

# The Holy Family

## Catholic School

a voluntary academy



### YEAR 11 Trial Examination Summer Term 2024

Student Name

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Candidate Number

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Subject Teacher

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Form

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**Subject: Design and Technology**

**Level: N/A**

**Title of Paper: Designing and making principles**

**Duration of Paper: 50 minutes**

Head of Subject/Lead: Mr P Campana

Head of Faculty: Mrs Findlay

**Section C – Designing and making principles**

Answer all questions in this section.

**1 9**Study the pictures of garden furniture and packaging in **Figure 5** and **Figure 6** and the specifications in **Table 2**.**Figure 5****Table, chairs and umbrella****Figure 6****Flat-pack furniture packaging****Table 2**

<b>Material specification for garden furniture in Figure 5</b>	
<b>Material</b>	<b>Description of use</b>
Timber	Table and chairs
Fabric	Umbrella covering
Metal	Fixtures and fittings to assemble
Polymers	Umbrella stand base and end caps for chair legs
Papers and boards	Cardboard packaging and assembly instructions prior to use







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ANSWER IN THE SPACES PROVIDED**

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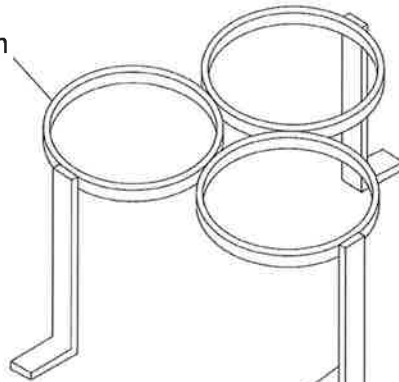


2 0

**Figure 7** shows a structure made from a number of material lengths cut and bent to shape.

**Figure 7**

Each hoop is of a diameter 90 mm



Each leg is 120 mm in total length

2 0 . 1

Calculate the length of material required to make **one** hoop to the nearest whole millimetre.

Show your working.

**[3 marks]**

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Answer \_\_\_\_\_ mm



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2 0 . 2

Calculate the total length of material required to make all the parts in **Figure 7** to the nearest whole centimetre.

Show your working.

[4 marks]

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Answer \_\_\_\_\_ cm

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2 1

Materials frequently have to be deformed and reformed.

Choose **one** product from **Table 3**.

**Table 3**

		
<p><b>Metal toy car</b></p>	<p><b>Birthday card</b></p>	<p><b>Polymer toothbrush</b></p>
		
<p><b>Cotton skirt</b></p>		<p><b>Plywood chair</b></p>

My chosen product is \_\_\_\_\_





2 1 . 1

Name a specific deforming or reforming process used in the manufacture of your chosen product.

[1 mark]

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2 1 . 2

Explain why this process is used in the manufacture of your chosen product.

[2 marks]

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2 1 . 3

What safety issues need to be considered when using the specific process given in your answer to Question 21.1?

[2 marks]

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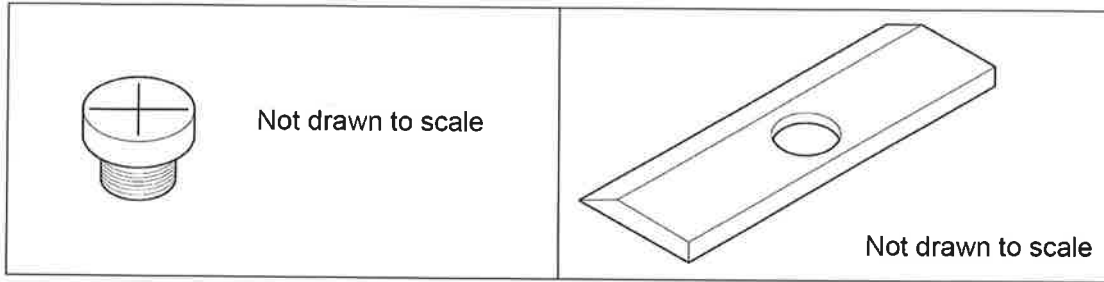
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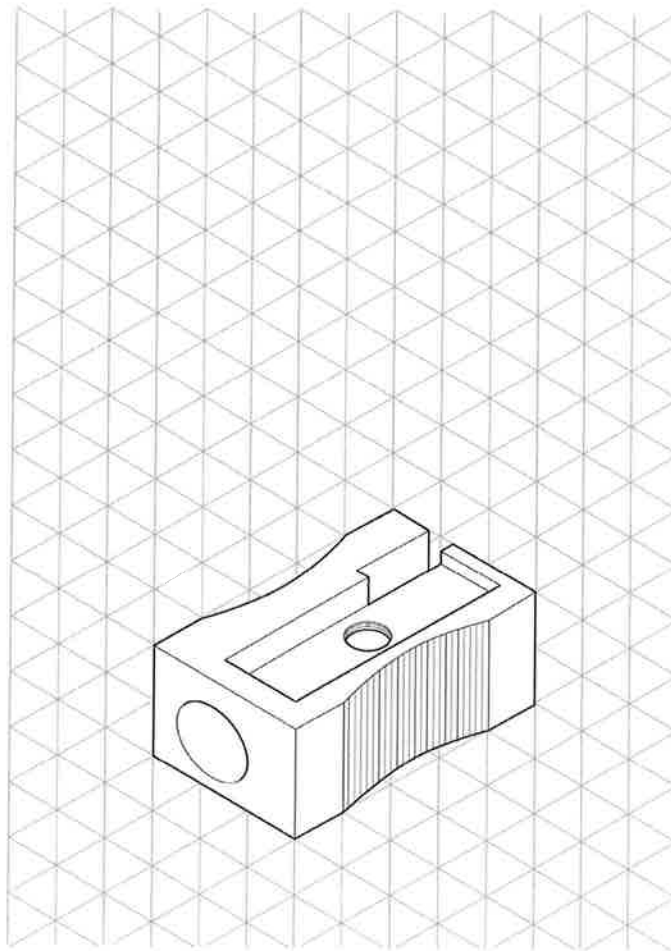
**2 2 . 1** Below are drawings of two parts needed to make a pencil sharpener.



Complete an exploded isometric drawing in **Figure 8** showing how the parts of the sharpener are assembled.

[5 marks]

**Figure 8**



2 2 . 2

Exploded drawings show details of an object in a unique way.

Explain where and why exploded drawings are used.

Give examples in your answer.

[4 marks]

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2 3

Sketching is used by designers to communicate information.

Describe **one** advantage and **one** disadvantage of freehand sketching over computer aided design (CAD) drawing.

[2 x 2 marks]

Advantage \_\_\_\_\_

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Disadvantage \_\_\_\_\_

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**2 4 . 1** Define the term 'datum point'.

[1 mark]

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**2 4 . 2** Explain why datum points are used during manufacturing.

[2 marks]

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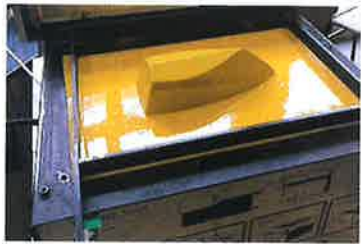
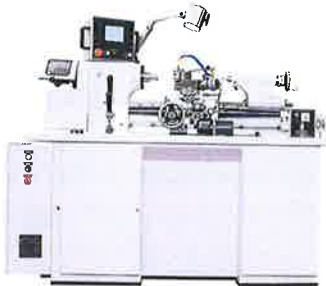
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**2 5** The images in **Table 4** are of specialist pieces of Design and Technology equipment.

**Table 4**

		
<p><b>Laser cutter</b></p>	<p><b>Overlocker</b></p>	<p><b>Vacuum former</b></p>
		
<p><b>3D printer</b></p>		<p><b>Centre lathe</b></p>



Choose **one** piece of specialist equipment from **Table 4**.

My chosen piece of equipment is \_\_\_\_\_

**2 5 . 1**

Describe how your chosen piece of equipment is used.

**[3 marks]**

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**2 5 . 2**

Explain the checks you would make to ensure the equipment is able to produce quality outcomes.

**[3 marks]**

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2 6

Explain the importance of evaluation when developing prototypes.

Give specific examples in your answer.

[4 marks]

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END OF QUESTIONS

