

# AS DESIGN AND TECHNOLOGY (PRODUCT DESIGN) FOR TEACHING FROM 2017

2019 EXAMINATION

UNIT 1 OER MATERIAL (ANNOTATED)

*The interactive version of this exemplar is available on our Online Exam Review website ([oer.wjec.co.uk](http://oer.wjec.co.uk)).*

## Printing with/without comments and annotations

The exemplar in this booklet includes comments/annotations from the Principal Examiner.

If you are printing this exemplar, the printed version will by default include the Principal Examiner's comments/annotations:

✓ of all of the disadvantages. What do you think? ...  
Are you going to get a tattoo or has this article ...  
~~has~~ changed your mind?

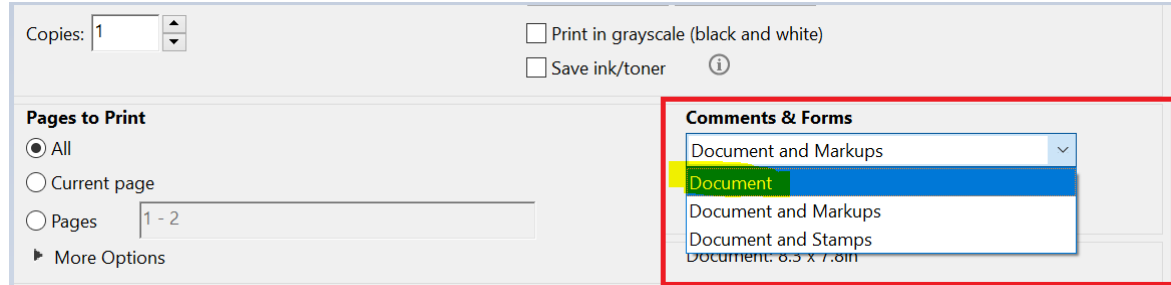
Secure awareness of intended audience.  
Written with an easy, confident style.  
Shows clear shape and structure.  
Some errors but a decent level of control.

8+5

13

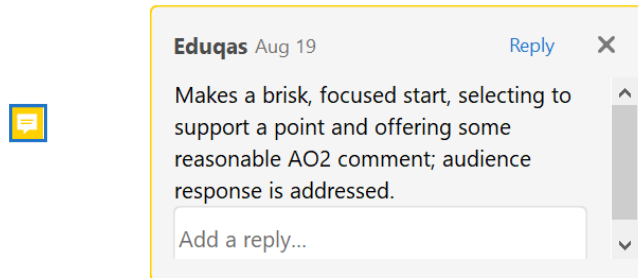
If you would like to print a 'clean' copy of the exemplar, this can be done by adjusting the print settings as follows:

After selecting *File > Print*, you will need to change the option in the dropdown menu under 'Comments and Forms' to 'Document'. This will then print the document without the Principal Examiners' comments.



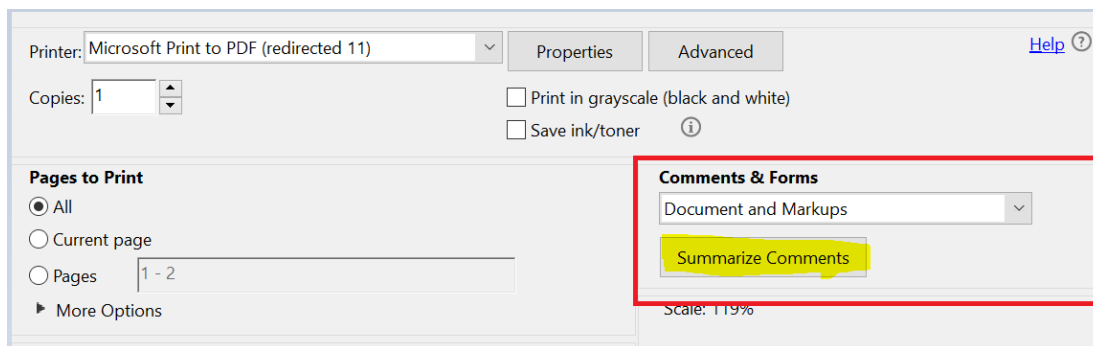
## Printing comments with sticky notes

If you are printing the exemplar in this document, the Principal Examiner comments contained in the sticky notes will not automatically be printed.



If you would like your printed copy to include the Principal Examiner comments you will need to adjust the printer settings as follows:

After selecting *File > Print*, you will need to click 'Summarize Comments' in the 'Comments & Forms' area of the print settings.



The Principal Examiner comments will then be printed at the end of each page of exemplar:

## Summary of Comments

### Page: 1

Number: 1	Author: Eduqas	Subject: Sticky Note	Date: 19/08/2019 11:33:48
Makes a brisk, focused start, selecting to support a point and offering some reasonable AO2 comment; audience response is addressed.			
Number: 2	Author: Eduqas	Subject: Sticky Note	Date: 19/08/2019 11:33:48
The approach here is rather formulaic, but the focus is clear and each paragraph hits both assessment objectives.			
Number: 3	Author: Eduqas	Subject: Sticky Note	Date: 19/08/2019 11:33:48
Perhaps, but this point isn't fully explained.			

2. Product designers have access to a vast range of both new and traditional materials.

(a) Explain the term 'composite material'.

[3]

.....

.....

.....

.....

.....

.....

(b) The product pictured below utilises a composite material in the frame. State a possible composite material and explain in detail the reasons for its use.

[5]



.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



		AO3	AO4	Mark
(b)	The product pictured below utilises a composite material in the frame. State a possible composite material and justify the reasons for its use.		✓	5
	<p><i>The response must explain justify the identification of an appropriate composite material.</i></p> <p><i>Incorrect/ no response</i></p> <p><i>Identification of suitable material.</i></p> <p><i>Example: Carbon Fibre</i></p> <p><b>1 Mark for each detailed reason. Maximum 4 Marks</b></p> <p><b>Based on:</b></p> <ul style="list-style-type: none"> <li>• <i>Very strong and light material (Good strength to weight ratio) this property is useful for a cyclist reducing the weight of the bike.</i></li> <li>• <i>Resistant to corrosion, allows the bike to be used in all weather conditions and reduces the need for a weather proof coating.</i></li> <li>• <i>Can be formed using a mould allowing for a range of aerodynamic frame shapes.</i></li> <li>• <i>Good resistance to fatigue allows the frame to withstand the impacts of general road cycling.</i></li> <li>• <i>Provides a rigid frame which allows for the effective transfer of energy from the cyclist through the frame and wheels to the road.</i></li> </ul> <p><b>Accept any other appropriate response</b></p>			<p><b>0 Marks</b></p> <p><b>1 Mark</b></p> <p><b>4 Marks</b></p>

2. Product designers have access to a vast range of both new and traditional materials.

(a) Explain the term 'composite material'.

[3]

The term Composite material means a material that ~~can't be~~ is eco friendly. It is usually strong and made of different materials to form one material.

(b) The product pictured below utilises a composite material in the frame. State a possible composite material and explain in detail the reasons for its use.

[5]



The possible material could be Carbon fibre. This doesn't rust. It's fairly strong. It's easy to mould into the frame. It has a dull look but still works. It is better than copper as copper rusts.

2. Product designers have access to a vast range of both new and traditional materials.

(a) Explain the term 'composite material'.

[3]

Composite material is natural materials such as metals, woods etc

(b) The product pictured below utilises a composite material in the frame. State a possible composite material and explain in detail the reasons for its use.

[5]



The material could be aluminium given that it is a lightweight but strong metal, making it perfect for this type of road bike that needs to be strong enough to carry a person yet still light and fast.



2. Product designers have access to a vast range of both new and traditional materials.

(a) Explain the term 'composite material'.

[3]

A composite material is a ~~mixture~~<sup>mixture</sup> or combination of other materials to create a new material with superior characteristics and properties. Carbon Fibre is an example of a composite material that is far lighter and stronger than its competitors. It is made by combining resin and strands/fibres of carbon.

(b) The product pictured below utilises a composite material in the frame. State a possible composite material and explain in detail the reasons for its use.

[5]



Carbon Fibre would be a good composite material for use within this bikes frame. Carbon fibre was a blend of carbon fibres/strands and resin to create a strong and sturdy material. It is well known for being as strong as steel but also being much lighter. This allows the cyclist to accelerate quicker and makes the bike lighter and easy to carry. Carbon fibre can be brought in sheets and so can be shaped easily to form complex shapes such as the bikes frame. The strength of Carbon fibre means it will hold the weight of the cyclist.

3. A storage unit is pictured below. This unit is part of a storage system sold both online and through retail outlets.



- (a) The storage system uses a broad range of bought-in components in its assembly. Explain **two** advantages of using bought-in components. [4]

.....

.....

.....

.....

.....

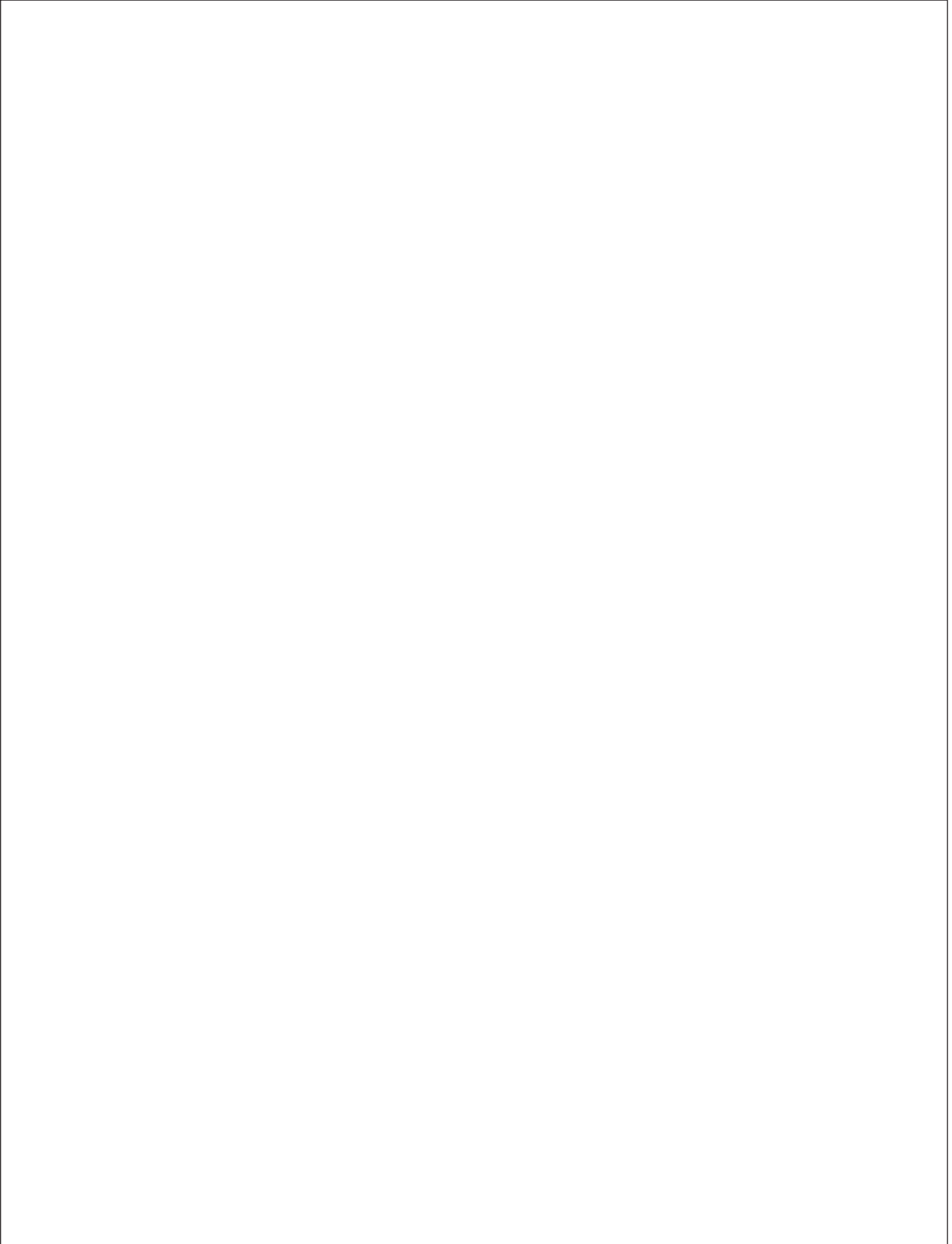
.....

.....

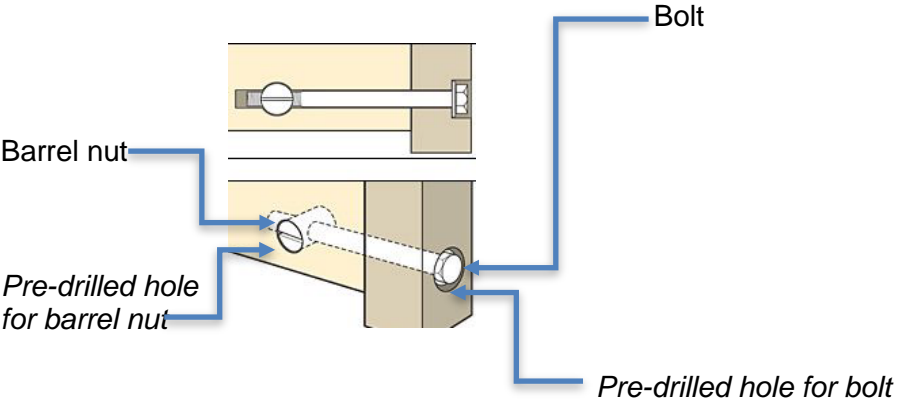
.....

.....

- (b) Using notes and sketches describe an example of a semi-permanent fixing method that could be used to join the storage system together. [4]





	AO3	AO4	Mark
(b)		✓	4
<p><i>The response must identify and describe the basic elements of a suitable Knock Down Fitting.</i></p> <p><i>Incorrect/ no response</i></p> <p><i>Diagram with <b>no</b> explanation maximum 2 Marks.</i>  <i>Explanation with <b>no</b> diagram maximum 2Marks.</i></p> <p><i>Identification of suitable fitting;</i>  <i>Barrel nut and Bolt,</i>  <i>Cam fitting,</i>  <i>T-Nut and bolt,</i>  <i>Corner Plate,</i>  <i>Screw socket,</i>  <i>Screw connector,</i>  <i>Chipboard Fastener,</i>  <i>Block connector.</i></p> <p><i>Supporting diagram with relevant details/ information identified.</i></p> 			<p><b>0 Marks</b></p> <p><b>1 Mark</b></p> <p><b>3 Marks</b></p>

3. A storage unit is pictured below. This unit is part of a storage system sold both online and through retail outlets.

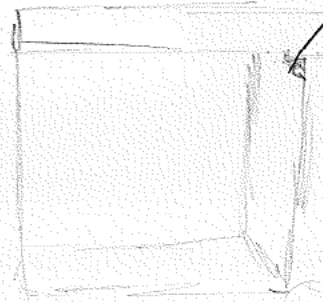


- (a) The storage system uses a broad range of bought-in components in its assembly. Explain **two** advantages of using bought-in components. [4]

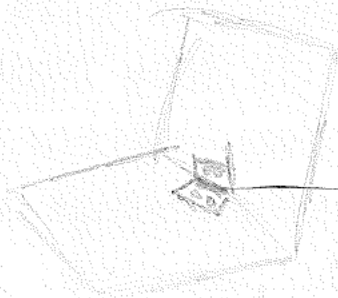
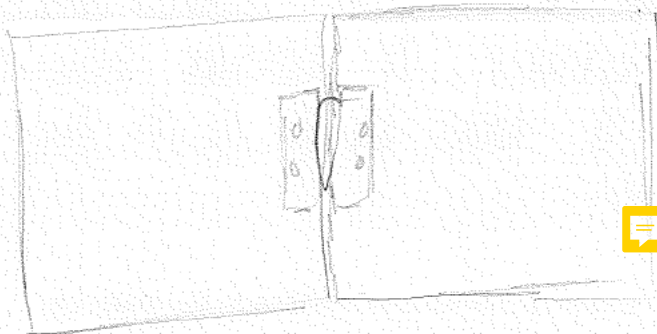
One advantage is that it takes up less packaging space meaning it will use less materials. Another advantage is that they are not as visible to see on the storage system and they hold it together & securely.

- (b) Using notes and sketches describe an example of a semi-permanent fixing method that could be used to join the storage system together. [4]

Hinge



hinge  
to hold  
them in  
place.



The hinge  
can fold up.

You can take the hinge off if needed when disassembling the storage unit. Also they can vary in size depending on the size of the storage unit.

3. A storage unit is pictured below. This unit is part of a storage system sold both online and through retail outlets.

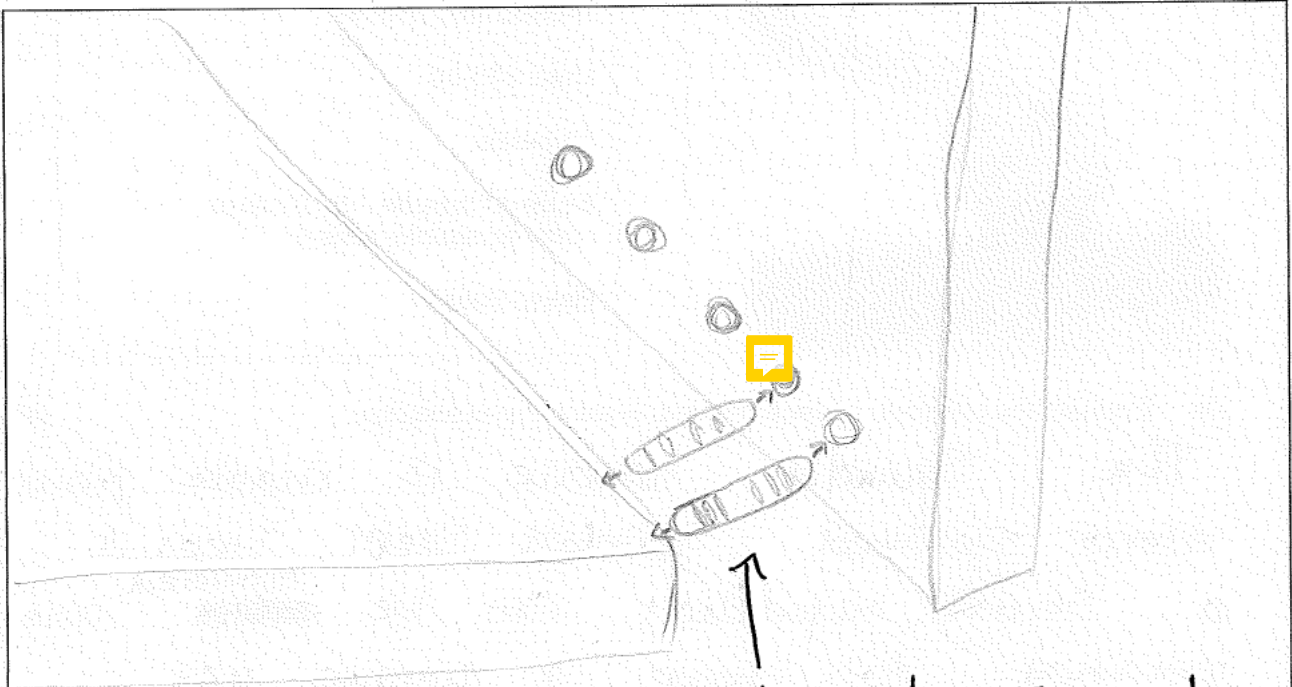


- (a) The storage system uses a broad range of bought-in components in its assembly. Explain **two** advantages of using bought-in components. [4]


an advantage would be that it is  
cheaper and also that its more  
convenient



- (b) Using notes and sketches describe an example of a semi-permanent fixing method that could be used to join the storage system together. [4]



using dowels and

holes would work as  
you would require   
no glue or nails etc,

but, you would need to  
drill holes in that are  
fairly irreversible so unless it  
is guaranteed this would be concealed,  
it may not work but,  
it is certainly semi-permanent

3. A storage unit is pictured below. This unit is part of a storage system sold both online and through retail outlets.

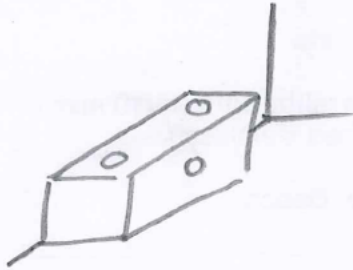


- (a) The storage system uses a broad range of bought-in components in its assembly. Explain **two** advantages of using bought-in components. [4]

Bought in components are cheaper for a manufacturing company as they do not need to build the part as it arrives in one piece. This means a company needs less staff and can save money. Manufacturing parts is often more time consuming than buying in components meaning that bought in components save time for the manufacturing process. This allows more room for profits when selling the product.

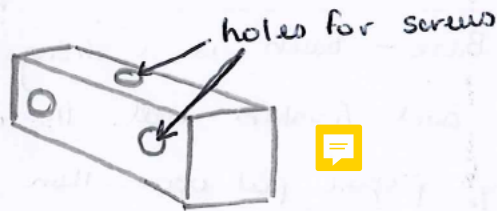
(b) Using notes and sketches describe an example of a semi-permanent fixing method that could be used to join the storage system together. [4]

Nylon corner block  
- knock down fitting

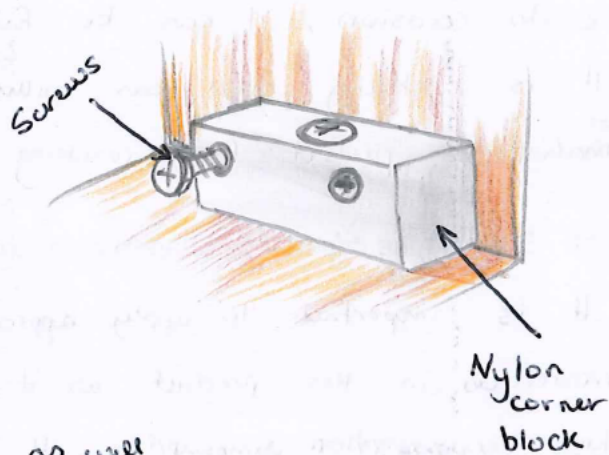


a nylon corner block is a corner block that screws are inserted into it is used to join two corners or sides of a product such as a wheel or chest.

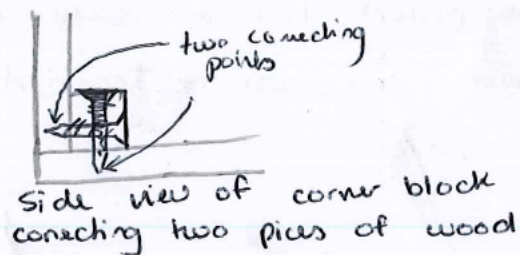
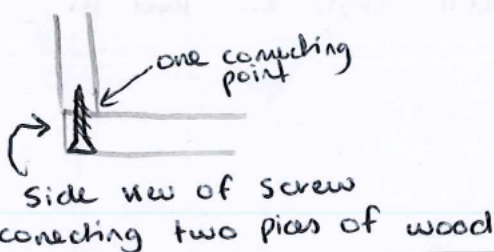
The nylon corner block is a knock down fitting meaning that it can be taken from its position and the whole product will come apart. This is useful in knock down furniture or flat pack furniture.



A corner block is cheap to use as it can be manufactured on a mass production level as it can be made by 3D printing or injection moulded.



A corner block is quite strong as well when compared to screws or bolts as it ~~is~~ is connected to the two pieces of wood by 2 places



5. Many products achieve the status of a design classic.

Explain the meaning of the term 'design classic', and describe the key features of **one** named design classic. [8]

*Marks will be awarded for the content of the answer and the quality of communication.*

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Question 5	Many products achieve the status of a 'design classic'.			
		<b>AO3</b>	<b>AO4</b>	<b>Mark</b>
	Explain the meaning of the term 'design classic' and describe the key features of a named design classic.	✓		8
	<p><b>Guidance to markers</b></p> <p><i>Incorrect/ no response</i></p> <p><i>Response <b>could</b> be based on:</i></p> <p><i>The original Mini</i>  <i>Fiat 500</i>  <i>Dieter Rams T3 transistor radio</i>  <i>Apples first ipod</i>  <i>London underground map</i>  <i>Road signs</i></p> <p>A Design Classic is a manufactured product that has:</p> <ul style="list-style-type: none"> <li>• Timeless aesthetic appeal. Regardless of the year or time period it was produced.</li> <li>• Remained desirable regardless of the year of its design.</li> <li>• Attained its status over time.</li> <li>• Innovation and has lasting impact on society, together with influence on later designs.</li> <li>• Instantly recognisable features and will provoke different emotional responses.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• The candidate has a simplistic knowledge of the issues associated with the question.</li> <li>• Limited use of terminology and technical language.</li> <li>• The candidate has limited knowledge of the aesthetic qualities of the product and/ or consideration for the user in their design.</li> <li>• The candidate will express basic ideas clearly, if not always fluently. Answers may deviate from the question or not be relevant.</li> <li>• Grammar, punctuation and spelling may be weak impacting on effective communication.</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• The candidate has a basic understanding of the issues associated with the question.</li> <li>• Satisfactory use of terminology and technical language.</li> <li>• The candidate has some general knowledge of the aesthetic qualities and consideration for the user in the design aspects, but they are not always considered in detail.</li> <li>• The candidate will express straightforward ideas clearly, if not always fluently. Answers may deviate from the question or be weakly presented.</li> <li>• There may be some errors of grammar, punctuation and spelling but is still able to communicate the issues</li> </ul>			<p><b>0 Marks</b></p> <p><b>1-2 Marks</b></p> <p><b>3-4 Marks</b></p>

	<p><b>Level 3</b></p> <ul style="list-style-type: none"><li>• The candidate demonstrates a clear understanding of the issues associated with the question.</li><li>• Good use of terminology and technical language.</li><li>• The candidate has demonstrated real knowledge about the aesthetic qualities, linked to the products discussed. There are descriptive comments about some elements of the needs of the end user.</li><li>• The candidate will express moderately complex ideas clearly and fluently, through well-linked sentences and paragraphs. Answers will be generally relevant and structured.</li><li>• There may be occasional errors of grammar, punctuation and spelling.</li></ul> <p><b>Level 4</b></p> <ul style="list-style-type: none"><li>• The candidate demonstrates a specific ability to analyse questions, considers a wide range of factors and has a clear understanding of the issues associated with the question.</li><li>• Very good use of terminology and technical language.</li><li>• The candidate has demonstrated detailed knowledge about the aesthetic qualities, linked to the products identified. There are detailed descriptive comments about specific elements of the needs of the end user.</li><li>• The candidate will express complex ideas extremely fluently. Sentences and paragraphs will follow on from each other smoothly and logically. Answers will be consistently relevant and structured.</li><li>• There will be few, if any, errors of grammar, punctuation and spelling.</li></ul> <p><b>Only Level 1 credit for stating a definition of the term <i>Design Classic</i></b></p> <p><b>Accept any other appropriate response</b></p>	<p><b>5-6 Marks</b></p> <p><b>7-8 Marks</b></p>
--	---	---

5. Many products achieve the status of a design classic.

Explain the meaning of the term 'design classic', and describe the key features of **one** named design classic. [8]

Marks will be awarded for the content of the answer and the quality of communication.

The term ~~classic~~ design classic means a iconic design that later designers inspired off. The key features of a mini is that it is small. It will have had a smaller engine. It didn't need much fuel. They came in red or green ~~with~~ with a white roof sometimes. They had small boots, ~~had~~ had better acceleration. They <sup>have</sup> two extra front headlights for when it got really dark. The later ~~des~~ models went off the original design. The suspension ~~is~~ <sup>is</sup> low. They had manual windows meaning you would need to turn the lever.

5. Many products achieve the status of a design classic.

Explain the meaning of the term 'design classic', and describe the key features of **one** named design classic. [8]

Marks will be awarded for the content of the answer and the quality of communication.

a design classic is one that is iconic and trend setting, a mini cooper is an example of this.

A mini cooper started out very small and some were very colourful, they aren't too 'high end' so were affordable and the name 'mini cooper' has stuck around for decades, with everyone knowing it, making this car iconic and a design classic.



5. Many products achieve the status of a design classic.

Explain the meaning of the term 'design classic', and describe the key features of **one** named design classic. [8]

Marks will be awarded for the content of the answer and the quality of communication.

Design classic is a term given to a design that becomes so well known and sought after that it becomes a classic. A clear example of a design/product/item that has become a design classic is the Classic Mini. The Mini became an instant classic due to its unique design. It was one of the first cars to be designed inside out with its wheel arches protruding outwards, which allowed it to be so small and compact.

The design of the Mini made it a British icon recognisable all around the world. This is something that coins the term 'design classic', that it is something so recognisable that anyone anywhere can recognise it. The Mini inspired an entire new group/family of cars the 'super mini' or small hatchbacks.