

FOR OFFICIAL USE

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Q1		Q5	
Q2		Q6	
Q3		Q7	
Q4			

Total
Mark

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0600/403

NATIONAL
QUALIFICATIONS
2010

MONDAY, 17 MAY
1.00 PM – 2.00 PM

CRAFT & DESIGN
STANDARD GRADE
Credit Level

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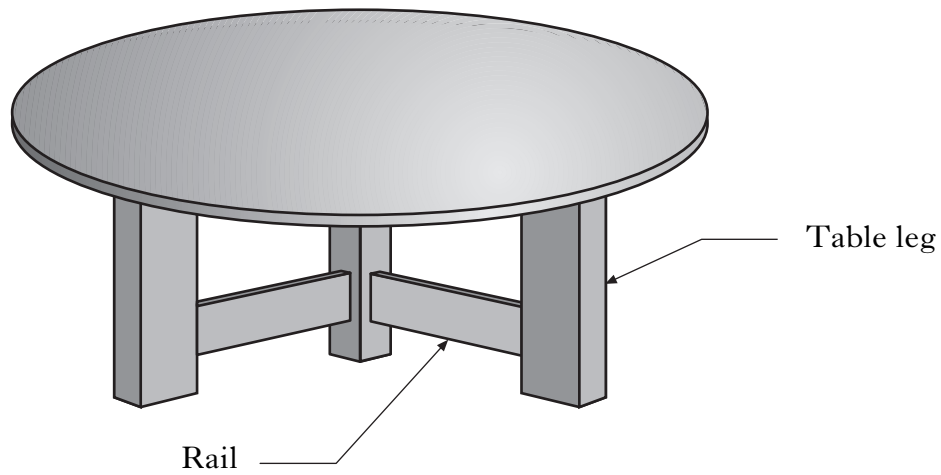
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1. Answer all the questions.
2. Read every question carefully before you answer.
3. Write your answers in the spaces provided.
4. Do **not** write in the margins.
5. All dimensions are given in millimetres.
6. Before leaving the examination room you must give this book to the Invigilator. If you do not, you may lose all the marks for this paper.



ATTEMPT ALL QUESTIONS

1. A table is shown below.



(a) The tool shown below was used in the manufacture of the table legs.



State two separate adjustments that can be made to this tool.

Adjustment one

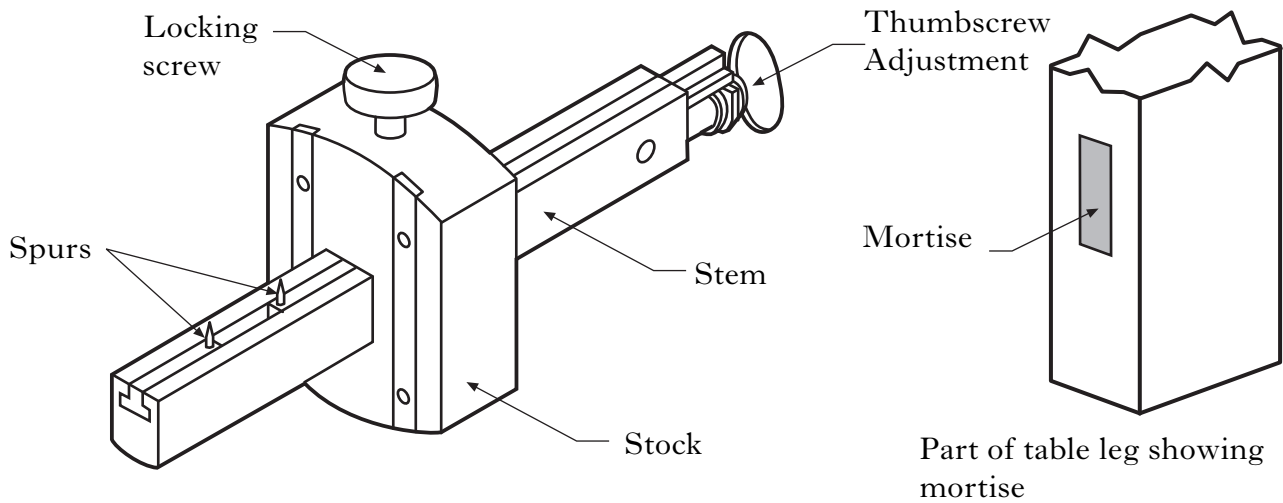
1
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Adjustment two

1
0

1. (continued)

(b) The mortise gauge shown below was used to mark out the mortise and tenon joints.



Describe two steps to mark a 12 mm mortise centrally on the table leg.

Sketches may be used to illustrate your answer.

Step 1

Step 2

(c) The finishing process includes “wetting the wood”.

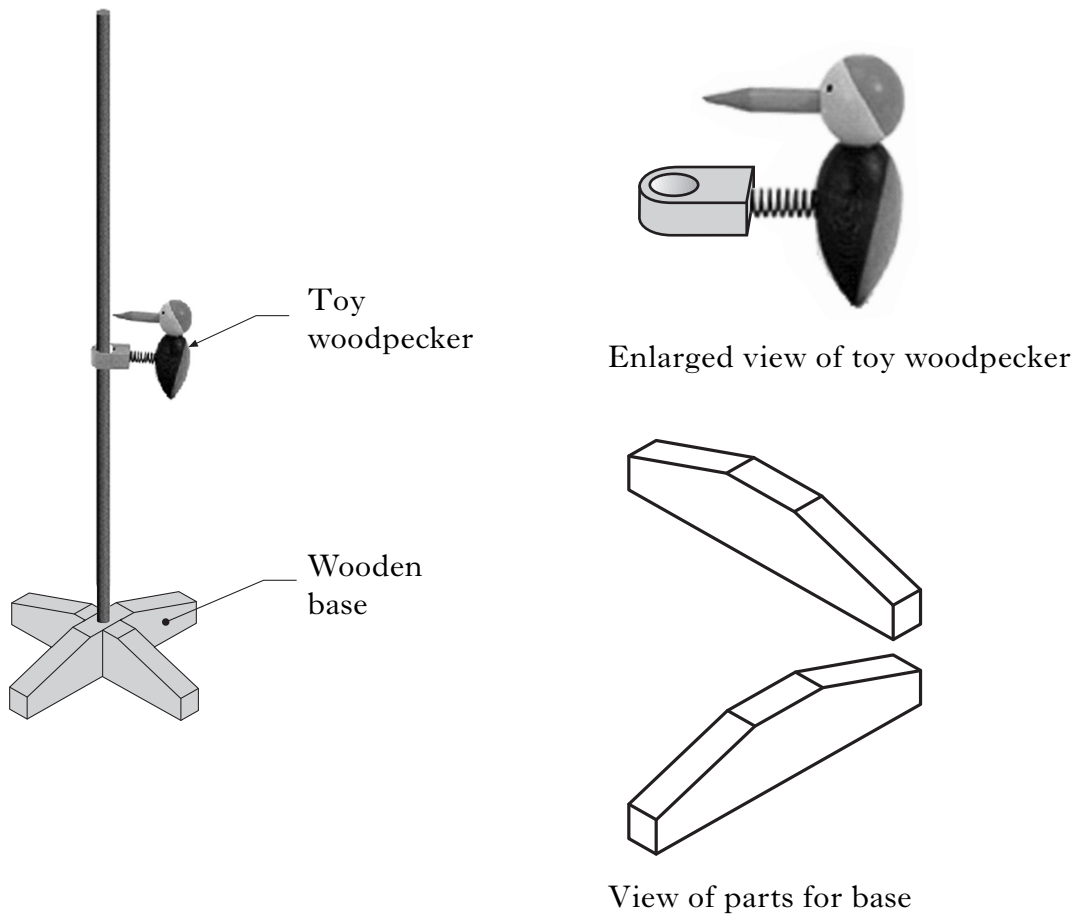
State the purpose of “wetting the wood”.

1
0

1
0

1
0

2. A woodpecker toy is shown below.



(a) During the design process various techniques were used to generate ideas.
Name two techniques used by designers to help generate ideas.

(i) _____

(ii) _____

1
0
1
0

(b) The woodpecker is made from a close grained hardwood.
State the name of a suitable hardwood.

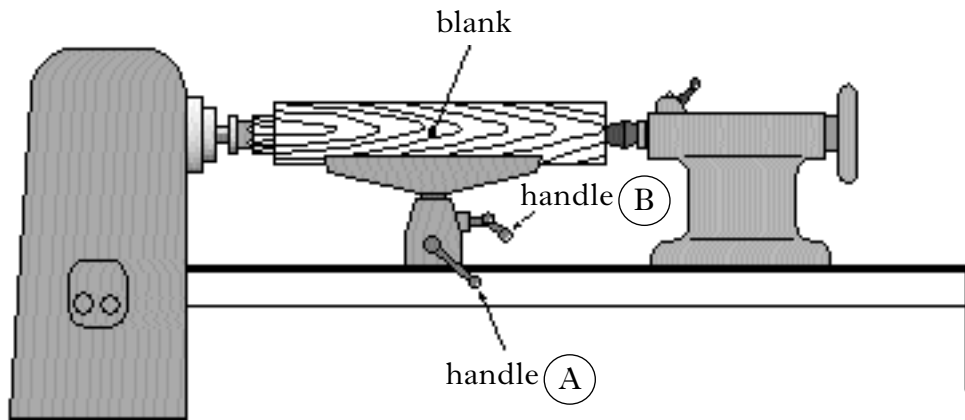
1
0

(c) The wooden base is made in two parts.
State the name of a suitable joint for the base of the toy.

1
0

2. (continued)

The woodpecker's body was turned on a woodwork lathe.



(d) The tool rest can be adjusted before the wood lathe is switched on.

State three adjustments that can be made to the tool rest.

- (i) _____
- (ii) _____
- (iii) _____

1
0
1
0
1
0

(e) The blank was turned to a cylinder

State the name of a turning tool used to produce the cylinder.

1
0

(f) A tool was used to check the diameter of the cylinder.

State the name of a suitable tool.

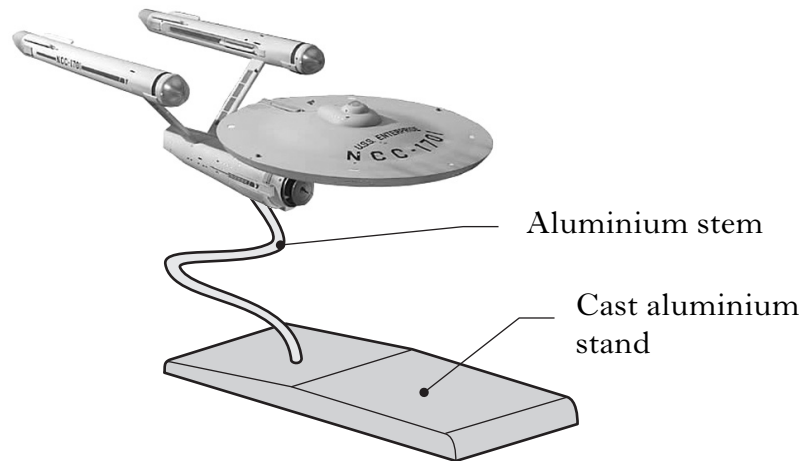
1
0

(g) State an adjustment that could be made to the woodwork lathe to improve the finish of the woodpecker.

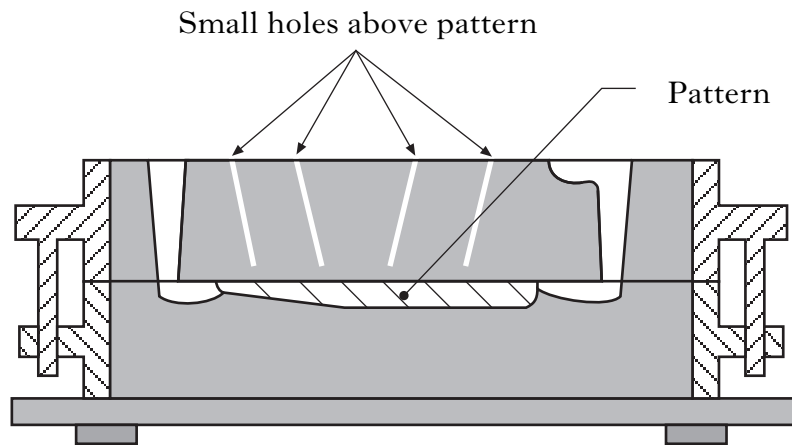
1
0

[Turn over

3. A model spaceship on a stand is shown below.



(a) The stand was manufactured by sand casting.



(i) The pattern for the stand has tapered sides.
State a reason for this feature.

1
0

(ii) Parting powder was used during the manufacture of the stand.
State the purpose of parting powder.

1
0

(b) Small holes are made in the sand above the pattern. State a reason for these holes.

1
0

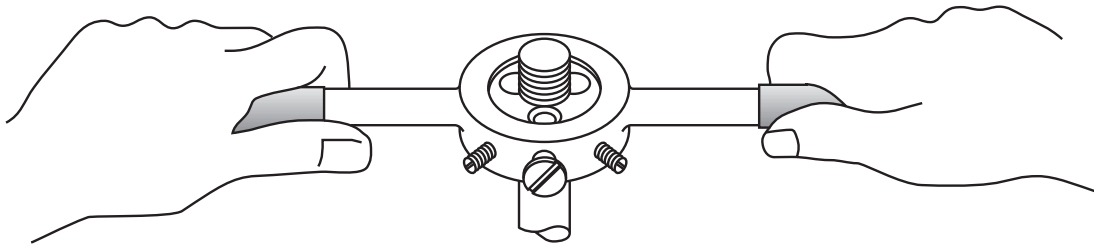
3. (continued)

(c) One end of the stem is threaded.

(i) State how the end of the stem should be prepared before threading.

1
0

The tool shown below was used to cut the thread on the stem.



(ii) State the name of this tool.

1
0

(iii) The initial thread was cut and found to be a tight fit.

Describe how to adjust the tool so that the thread is an “easy running fit”.

2
1
0

(d) The aluminium stem was heat treated to make it more malleable.

(i) State what is meant by malleable.

1
0

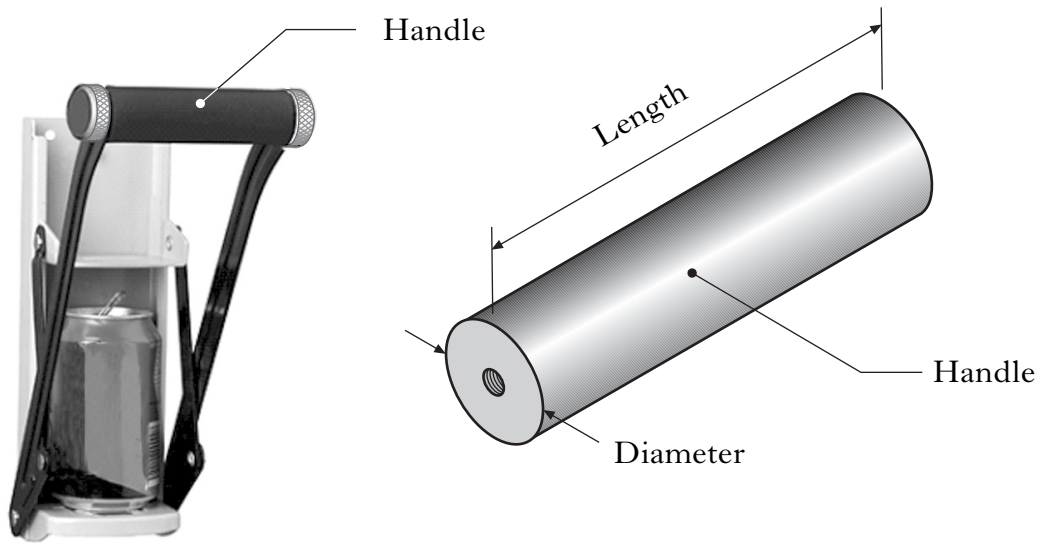
(ii) State the name of the heat treatment process.

1
0

(iii) State a reason why soap was used in this process.

1
0

4. A can crusher is shown below.



(a) During the design of the can crusher, reference was made to data sheets of human dimensions.

State the name of this type of data.

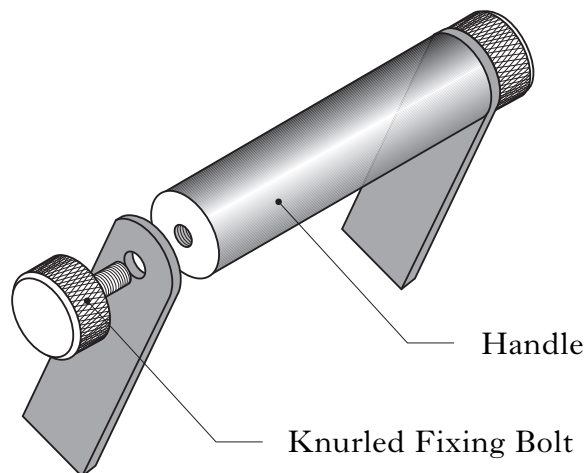
1
0

(b) The handle of the crusher has been designed to be used by adults in the 5th to 95th percentile range.

State the percentile used to determine the length of the handle.

1
0

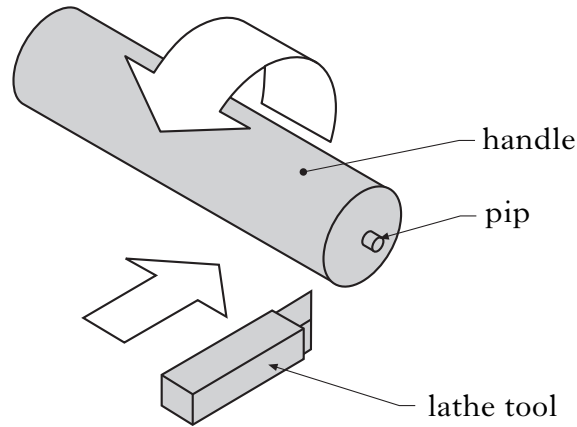
(c) An exploded view of the handle is shown below.



4. (c) (continued)

The handle was manufactured using a metal lathe.

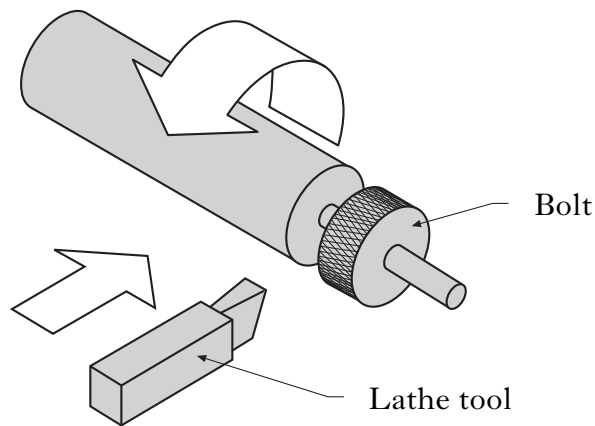
When facing off the handle, a pip remained on the end as shown below.



State one fault that would cause this pip.

1
0

(d) The lathe tool shown below was used in the manufacture of the handle.



State the name of this lathe tool.

1
0

(e) The bolt was knurled.

(i) State a reason for knurling the bolt.

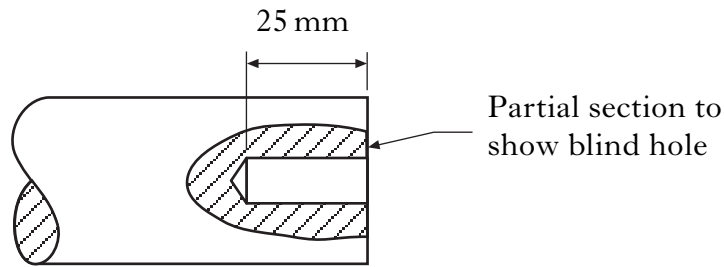
1
0

(ii) State an adjustment to the lathe that may be necessary before knurling.

1
0

4. (continued)

(f) One end of the handle is shown below.



The drill shown below was used in the manufacture of the handle.



(i) State the name of this drill.

1
0

(ii) State the function of this drill.

1
0

The blind hole was drilled to a depth of 25 mm using the metal lathe.

(iii) Describe a method of ensuring that the hole is drilled to the correct depth.

1
0

(g) The blind hole was threaded.

(i) State why care must be taken when threading a blind hole.

1
0

(ii) State the name of the tap that should be used to begin threading.

1
0

(iii) State the name of the tap that should be used to complete the threading.

1
0

4. (continued)

(h) The handle was plastic dip coated.

Describe in detail three stages in the plastic dip coating process.

The stages should be described in order.

Stage 1

1
0

Stage 2

1
0

Stage 3

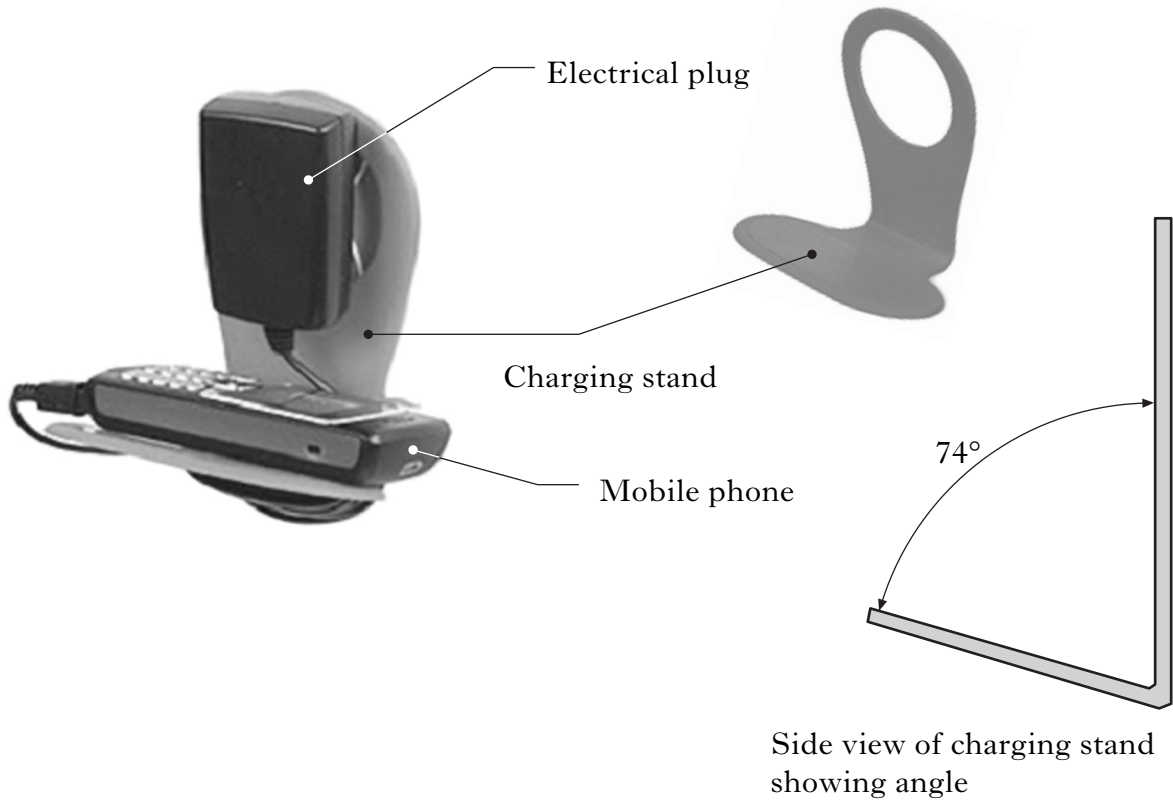
1
0

(i) State a reason why the plastic looked dull and gritty after the dip coating process.

1
0

[Turn over

5. A charging stand for a mobile phone is shown below.



(a) Aesthetics and ergonomics are design factors. State three further design factors that may have been considered in the design of the charging stand.

- 1 _____
- 2 _____
- 3 _____

1
0
1
0
1
0

(b) During the design process various types of graphics are used.

(i) State the name of the stage where rough sketches are used.

Stage _____

1
0

(ii) State the name of the stage where fully rendered 3D sketches are used.

Stage _____

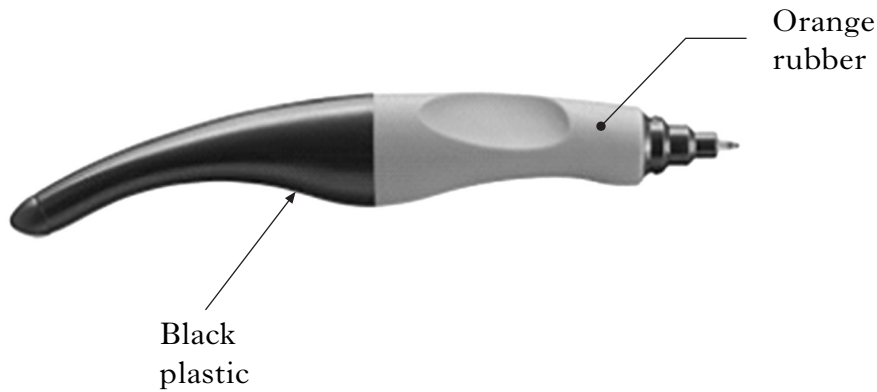
1
0

(c) A number of identical charging stands are to be manufactured. State two ways in which manufacture can be speeded up.

- 1 _____
- 2 _____

1
0
1
0

6. A pen is shown below.



(a) During the design of the pen, ergonomics was considered.

(i) State what is meant by the term ergonomics.

1
0

(ii) State two ergonomic features of the pen shown above.

1 _____

1
0

2 _____

1
0

(b) (i) Orange and black are used to contrast with each other.

State why a designer would use colour contrast on a product.

1
0

(ii) State two other methods a designer can use to create contrast in a product.

1 _____

1
0

2 _____

1
0

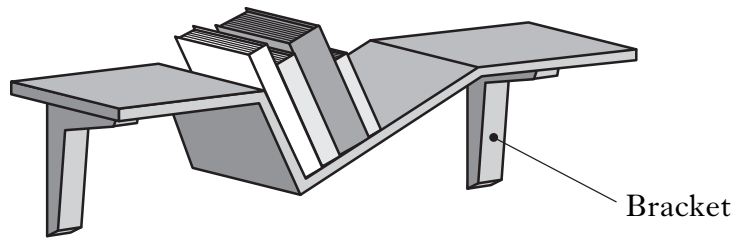
(c) Potential customers were asked to evaluate the pen by means of a questionnaire.

State the name of this type of research.

1
0

[Turn over for Question 7 on Page fourteen

7. A wall mounted shelf unit made from MDF is shown below.



(a) State two reasons why MDF is a suitable material for the shelves.

- 1 _____
- 2 _____

1
0
1
0

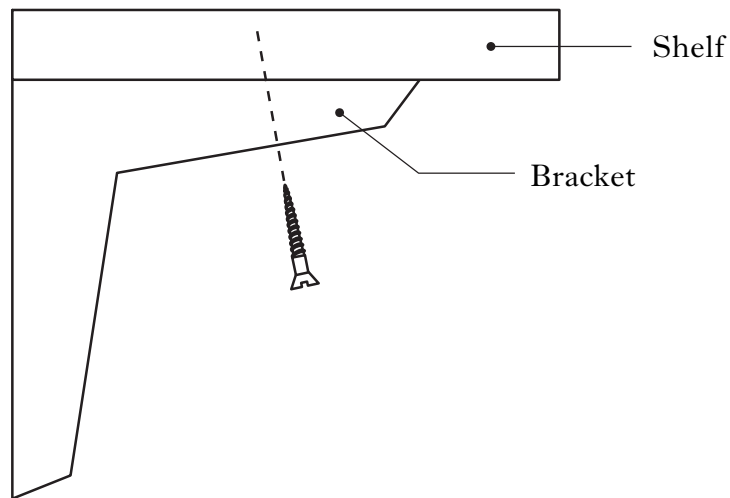
The brackets are fixed to the shelf using countersink screws.

(b) On the diagram below, sketch and label the following.

Pilot hole

Countersink hole

Clearance hole



Side view of bracket and shelf

Use the diagram above to illustrate your answer

1
0
1
0
1
0

[END OF QUESTION PAPER]

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