

SAMPLE RESISTANT MATERIALS

GCSE EXAMINATION PAPER

CENTRE NUMBER

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CANDIDATE NUMBER

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SAMPLE PAPER 2 - MARK SCHEME

SURNAME _____

FORENAME(S) _____

CANDIDATE SIGNATURE _____

2 HOURS ALLOWED

Materials required for this examination:

- normal writing and drawing instruments
- a calculator
- a protractor.

Instructions to candidates:

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the Preliminary Material that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers.

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SECTION A

Answer all the questions

In this section you will be asked to:

- Write a Design Specification.
- generate a range of designs.
- develop an idea.

Design Brief:

A manufacturer of remote control organisers, has asked you to produce a range of designs for an organiser to be used in a living room / bedroom / study.

Produce **five** designs for a remote control organiser, for a living room / bedroom / study.

Below are shown a number of typical living rooms /bedrooms, where remote controls may be used.



Design Specification.

1. Write three design requirements of a remote control organiser. Include an explanation for each of your requirements.

Example:

Requirement: The organiser should be designed/manufactured, to hold a range of different sizes of remote controls.

Explanation: Remote controls for different electronic equipment are never the same size. They vary in size and their shapes differ slightly.

REQUIREMENT 1:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

REQUIREMENT 2:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

REQUIREMENT 3:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/rmflsh1/remote10.html>

<http://www.technologystudent.com/rmflsh1/remote11.html>

<http://www.technologystudent.com/rmflsh1/remote12.html>

<http://www.technologystudent.com/rmflsh1/remote13.html>

This question is about creative design.

You are advised to spend about 15 minutes on this question.

2. Read the design brief and your design requirements again, before attempting the question below.

Sketch **FOUR** different designs for a remote control organiser.

All your designs must store a range of remote controls.

Marks will be awarded for creativity and imagination. **(4 X 5 marks)**

Up to 5 marks for each idea.

If more than four ideas are sketched, mark the first four.

For each idea:

0 marks for just sketch.

1 mark for basic sketch with labels.

2-3 marks for sketch and labels/notes

4-5 marks for detailed sketch and notes/labels.

QUESTION 2 CONTINUED:

Question 3. This is concerned with developing a design.

You are advised to spend about 12 minutes on this question.

Choose **one** of your designs from Question 2.

Develop your initial design to a final version. Include of notes and sketches.

You will be awarded marks for:

- how you developed your design to meet the needs of the user. **3 marks**
- details of manufacture / construction. **3 marks**
- details relating to functions, features and sizes. **3 marks**
- your explanation of materials and finishes. **2 marks**

Awarded marks for:

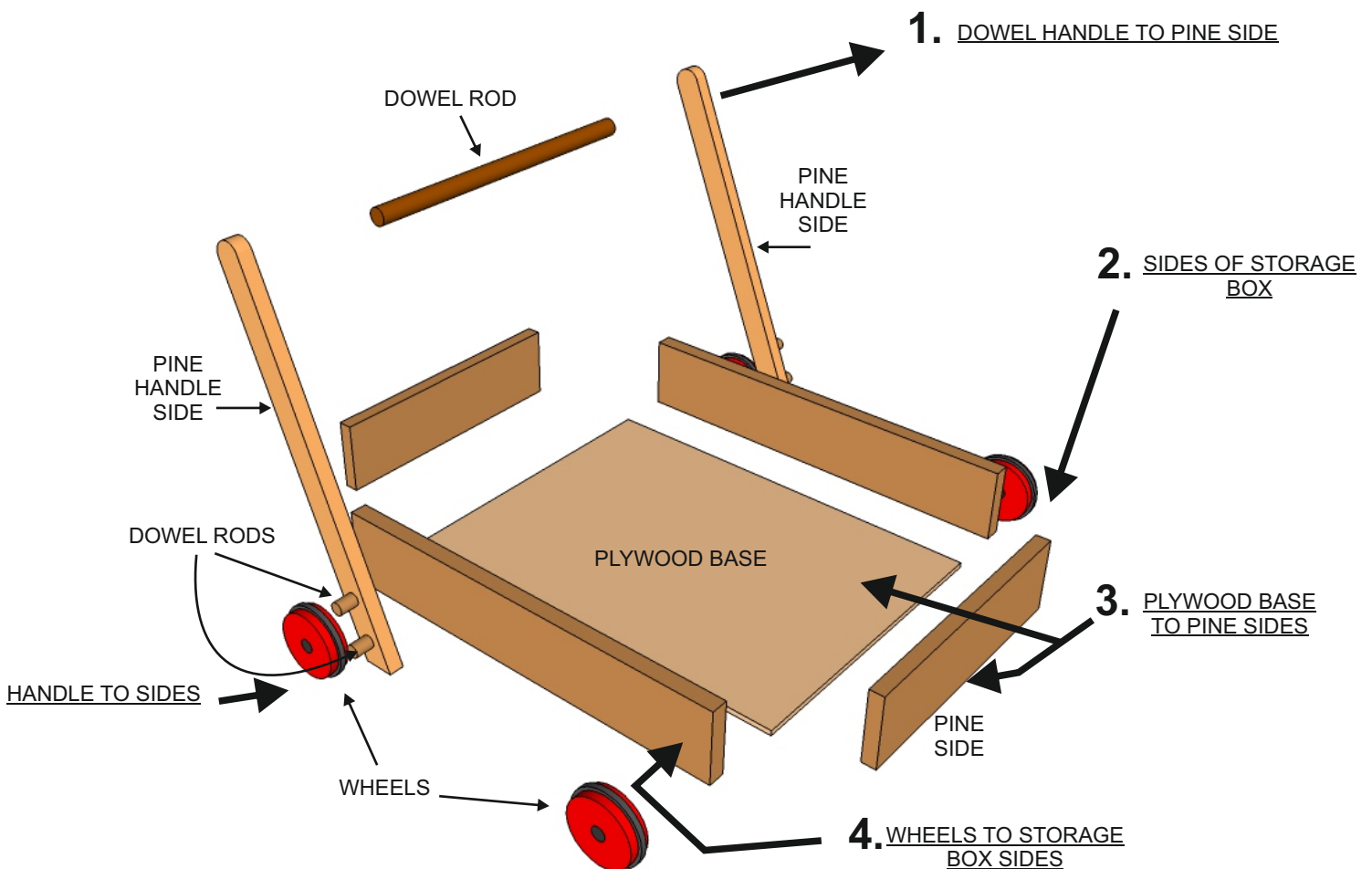
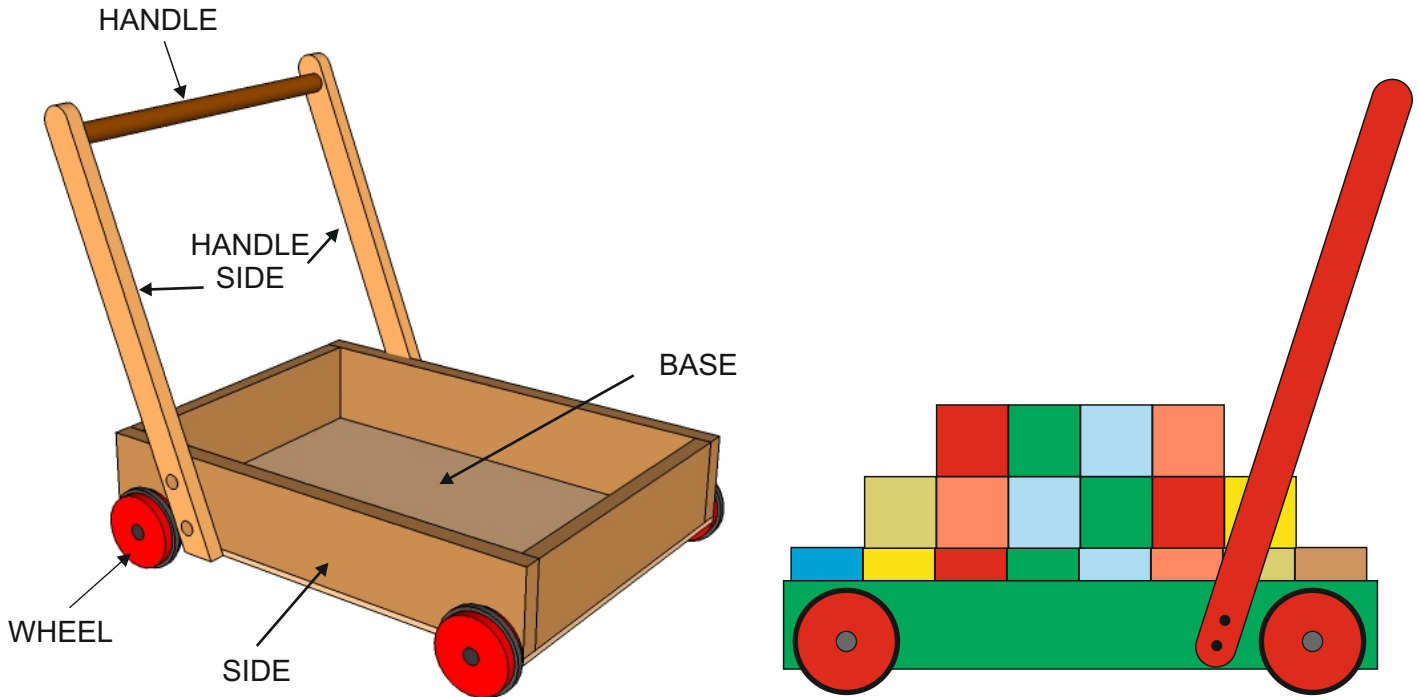
- *development of the design to meet the needs of the user. **3 marks***
- *details of manufacture / construction. **3 marks***
- *details relating to functions, features and sizes. **3 marks***
- *explanation of materials and finishes. **2 marks***

QUESTION 3 CONTINUED:

SECTION B
Answer all the questions

4. This question is about manufacturing a product.

Carefully study the drawings of the 'building block trolley for a young child, shown below.



4a. Using notes and sketches describe how you would manufacture the trolley in a typical workshop (**excluding the wheels**)

The trolley is for use by a young child and consequently pay particular attention its safe use.

In your answer, include an explanation of:

- each stage of manufacture **5 marks**
- sketches. **3 marks**
- notes. **3 marks**

Include the names of all the equipment you would use.

ANSWER THIS QUESTION ON THE NEXT TWO PAGES
USING THE TABLE PROVIDED

QUESTION 4a.

Use this table for your notes and sketches

<p>STAGE 1:</p> <hr/> <hr/> <hr/> <hr/>	
<p>STAGE 2:</p> <hr/> <hr/> <hr/> <hr/>	<p>Follow the link for detailed information of the manufacturing process.</p> <p>Award up to 5 marks for the range of stages (answers may vary).</p> <p>1 -2 marks for minimal understanding of the stages of manufacturing.</p>
<p>STAGE 3:</p> <hr/> <hr/> <hr/> <hr/>	<p>3- 5 marks for increased detail (teacher discretion required).</p> <p>In addition up to 3 marks for quality of sketches and 3 marks for detail of notes.</p> <p>Names of equipment must to included.</p>
<p>STAGE 4:</p> <hr/> <hr/> <hr/> <hr/>	

QUESTION 4a CONTINUED

STAGE 5:

STAGE 6:

STAGE 7:

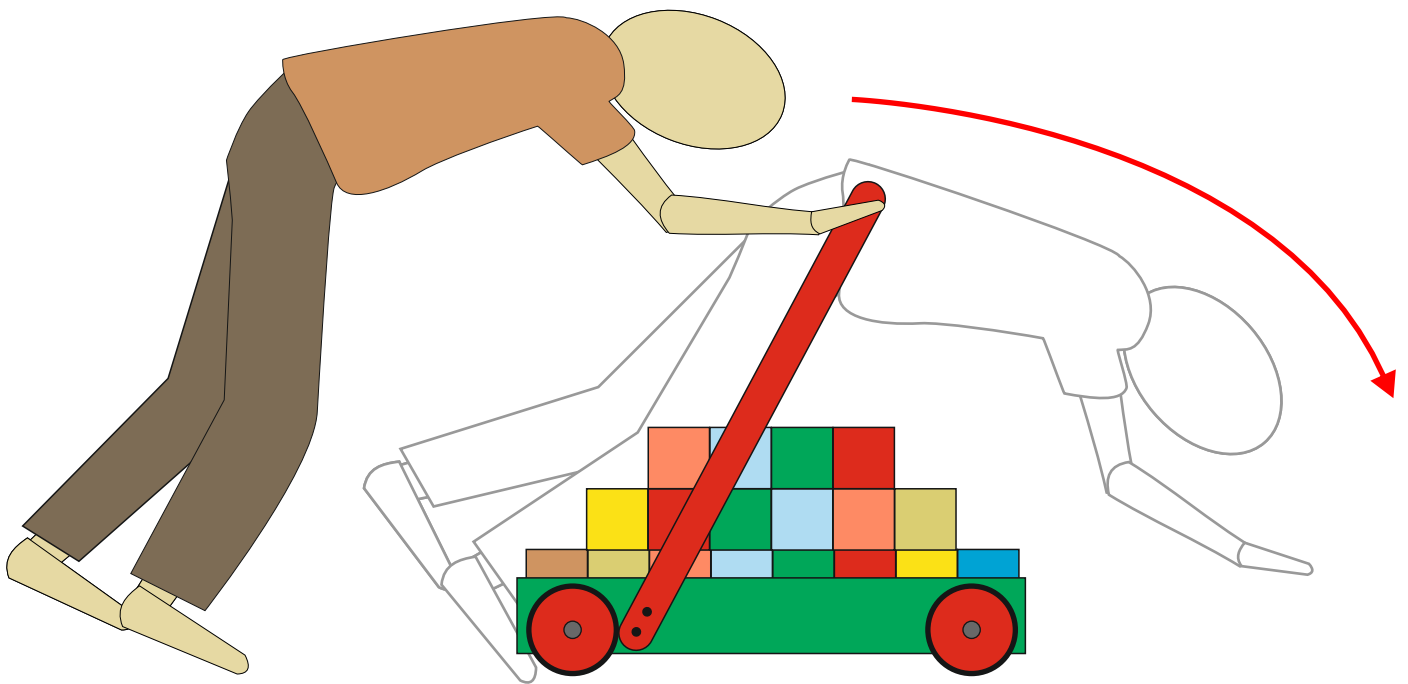
STAGE 8:

STAGE 9:

4b. Describe a potential health and safety issue concerning the folding handle and use of the trolley by young children. (See the diagram below). **3 marks**

1 mark for basic description
2 marks for more detail.
3 marks for full description.

Sample - *'It is possible for a young child to put too much pressure on the handle and to fall forwards, resulting in injury. The 'permanent' fixing of the handle to the storage unit appears too weak. It needs strengthening or reinforcing to ensure this type of accident cannot occur.'*



4c. The building block trolley has been altered so that the handle can be folded level with the storage / base. This is seen in diagrams A, B and C.

DIAGRAM 'A'

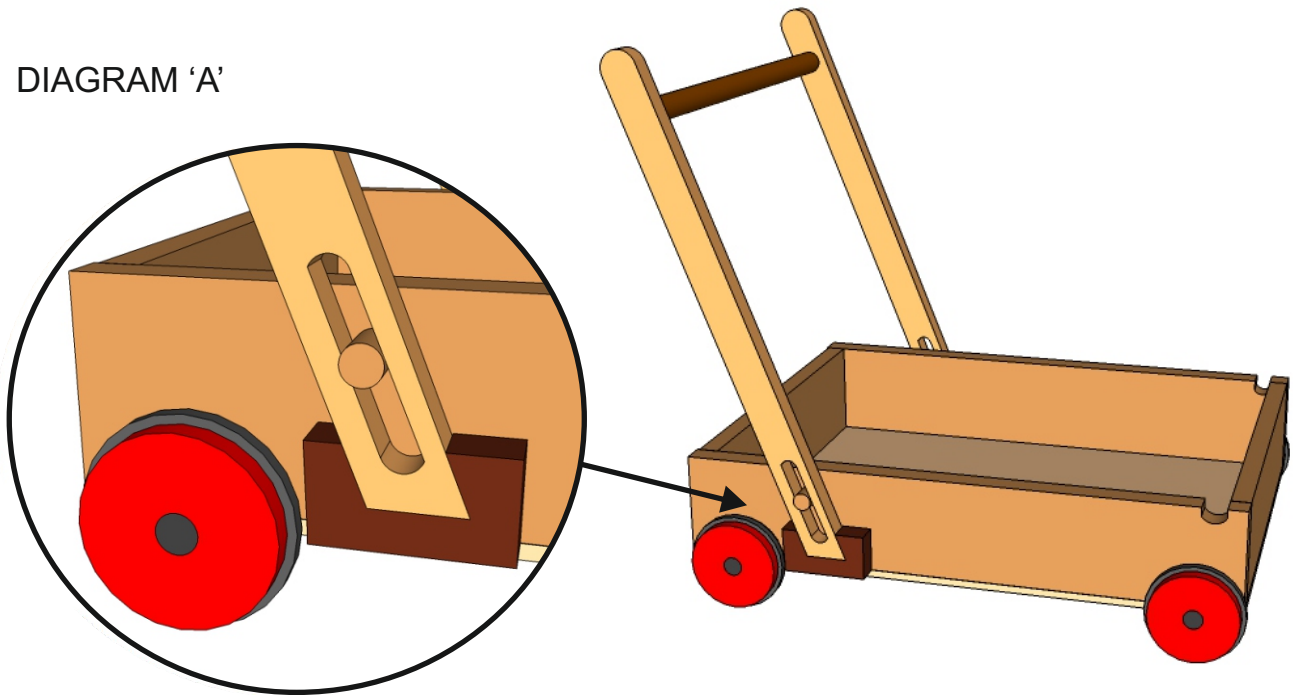


DIAGRAM 'B'

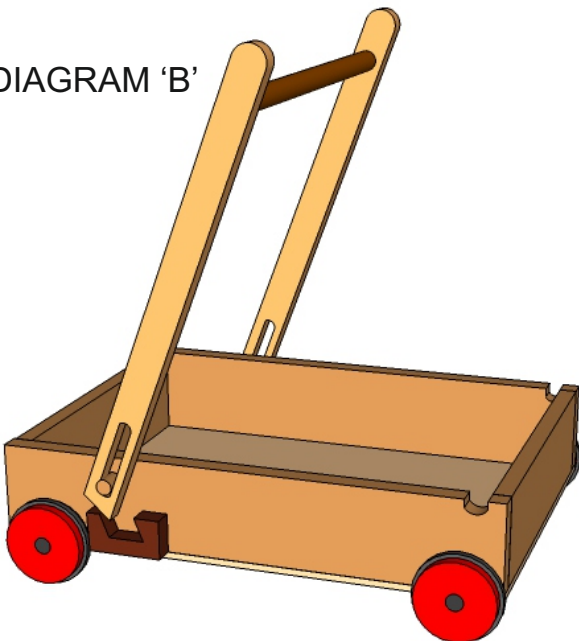
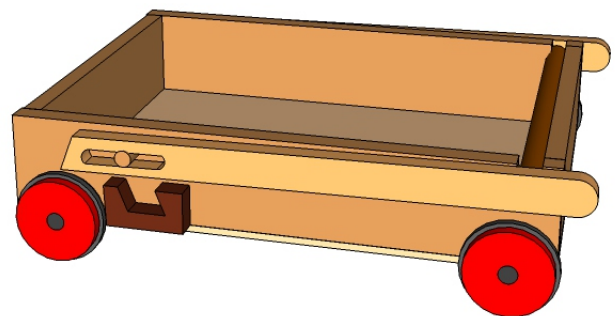


DIAGRAM 'C'



Describe the alterations to the trolley that allow the handle to fold down. **3 marks**

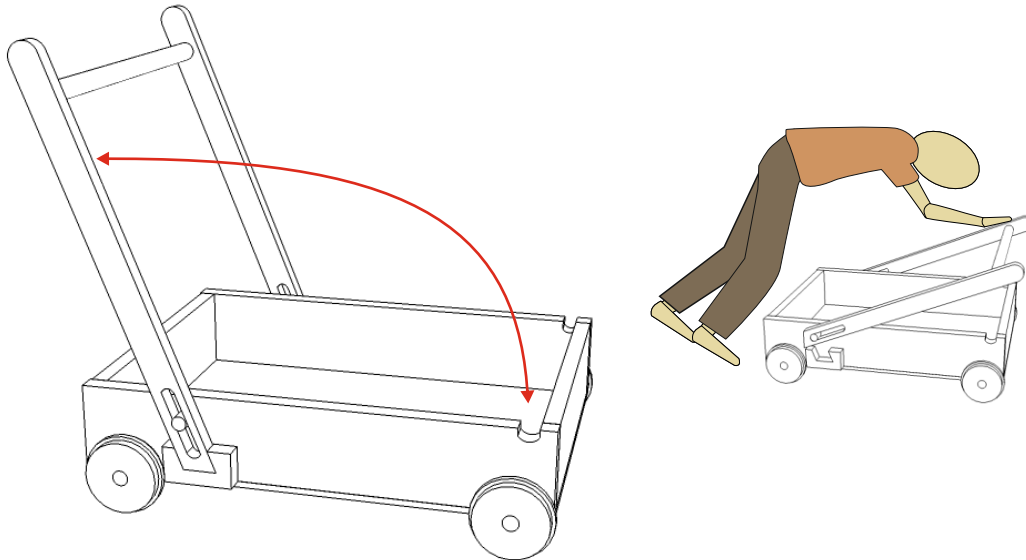
1 mark for basic description
2 marks for more detail.
3 marks for full description.

Sample - 'A shaped block has been added to the area in front of the 'back' wheel. The slot in the handle allows it to be lifted upwards, freeing it from the block and then to fold forwards. The handle folds so that it is parallel with the top surface of the storage unit'. The trolley can be stored more easily as a result.'

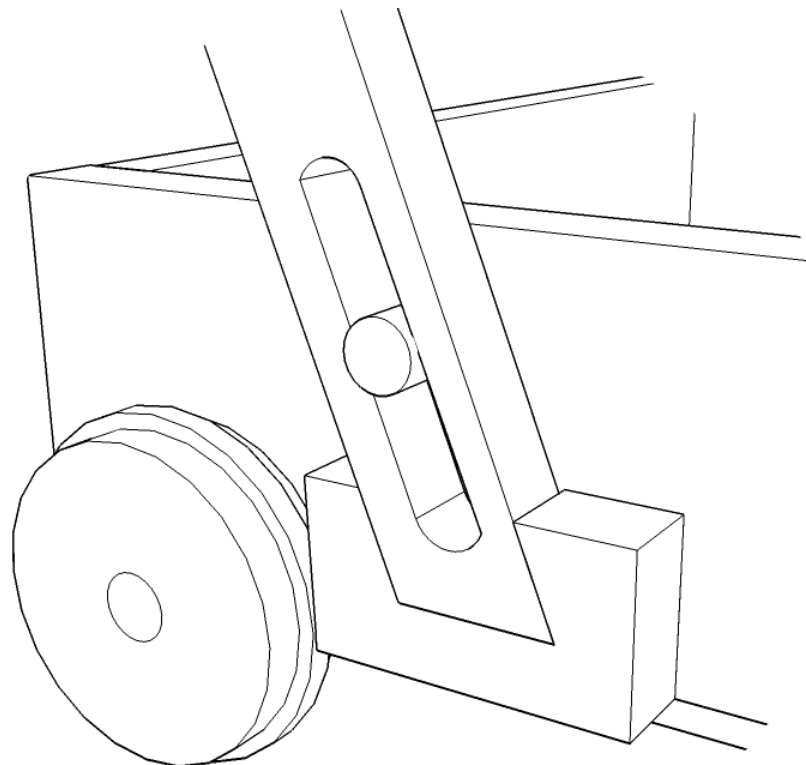
4d. The trolley folds away to save space when the building block trolley is put in storage. However, a similar design fault has been identified. It is possible that the handle could fold accidentally when the trolley is pushed. This could result in an accident (see diagram below).

A locking mechanism is needed, that will fix the handle in position and not allow it to fold away accidentally.

Sketch a potential mechanism on the diagram opposite. Add labels and notes to help explain your design. 5 marks



ADD YOUR DESIGN TO THIS DIAGRAM



1 mark for a basic drawing of a solution

2 marks for a basic drawing and limited labels explaining a solution.

2-4 marks for more detail and a reasonable drawing /sketch with notes and labels.

5 marks for a detailed sketch with labels and detailed notes.

Teacher discretion regarding the solution is required. The solution may be the addition of a child proof pin that locks the mechanism in position but can be removed by an adult, when storage is required. A locking device that needs a special key etc....

Question 5 is concerned with materials and their properties.

5a. Select one of the products shown in the table below. Then, describe two of the features that mean it is suitable for manufacture on a production line. 2 x 2 marks

<p>STEEL CHAIR</p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>	<p>PACKAGE</p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>	<p>POLYPROP CHAIR</p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>
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TO HELP YOU ANSWER THIS QUESTION

<http://www.technologystudent.com/prddes1/barcelona2.html>
<http://www.technologystudent.com/grp08/pack1.html>
<http://www.technologystudent.com/prddes1/polyprop2.html>

PRODUCT:

FEATURE 1:

For any marks the product must be named.

*1 mark - a basic description of a feature.
2 marks for a full description of a feature.*

FEATURE 2:

For any marks the product must be named.

*1 mark - a basic description of a feature.
2 marks for a full description of a feature.*

5b. For the product you selected in question 5a - name and describe one of the industrial processes used in it's manufacture. 8 marks

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/barcelona2.html>
<http://www.technologystudent.com/grp08/pack1.html>
<http://www.technologystudent.com/prddes1/polyprop2.html>

INDUSTRIAL PROCESS: _____

DESCRIPTION OF MANUFACTURING PROCESS
INCLUDE NOTES AND A SKETCH(S)

Follow the links for possible answers.

1- 2 marks for the identification of the correct process (several answer possible). No notes or very limited notes.

3-4 Notes and sketches/sketch. Clear understanding of the process, although only reasonable overall description.

5- 8 marks for increased detail and clarity of sketch / sketches (teacher discretion required).

6. This question relates to environmental issues

6a. Explain each of the following environmental terms. **3 x 2 marks**

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/downcyc1.html>

Downcycling:

*1 mark for basic description
2 marks for detailed description.*

Follow the links for sample answers / information.

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/closetloop1.html>

Closed Loop Recycling:

*1 mark for basic description
2 marks for detailed description.*

Follow the links for sample answers / information.

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/envirmod1.html>

Environmental Modernism:

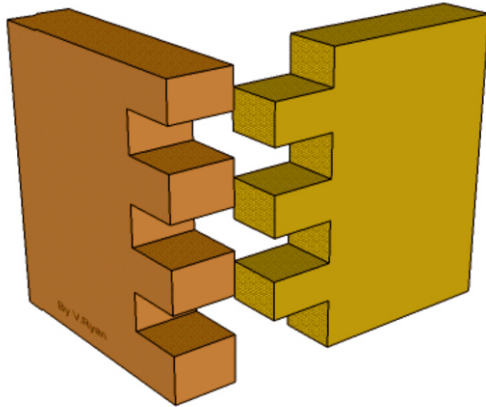
*1 mark for basic description
2 marks for detailed description.*

Follow the links for sample answers / information.

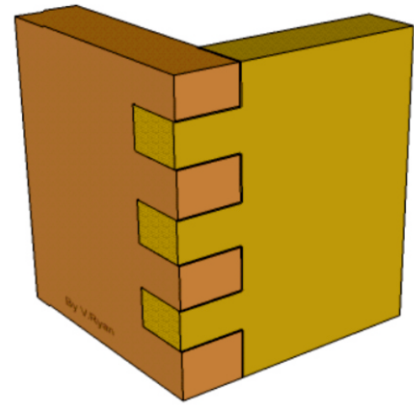
7. This question is concerned with planning and manufacturing

7a. Below are two views of a typical finger/comb. Draw up to six stages of the marking out and cutting one set of 'fingers'. **12 marks**

DISASSEMBLED



ASSEMBLED / GLUED



1

up to 2 marks for each stage.

1 mark - basic description, involving a sketch or description.

2 marks for notes and a sketch - clear understanding of the stage expressed.

Where less than six stages have been describe, but in detail, full marks can still be awarded (teacher discretion).

2

3

4

5

6

8. This set of questions is about Inclusivity and products.

8a. What is an inclusive design? 2 marks

Follow the link for a detailed answer / description.

1 mark for a basic understanding.

2 marks for a clear description and understanding.

8b. Why can this adjustable office chair be regarded as an inclusive product? 4 marks

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/pod1.html>



Follow the link for a detailed answer / description.

1 mark for a basic understanding.

2 marks for a clear description and understanding.

3-4 marks for very good detail and analysis of the inclusivity of the chair.

9. This set of questions is concerned with production methods and product systems.

**TO HELP YOU ANSWER
THIS QUESTION**

<http://www.technologystudent.com/joints/scalep1.htm>

http://www.technologystudent.com/joints/revcard_oneoff1.html

http://www.technologystudent.com/joints/rev_batch1.html

9a. What is the difference between Prototype Production and Batch Production? Include an example of a product manufactured by each system. 4 marks

1 mark for a basic understanding - only one difference described.

2 marks for a clear understanding but limited description.

3-4 marks for a detailed answer

Follow the links for information regarding this question / answer.

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/joints/pet1.html>

<http://www.technologystudent.com/joints/pety2.html>

10a. The products shown below are manufactured from POLYETHYLENE TEREPHTHALATE, PET, PETE, (POLYESTER).



Write two reasons why this type of material is suitable for the products above. 2 marks

REASON 1:

*1 mark for a basic / limited answer
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

REASON 2:

*1 mark for a basic / limited answer
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

**10b. The clothing is manufactured from nylon.
Write two reasons why this material is suitable. 2 marks**



TO HELP YOU ANSWER THIS QUESTION

http://www.technologystudent.com/joints_fish/nylon1.html

REASON 1:

*1 mark for a basic / limited answer
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

REASON 2:

*1 mark for a basic / limited answer
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

TO HELP YOU ANSWER THIS QUESTION Follow the link below.

<http://www.technologystudent.com/prddes1/kite1.html>

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<https://www.facebook.com/groups/254963448192823/>

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11a. These questions are related to British Standards and European Standards (8 marks in total)

What is the British Standards Institute? 2 marks

*1 mark for a basic / limited answer
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

11b. What is the British Standards Institute Kite Mark? Include a sketch. 2 marks

*1 mark for a basic / limited answer - only a sketch OR notes.
2 marks for a clearly expressed answer with both notes and symbol.*

Follow the links for detailed information / answers.

11c. What is the Conformite European Symbol? Include a sketch of the symbol. 2 marks

*1 mark for a basic / limited answer - only a sketch OR notes.
2 marks for a clearly expressed answer with both notes and symbol.*

Follow the links for detailed information / answers.

11d. How do the two standards differ? 2 marks

*1 mark for a basic / limited understanding
2 marks for a clearly expressed answer.*

Follow the links for detailed information / answers.

TO HELP YOU ANSWER THIS QUESTION Follow the link below.

<http://www.technologystudent.com/prddes1/standard1.html>

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**12a. What is a standard component. Give one or more examples in your answer.
4 marks**

Follow the links for information / detailed answers.

1 mark for one correct statement of fact.

2 - 4 marks - additional mark for each correct point / fact.

TO HELP YOU ANSWER THIS QUESTION Follow the link below.

<http://www.technologystudent.com/prddes1/standard9.html>

12b. Write 4 advantages to a designer and manufacturer, of using standard components in a new product. 4 marks

Follow the links for information / detailed answers.

1 mark for one correct statement of fact.

2 - 4 marks - additional mark for each correct point / fact.