



Sample assessment task	
Year level	5
Learning area	Technologies
Subject	Design and Technologies: Materials and technologies specialisations
Title of task	Kitchen utensils
Task details	
Description of task	Students will investigate the characteristics and properties of materials best suited for a variety of kitchen and house-hold devices. Students will design and make a useful domestic product device based on their investigations.
Type of assessment	Formative and summative
Purpose of assessment	To provide students with the opportunity to investigate and use a range of materials and components to design, produce and test a domestic product device
Assessment strategy	Written work, observations and a practical work sample
Evidence to be collected	Design task booklet Completed task
Suggested time	10 x 1 hour lessons
Content description	
Content from the Western Australian Curriculum	<p>Knowledge and understanding Materials and technologies specialisations Characteristics and properties of a range of materials and components, and the suitability and safe practice of their use</p> <p>Processes and production skills Investigating and defining Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task Identify available resources</p> <p>Designing Develop and communicate alternative solutions, and follow design ideas, using annotated diagrams, storyboards and appropriate technical terms</p> <p>Producing and implementing Select, and apply, safe procedures when using components and equipment to make solutions</p> <p>Evaluating Develop negotiated criteria to evaluate and justify design processes and solutions</p> <p>Collaborating and managing Work independently, or collaboratively when required, to plan, safely develop and communicate ideas and information for solutions</p>
Task preparation	
Prior learning	Students have previously engaged in research tasks and design processes.
Assessment differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Assessment task

Assessment conditions	Students collaboratively investigate the different kitchen and household devices and the different types of materials they are made from. Students independently design and build a useful domestic product in the form of a kitchen utensil, household device or storage appliance.
Resources	Task booklet Variety of materials suitable for constructing the product (such as different types and weights of fabric, various plastics, cardboards, fibreboards) Variety of fasteners (tape, binding, glue, stapler) Variety of tools for cutting appropriate, supplied materials Teachers may ask students to bring recycled materials from home

Instructions for teacher

Investigating and Defining

Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task. Identify available resources.

(Part one, approximately 3 hours)

1. Explain to students that they will design and make, from recyclable and/or new materials, a useful domestic product: a kitchen utensil, household device or storage appliance. They will start by:
 - using their task book, students describe the problem they have been given.
2. Engage the students in learning about the different types of useful domestic products:
 - kitchen utensils: cooking utensils, serving utensils, cleaning-up utensils
 - household devices: cleaning tools, gardening tools, barbeque tools
 - storage appliances: storage containers, racks or boxes for kitchen, bedroom, bathroom or other rooms
3. Discuss with students domestic product design, and allow them to respond to questions:
 - provide students with the definitions of aesthetics, ergonomics and anthropometrics, and the relationship these terms have with the design of domestic products
 - they may focus on the size and shape of handles of domestic products, and compare different handles of a variety of products:
 - does handle shape (ergonomic design) relate to the hand action (anthropometrics) when using the device?
 - they may focus on sizes of storage containers:
 - does size relate to what is being stored?
 - they may discuss the similarities and differences between the parts, features and function of the products investigated:
 - what parts and sizes are common to all products?
4. Students will investigate the characteristics and properties of a selected range of materials used to make the different types of domestic products. Students collaboratively investigate and categorise the different types of materials from which different kitchen and household devices are made.
 - Students can use simple descriptions of:
 - hard, medium, and soft
 - shiny or dull, coloured or plain, rough, textured or smooth.
5. Discuss with students the types of products the class may choose to design and make.
 - Determine what equipment and materials are available.
 - Students should be directed to a range of products that could be made from available materials.

Designing

With teacher assistance, students develop and communicate alternative solutions, and follow design ideas, using annotated diagrams, storyboards and appropriate technical terms.

(Part two, approximately 2 hours)

1. Students draw possible shapes, producing four to six drawings for development of ideas for their product.
 - They consider each of the shapes they have sketched and decide on one to make or a combination of shapes.
 - They must determine the size of the product, and likely materials for any parts.
 - They must explain why they have chosen that particular shape/s and materials.
2. Allow time for students to investigate different joining/fastening techniques, if this is needed.
 - Students select likely joining methods to make their product.
 - Add drawings and notes on construction to their task book.
3. Students develop two annotated designs of their product.
 - The first is the structural design
 - with sizes of each part and, if required, ways of joining parts
 - The second is a representation of the finished product.
 - Students collaboratively plan how to build their products, and what materials to use.

Producing and implementing; Evaluating; Collaborating and managing

Select, and apply safe procedures when using components and equipment to make solutions. Work collaboratively to safely develop and publish basic plans, including sequencing of steps.

(Part three, approximately 4 hours)

Stress the need for cooperation in sharing materials and equipment to complete the task and adhering to safety precautions.

Supervise and observe the safe use of equipment and tools.

Allow time for students to safely construct their product.

- A suitable area should be set up for the cutting of material, for glues, paints and assembling the products.
 - Students take photographs of each completed product for inclusion in task book.
1. Students now need to consider the materials they will use to make their product.
 - They need to select and briefly explain the choice of their material.
 2. Discuss with students the different design criteria to evaluate their product.
 - Students collaboratively develop three to five criteria to evaluate their products.
 3. Students work safely and collaboratively to build their chosen design; a useful kitchen utensil, household device, or storage appliance.

Evaluating; Collaborating and managing

Develop negotiated criteria to evaluate and justify design processes and solutions.

(Part four, approximately 1 hour)

1. Students collaborate to evaluate the finished products against the agreed design criteria and, by discussion, justify design processes and solutions.
2. Students complete their task book.

Instructions to students

Task Book

Name: _____

Class: _____

**Investigating and defining
Domestic products**

Describe the problem you have been given

Investigate the different types of useful domestic products. A mind map or category table may be developed (identify all sources of information).

You have been investigating different domestic products and identified different shapes. The shape of a product is influenced by the following terms used by designers.

Write the definitions of the following terms.

Aesthetics _____

Ergonomics _____

Anthropometrics _____

Select a few similar products, and discuss the parts, features and function of these products. What is similar and what is different?

Investigate and discuss the different materials that have been used to make kitchen utensils, household devices or storage appliances. What are the characteristics and properties of these materials? (Identify all sources of information.)

Timbers	Metals	Polymers

Designing

After a class discussion about domestic products, choose a product or a range of products your class can design and make.

In the space provided, develop four to six sketches of possible shapes for your ideas about product designs.

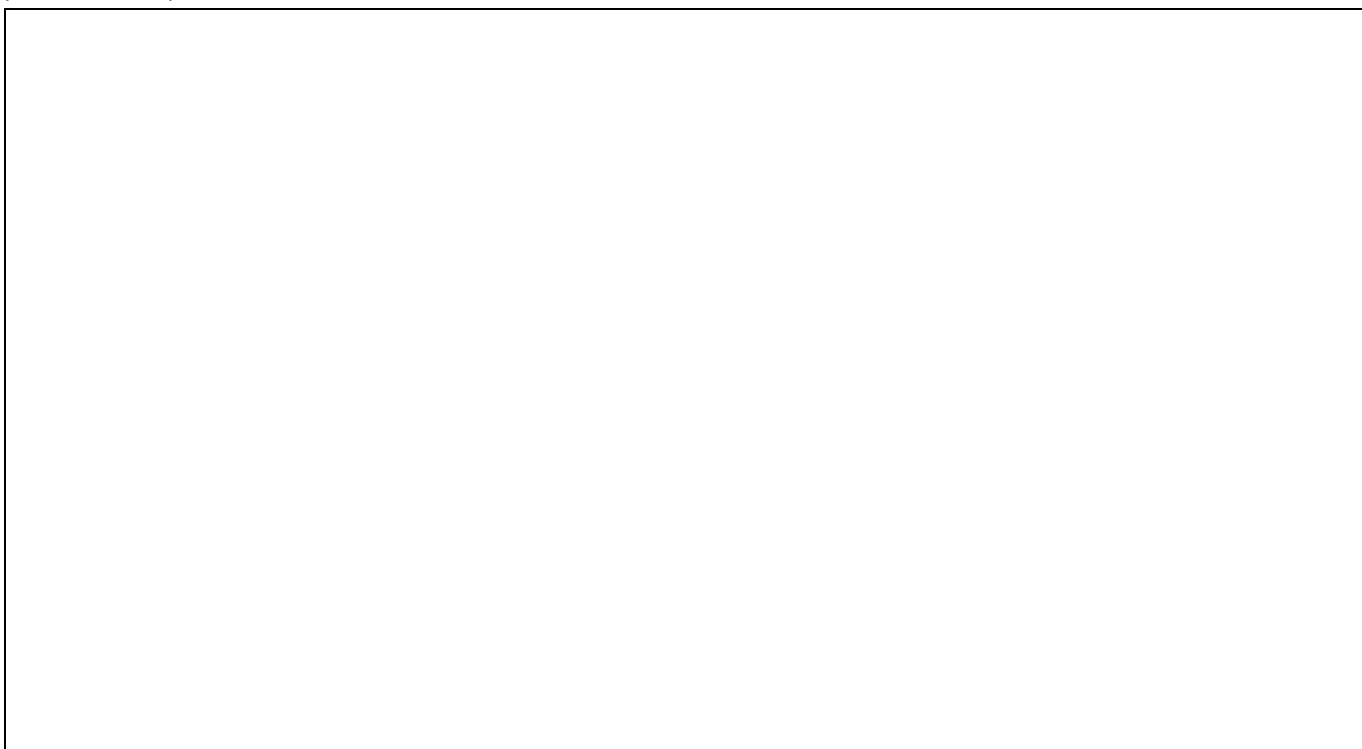
Explain your reasons for the shapes. Remember the product has a particular shape and size for particular uses.

Annotate the drawings to explain "shape for use". Indicate, through annotations, likely materials for the product.

If you need to, add another page.



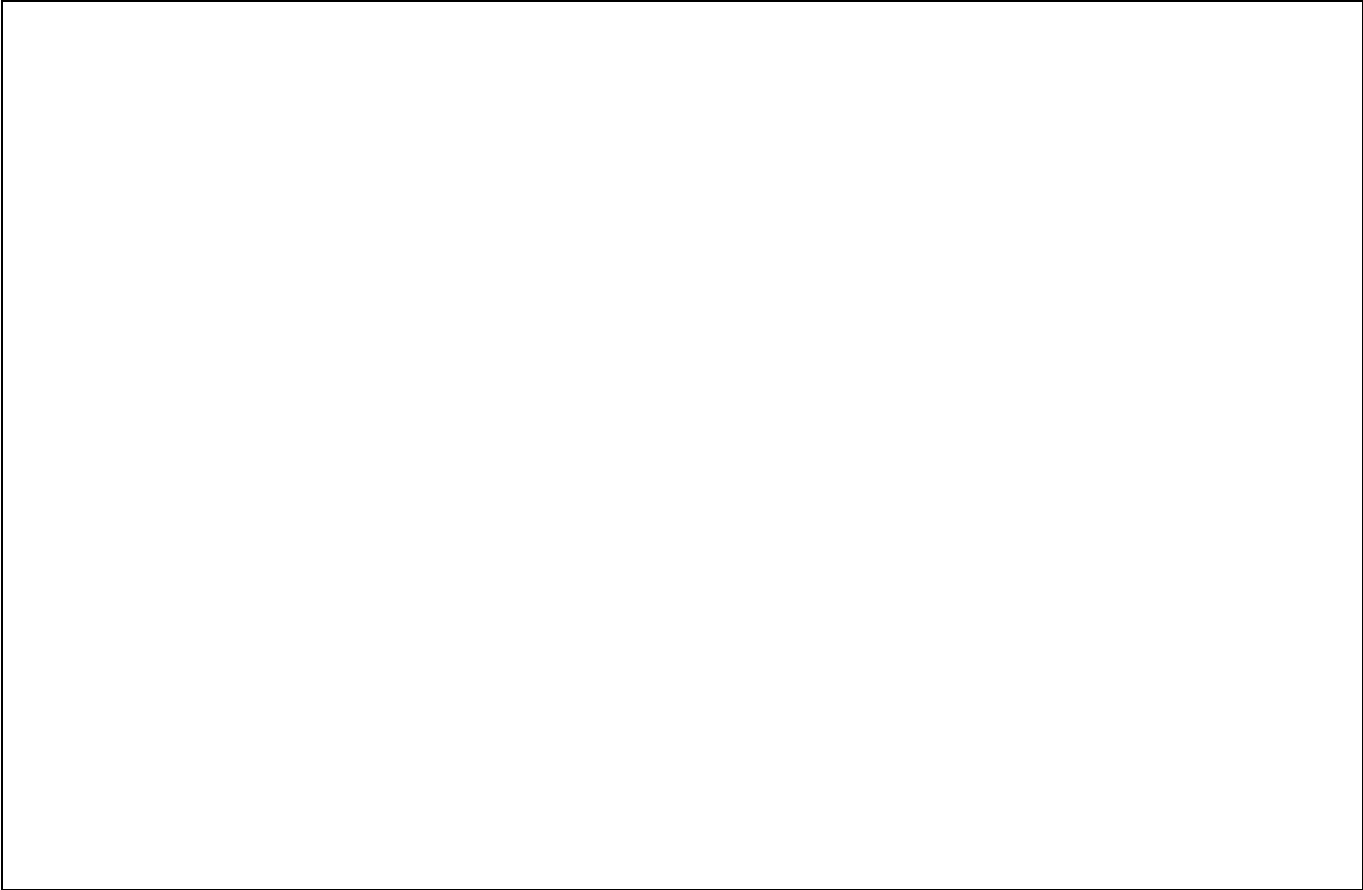
Consider each of the shapes you have sketched and decide on one to develop. Explain why you have chosen that particular shape.



Draw the structural design for your selected domestic product design, and include the sizes of each part, and chosen material/s. Using correct technical terms and annotations, label each part of your design.



Draw a pictorial representation of what you think the finished product will look like. Use colour to indicate surface appearance and material/s used to make the product.



If you need to, add another page.

Producing and implementing

We have discovered that domestic products can be made from a range of materials, including materials like timbers, polymers and metals. Detail the recyclable materials and/or new materials you could choose for your product design.

Designed parts	Type of material	Briefly explain your choice

Will you need to bring any materials from home? List them.

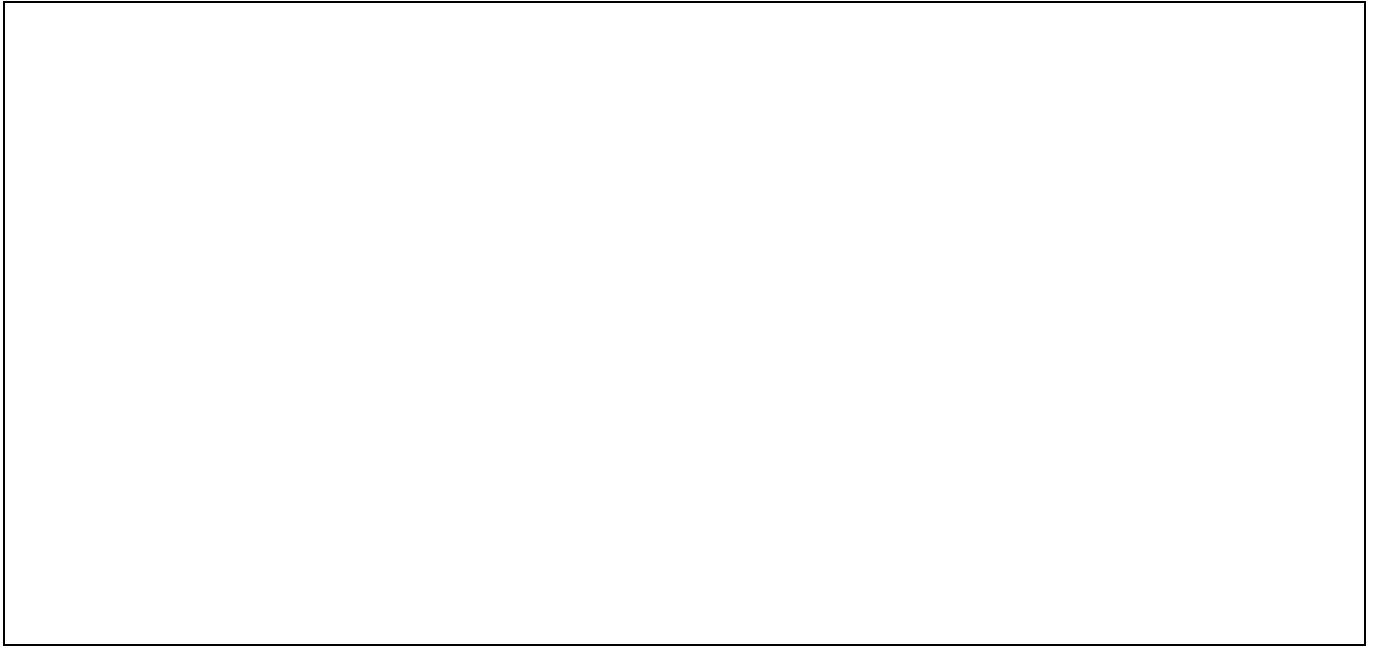
If you plan to join different materials together, refer back to your design. You may research additional ideas, if needed. Draw and label the types of fastenings/joins you have selected.

After some discussion about the different design criteria to evaluate the domestic products, collaboratively develop three to five criteria to evaluate your finished design. Once your product is complete, evaluate it against your criteria.

Criteria	Evaluation
1	
2	
3	
4	
5	

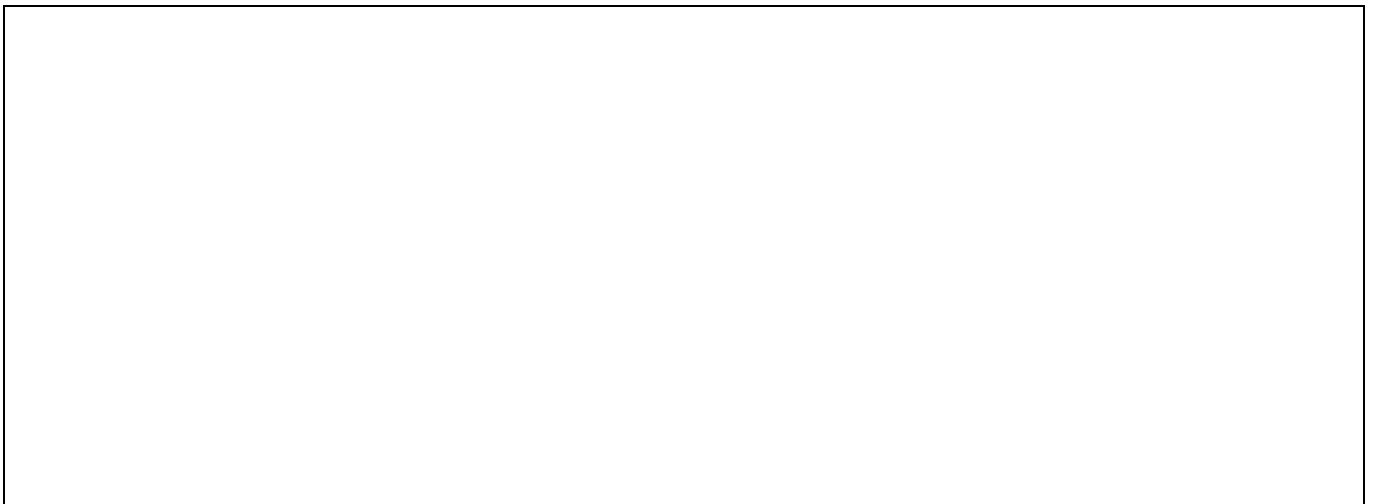
Select, and apply, safe procedures when using a variety of components and equipment to make solutions. Record any changes to the making of your product.

Include a photo of your finished product.



Evaluation of domestic products

Describe your test methods.



What problems did you encounter during testing? Suggest reasons for these problems and how they can be resolved.



Of all the products created by your class, which one performed best? What features contributed to its success?



Sample marking key	
Design Process: Investigating and defining	
Description	Marks
Provides a description of the problem	
Interesting and original, clear statements defining the problem.	3
Includes general statements to define the problem.	2
Defines the design problem in limited general terms only.	1
Subtotal	3
Description	Marks
Written definitions of Aesthetics, Ergonomics and Anthropometrics. Responses to questions about domestic products and their uses; their shapes	
Correctly written out definitions. Detailed responses to questions with clear comments about uses influencing shape of domestic products.	5–6
General definitions of terms. General comments about domestic product shapes and uses.	3–4
Errors in writing out the definitions or missing details. Errors in responses, and/or missing details.	1–2
Subtotal	6
Description	Marks
Provides information about the different materials used to make domestic products; their characteristics and properties	
Detailed information about a number of materials, with source referencing, together with their characteristics and properties.	5–6
Comparisons between a number of materials, with notes describing the general differences in characteristic and properties.	3–4
Collection of materials, with few notes; not referenced and/or with minimal properties information.	1–2
Subtotal	6
Investigating and defining total	
15	
Design Process: Designing	
Description	Marks
Complete four to six sketches of possible shapes of the chosen domestic product, with explanation of reasons for the shapes	
Detailed, well-proportioned sketches showing concept ideas of different shapes; shapes are good examples and explanations are well presented.	9–10
Well-drawn concept shapes; most shapes are suitable, each with a supporting explanation.	7–8
Drawn concept shapes; some shapes are suitable, each with a brief explanation.	5–6
Sketches that show development of mainly a single concept idea, explanations are brief.	3–4
Collection of dissimilar sketches, limited explanation of presented domestic product shapes.	1–2
Subtotal	10

Description	Marks
Presents final structural design of the domestic product, with sizes for each labelled part; using technical terms	
Detailed well-proportioned sketch, with correctly labelled and measured parts; using correct technical terms.	7–8
Well-drawn final sketch, with most parts labelled and sized correctly; using suitable technical terms.	5–6
Suitable final sketch, with technical terms used to label parts, although with some minor errors.	3–4
Final presented sketch gives little expression of shape or form, including very limited labelling.	1–2
Subtotal	8
Presents a representation of the finished chosen domestic product, with rendered coloured surfaces	
Description	Marks
Well-drawn, correctly proportioned pictorial solution, appropriate shape, including colour rendering; with clear explanation of ideas.	5–6
Reasonable drawing and adequately coloured; with suitable notes explaining choices.	3–4
Sketch represents a plausible shape; notes are brief.	1–2
Subtotal	6
Designing total	
24	
Design Process: Producing and implementing; plus Collaborating and managing	
Description	Marks
Provides list of parts and materials, with brief explanation of materials choice	
Lists are complete, logically presented; items are clearly identified, may include home items; choice of materials clearly explained.	5–6
List is mostly complete; items are identified with additional home items included; simple explanations of material choices.	3–4
Lists are missing a significant number of items and/or there is a lack of logic as to how these are collated; materials choice is not identified.	1–2
Subtotal	6
Provides working drawings fastenings/joins. These could take the form of simple diagrams, collected images and/or pictorial and/or schematic drawings	
Description	Marks
Drawings are neat, accurate and clearly annotated, with all required information.	3
Drawings are neat, accurate and annotated, with most of the required information.	2
Drawings are lacking accuracy and/or annotations that provide critical information.	1
Subtotal	3
Observations while working with materials; applying safe and collaborative processes	
Description	Marks
Applies specific safety rules and considerations while working with materials; full collaboration with others.	3
Aware of safety rules while working with materials; shows collaborative behaviour.	2
Little consideration for safety; limited collaborative behaviour shown.	1
Subtotal	3
Producing and implementing; plus Collaborating and managing total	
12	

Design Process: Evaluating	
Teacher evaluation of the completed product	
Description	Marks
Product completed to a very high standard; closely resembles the design drawings.	5
Product completed to a high standard; resembles the design drawings.	4
Product completed to a satisfactory standard; resembles the design drawing.	3
Product completed, but changed considerably; does not resemble the final drawing.	2
Product incomplete.	1
Subtotal	5
Description	Marks
Evaluation comments with regards to the specifications and design considerations of at least three selected criteria	
Clear comments referring to specific design criteria combined with justification of solution fulfilling design requirements.	5–6
Comments outlining major function of solution, and referring to points within design requirements.	3–4
Comments linked to design criteria, but expressing simple personal likes and dislikes about project.	1–2
Subtotal	6
Description	Marks
Descriptions of tests; problems encountered and reasons explained during the testing	
Clear, detailed comments referring to specific actions/uses of the product; minor issues with each use if any, well explained.	4
Appropriate comments referring to the way the domestic product was used; adequate descriptions of minor problems that may have occurred.	3
Comments referring to the way the domestic product was used; limited descriptions of obvious problems.	2
Comments reflect superficial consideration for the use of the domestic product; brief comments, with few references to obvious problems.	1
Subtotal	4
Evaluating total	15
Total	66