suitable material for the body of the car.

2



7. (continued)

The toy car was die cast.

- (b) State **two** identifying features that show products are die cast.

2

The plastic packaging was vacuum formed around a pattern.

- (c) State a manufacturing reason for each feature of vacuum forming:

A different reason must be given for each feature.

- (i) Tapered edges.

1

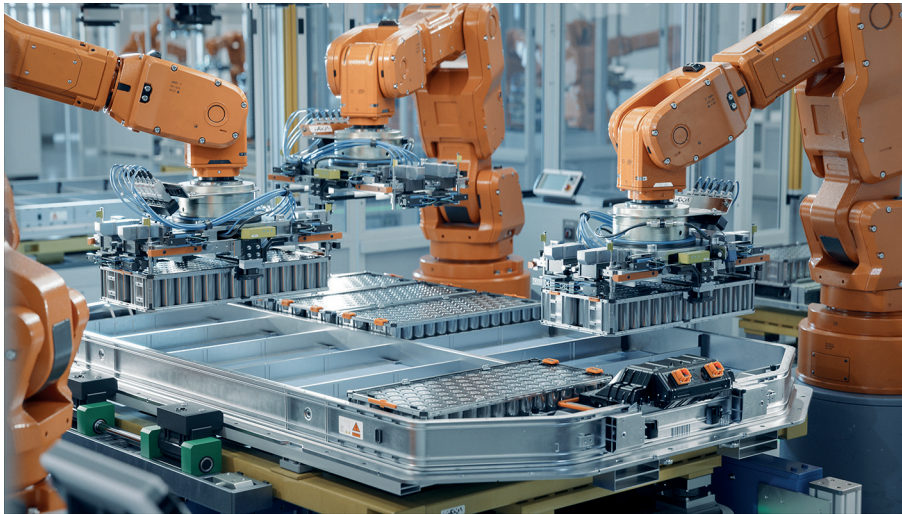
- (ii) Rounded corners.

1

[Turn over



8. Computer-Aided Manufacture (CAM) is used to help with mass manufacturing products.



You must give different responses in (a) and (b).

- (a) Describe the benefits of using CAM to the manufacturer.

4

8. (continued)

(b) Describe the impact of mass manufacture on **society**.

2

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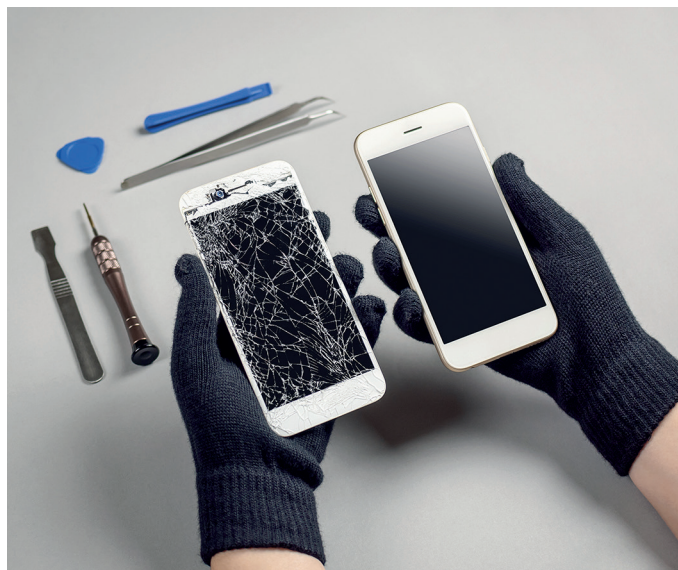
9. Standard components are used in the mass manufacture of products.



Outline **three** benefits of using standard components in products.

3

10. To reduce their impact on the environment, companies can take steps to increase the life expectancy of products.



Describe the steps that could be taken to increase the life expectancy of products.

3

[illegible]

[END OF QUESTION PAPER]



ADDITIONAL SPACE FOR ANSWERS

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ADDITIONAL SPACE FOR ANSWERS

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