

Design & Manufacture

Plastics questions

What is the difference between thermoplastics and thermosetting plastics?

What form can plastics be produced in?

Plastics have various advantages over wood and metal. List some of these in the table below.

Colour	
Water resistant	
Forms easily	
Mass production	
Insulator	
Weight	

Complete the table below.

Name of plastic	Properties	Uses	Common Processes	Thermosetting plastic	Thermoplastic
Acrylic					
ABS					
Polypropylene					
Nylon					
Polystyrene					
PVC					
Polyethylene					
Polyester					
Epoxy					
Melamine					
Polyurethane					

Marking & Cutting plastics

Name the following tools that can be used when working with plastics.















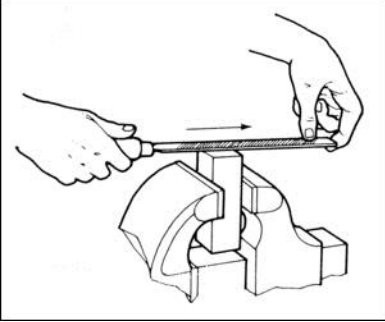
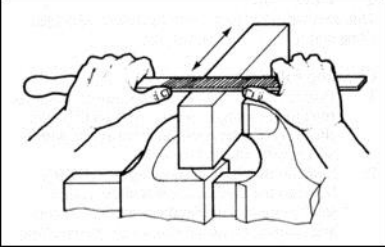




How can you prevent plastic from cracking when you drill holes in it?

Apart from saws, what can you use to cut straight lines in plastic?

Finishing Plastic

What are the stages of finishing the edges of plastic.

Stage and name of process	Image of process	Description of process
Stage 1		
Stage 2		
Stage 3		
Stage 4		

Joining Plastic

Name the 3 methods of joining plastics.

1. _____
2. _____
3. _____

How does Epoxy resin work?

How does Tensol work?

How can plastics be welded?

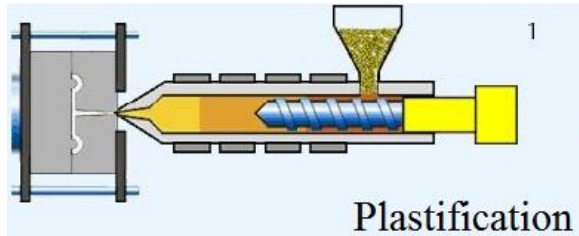
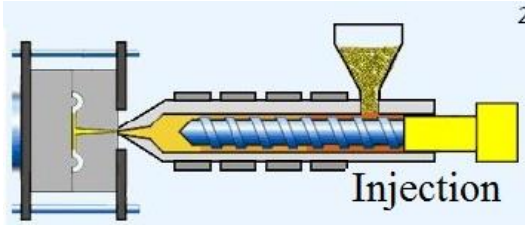
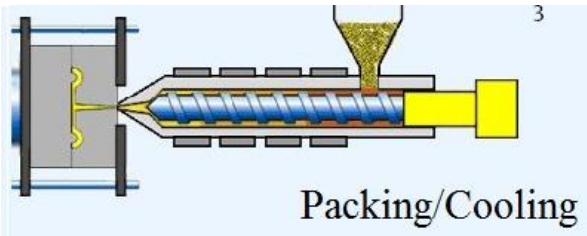
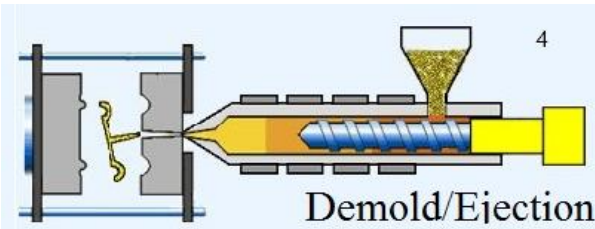
When are mechanical fixings better to be used?

Name some forms of mechanical fixings for plastic.

Injection Moulding

When is injection moulding used?

Describe what happens at each of the stages of injection moulding.

<p>Stage 1</p>	 <p>1</p> <p>Plastification</p>
<p>Stage 2</p>	 <p>2</p> <p>Injection</p>
<p>Stage 3</p>	 <p>3</p> <p>Packing/Cooling</p>
<p>Stage 4</p>	 <p>4</p> <p>Demold/Ejection</p>

Name the identifying features of a product manufactured using injection moulding.

1. _____

2. _____

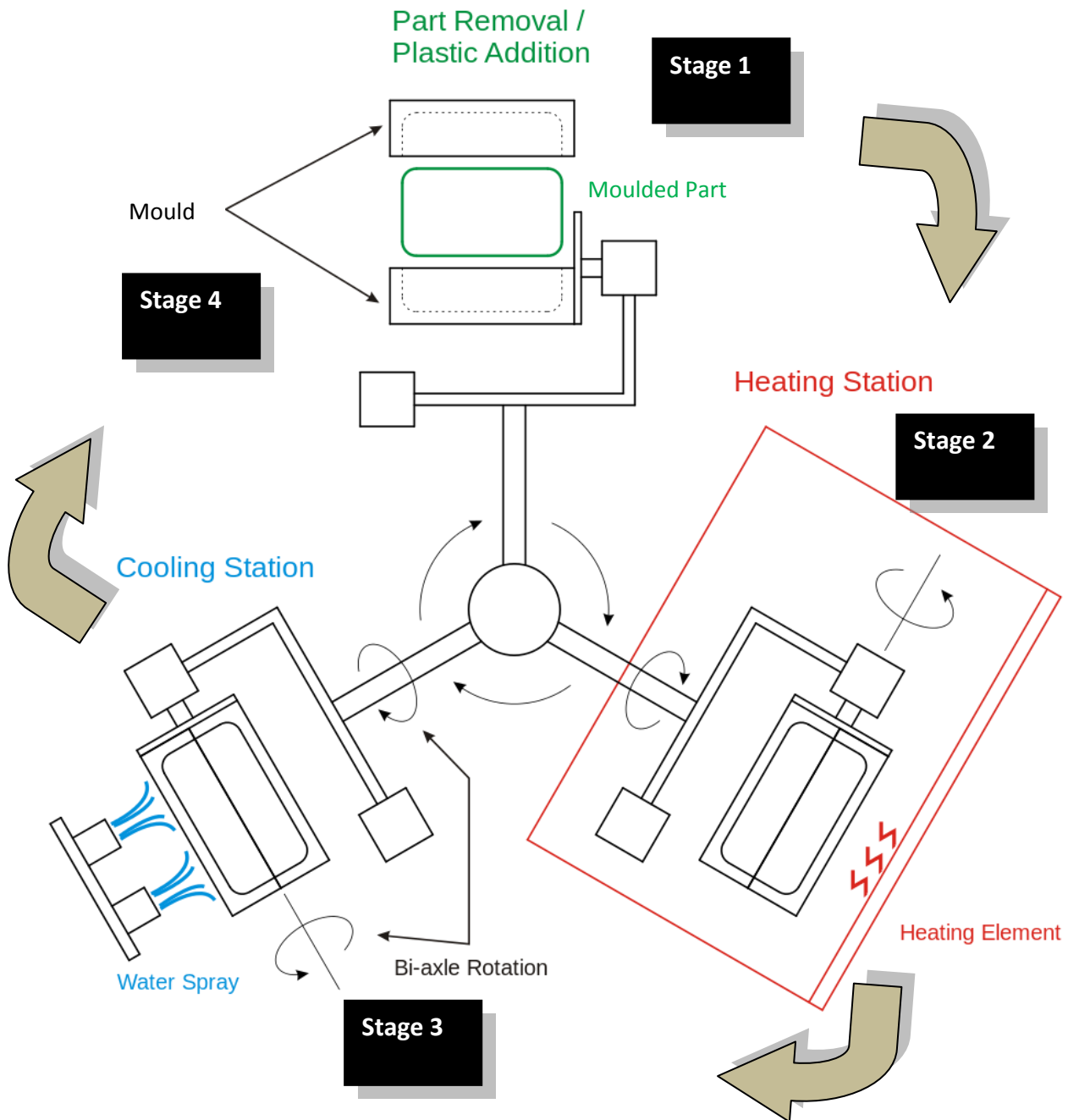
3. _____

4. _____

5. _____

Rotational Moulding

Complete the table on the next page describing what happens at each of the stages of rotational moulding. Use the diagram below to help you.



Stage 1	
Stage 2	
Stage 3	
Stage 4	

Name the identifying features of a product manufactured using rotational moulding.

1. _____
2. _____
3. _____
4. _____

Vacuum Forming

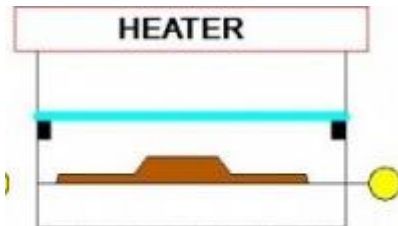
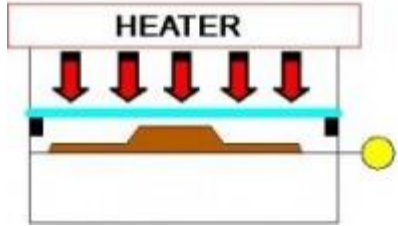
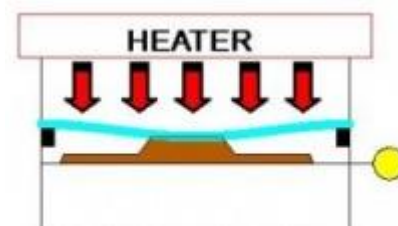
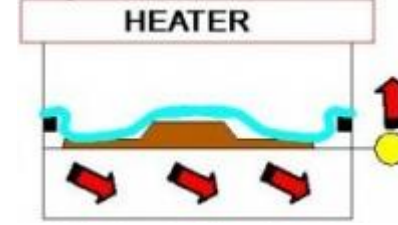
When is vacuum forming used to manufacture products?

What type of plastic can be vacuum formed?

What happens to the waste from vacuum forming?

Why is this an advantage?

Describe what happens at each of the stages of vacuum forming shown below.

<p>Stage 1</p>	
<p>Stage 2</p>	
<p>Stage 3</p>	
<p>Stage 4</p>	

Name the identifying features of a product that has been vacuum formed.

1. _____
2. _____
3. _____
4. _____

Line Bending

What machine is used to allow plastic to be bent along a straight line?

Describe how you would bend plastic in a straight line.

What do we use when line bending to allow for accuracy of bends and to allow mass production?

Name 3 advantages of designing a product that requires only straight line bends.

1.

2.

3.

Thermoforming

What machine is used to allow thermoforming?

What is one difference between the shapes you can produce with thermoforming over straight line bending?

What is press forming?

What is the difference between press forming and vacuum forming?

What safety equipment should you use when handling plastic during the thermoforming process?

What needs to be produced before a rapid prototyping model is created?

Name the advantages of using rapid prototyping to make models.

1.

2.

3.

4.

5.

6.

7.
