

**YEAR 11**  
**MOCK**  
**DESIGN AND TECHNOLOGY**

**GCSE EXAMINATION PAPER**

**CENTRE NUMBER**

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**CANDIDATE NUMBER**

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**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 displayed.
- The maximum mark for this paper is 134.
- There are 23 marks for Section A, 112 marks for Section B

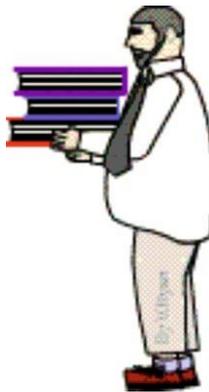
## CORE TECHNICAL PRINCIPLES - SECTION A

The questions to follow are multiple choice. Tick one answer for each question.

**1. Which one of the following energy production systems is a fossil fuel ?**

- A. Wind Power
- B. Hydraulic Fracturing
- C. Nuclear Power
- D. Hydroelectricity

**2. The character below is standing still. What is this type of load?**



- A. Dynamic
- B. Resting
- C. Static
- D. Shear

**3. A thermosetting plastic is:**

- A. Once 'set' these plastics cannot be reheated to soften, shape and mould.
- B. These plastics can be reheated up to four times, but no more.
- C. These plastics can be re-heated and therefore shaped in various ways.
- D. This is a composite plastic, made up of several layers.

**4. From the list of materials, identify the material that includes chromium in its composition.**

A. Copper

B. Nylon

C. Stainless steel

D. Lead

**5. Which of the following names means, 'materials on a very small scale', on a scale of three atoms?**

A. Small scale.

B. Micro-material

C. mini-substance

D. Nano

**6. Which of the following statements describing 'torsion' is true?**

A. Torsion is a 'twisting' force.

B. Torsion occurs when a material is stretched in a straight line.

C. Torsion is the 'impact' when two materials are knocked together.

D. Torsion is the term used to describe a rise in temperature of a material.

**7. Which of the statements below is the definition of the physical property 'Ductility'?**

A. A ability of a material to resist impact when dropped .

B. The ability of a material to resist a stretching force.

C. The ability of a material to return to its original shape.

D. The ability of a material to change shape (deform) usually by stretching along its length.

**8. Which of the following statements is representative of crowd funding?**

A.A group of designers fund the manufacture of a new product

B.The person / company seeking funding, sets up a 'page' on a website and asks for financial support.

C.A number of companies directly sponsor a designer, in exchange for advertising.

D. The Government funds a designer through taxes.

**9. Which of the following is the process called 'etching'?**

A.A process whereby paint is sprayed onto the surface of a material.

B.A process that changes the colour of the surface of a metal.

C. A process that creates a long-lasting protective coating on a metal.

D.Acid is used to slowly remove the unprotected surface of a metal, for a decorative finish.

**10. From the list of materials, identify the synthetic fibre that is often used in textile production**

A. Copper

B. Nylon

C. Stainless steel

D. Lead

**11. Which of the following statements, means manufacturing in another county?**

A.Prototype manufacture.

B.Remote manufacture.

C.Batch production.

D.Mass manufacture.

TO HELP YOU ANSWER  
THIS QUESTION

**11. Give two reasons why Flexi-ply is suitable for making 'curved' products such as furniture. 2 marks**

Reason 1: \_\_\_\_\_

\_\_\_\_\_

Reason 2: \_\_\_\_\_

\_\_\_\_\_

**12. The logo shown opposite, is some times printed on timber and packaging. Explain the meaning of this logo. 2 marks**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**13. Wind power is a popular form of energy production. Give two reasons for its increase of popularity. 2 marks**

Reason 1: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reason 2: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

14. Give two reasons why some people are not in favour of wind power. 2 marks

Reason 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

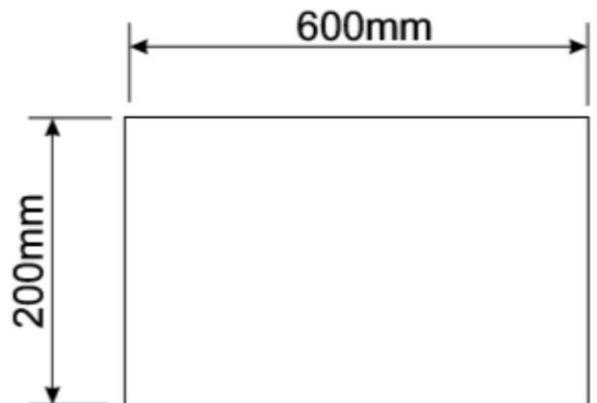
Reason 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

15. This question is about using ratios to scale drawings?  
What is the ratio of height to length of the rectangle?  
You will gain marks for the calculation and your written explanation of the calculation.

4 marks

EXPLANATION: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# **SECTION B - Specialist Technical Principles**

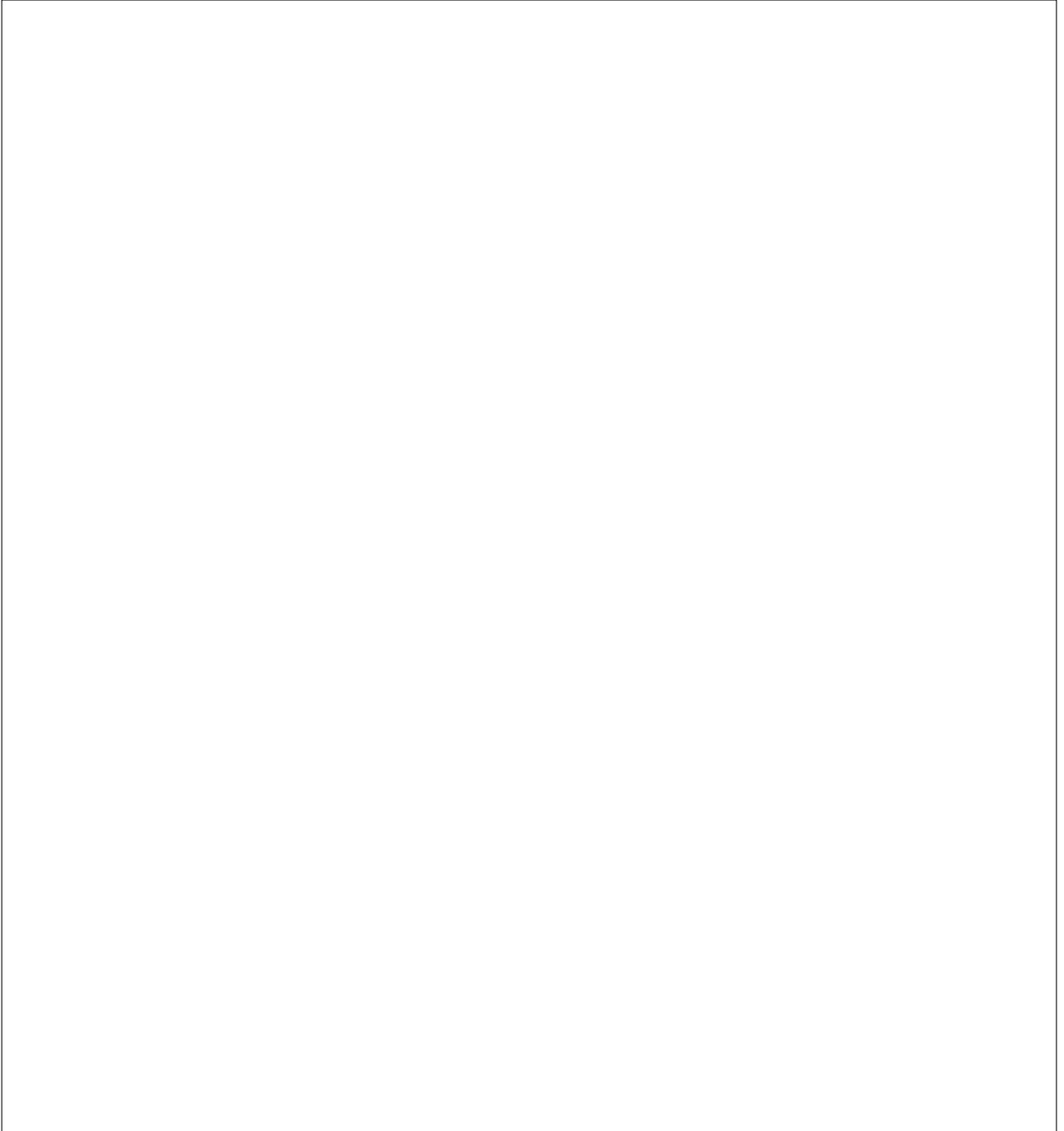
Plywood sheet

Plastic drinks bottle

16. Select one of the products listed above.

Name of product \_\_\_\_\_

Describe your chosen materials manufacture. Include notes and a labelled sketch(s)  
**8 marks**



17. Describe two processes that help to smooth / enhance the edge of a piece of 6mm thick acrylic. *Use notes and a sketch.* 2 x 2 marks

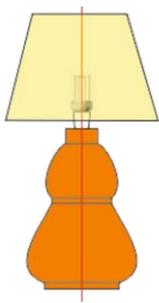
Process 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

18. Select one of the products shown below. Then, describe two reasons, for it being suitable for manufacture in large numbers / mass production. 2 x 2 marks

**Blister packing**  
Vacuum forming



**Wood lamp**  
Wood turning



**School chair**  
Injection moulded



PRODUCT: \_\_\_\_\_

REASON 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REASON 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**19. For the product you selected in question 18 - describe / explain the industrial process used in it's manufacture. *The industrial process is listed under the product name. 5 marks***

INDUSTRIAL PROCESS: \_\_\_\_\_

DESCRIPTION OF MANUFACTURING PROCESS  
INCLUDE NOTES AND ASKETCH(S)

**20a. What is the difference between batch production and continuous production? 4 marks**

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**20b. Briefly describe the stages involved in the batch manufacture of a product of your choice 4 marks**

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**21a. What is Computer Integrated Manufacture (CIM)? 4 marks**

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**21b. Select a product that could be manufactured through Computer Aided Manufacture (CIM) and describe the stages involved in it's manufacture 4 marks**

**PRODUCT:**

**DESCRIPTION:**

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## SECTION C - DESIGNING AND MAKING PRINCIPLES

### TASK LIGHTING

A typical task light is shown below



Turn over

**22. Evaluate the task light in terms of the materials you think have been used to manufacture the product. 4 marks**

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**23. Evaluate the task light in the terms of strength and stability of the product. 4 marks**

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**24. Evaluate the task light in the terms of its aesthetics and style. 4 marks**

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**25. Evaluate the task light in terms of the products functionality. 4 marks**

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**26. What is anthropometrics and why do designers regard it as essential when designing? 2 marks**

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**27. How is packaging used to promote products?**

**4 marks**

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**28. How could a QR code (Quick Response Code) be used to promote a product?**

**4 marks**



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**Designers need an understanding of Quality Control and Quality Assurance**

**29a. What is meant by the term Quality Assurance?    4 marks**

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**29b. What is meant by the term Quality Control?    4 marks**

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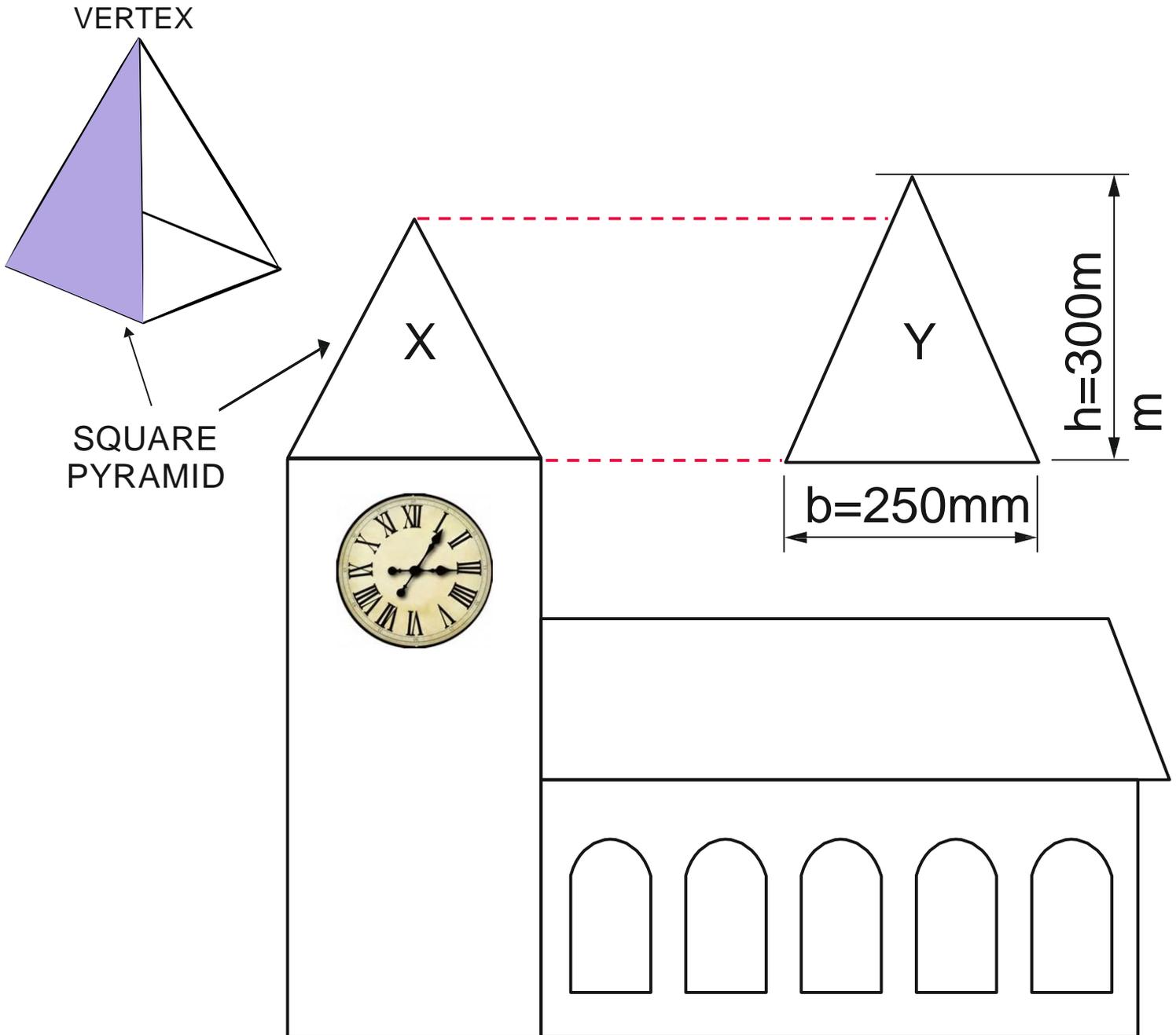
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30. Below is a model a typical village church. The roof of the tower is a square pyramid.

A. What is the area of one side of the square pyramid?



**AREA = 1/2 X BASE X HEIGHT**  
**6 marks**

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**B. The labels X and Y represent the same part, one side of the square pyramid. Why does Y appear taller than X ? 2 marks**

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**31a. Designers need an understanding of smart materials. Aroma Pigments have many practical applications. What are aroma pigments? 2 marks**

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**31b. Describe two practical applications of aroma pigments. 2 x 3 marks**

PRACTICAL APPLICATION 1:

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PRACTICAL APPLICATION 1:

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**32a. Designers invest time and effort, testing and evaluating a prototype. Why do designers test and evaluate? 2 marks**

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**32b. Describe two features / aspects of a design, that designers evaluate. 2 x 3 marks**

Feature/aspect 1:

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Feature/aspect 2:

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**33. This is a simple pencil sharpener.**

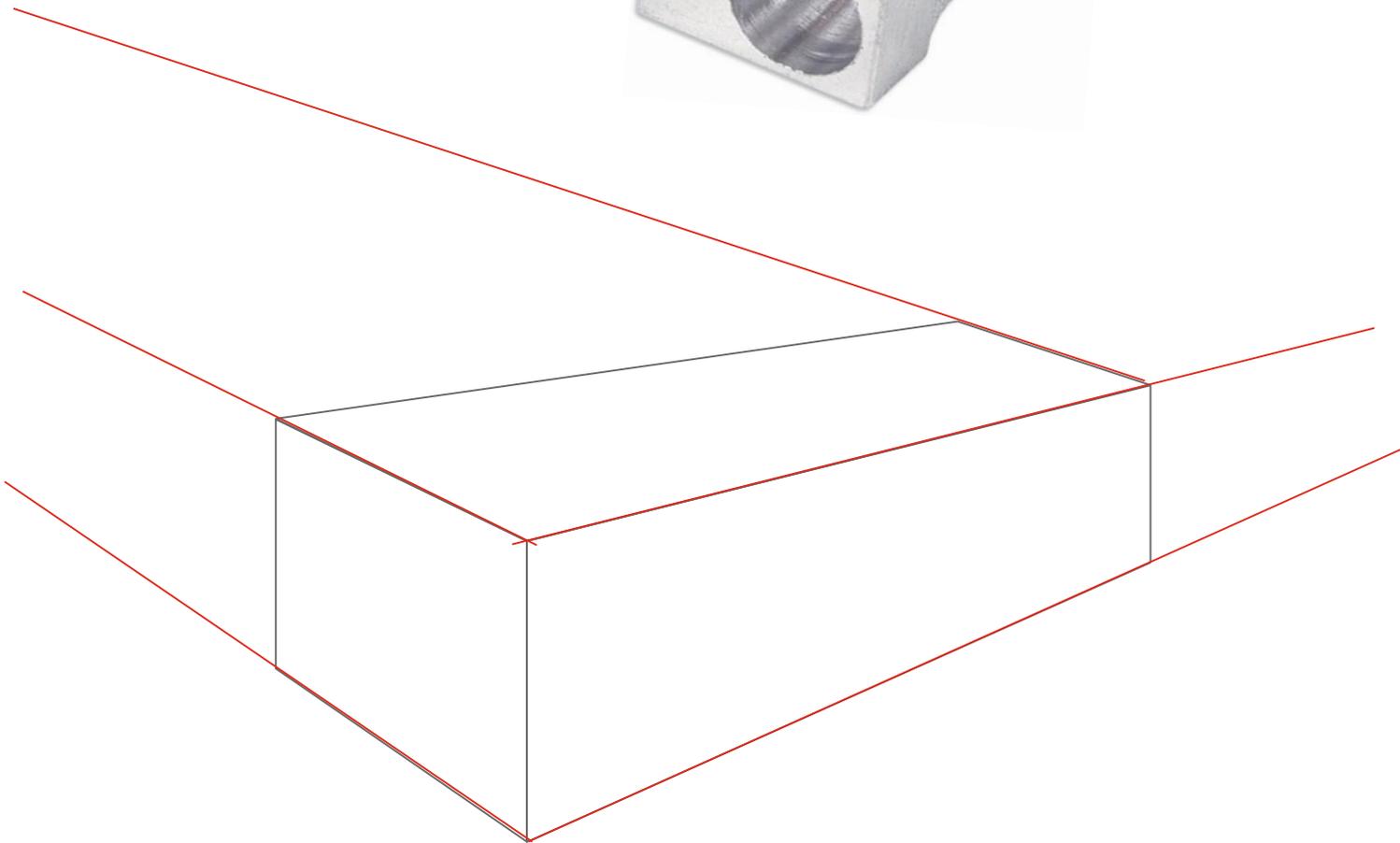
**An two point perspective drawing of the sharpener has been started below.**

**Complete the outline of the sharpener.**

**3 marks**

**Add appropriate pencil shading, to enhance the final finish.**

**3 marks**



**34a. Customers often purchase products that can be repaired when faults develop, rather than throwing away the faulty product and buying a replacement.**

**What are the advantages to the customer of buying a repairable product? *5 marks***

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**34b. Explain why it is important to be able to repair each of the parts of the electric kettle, identified in the photograph. *3 marks***



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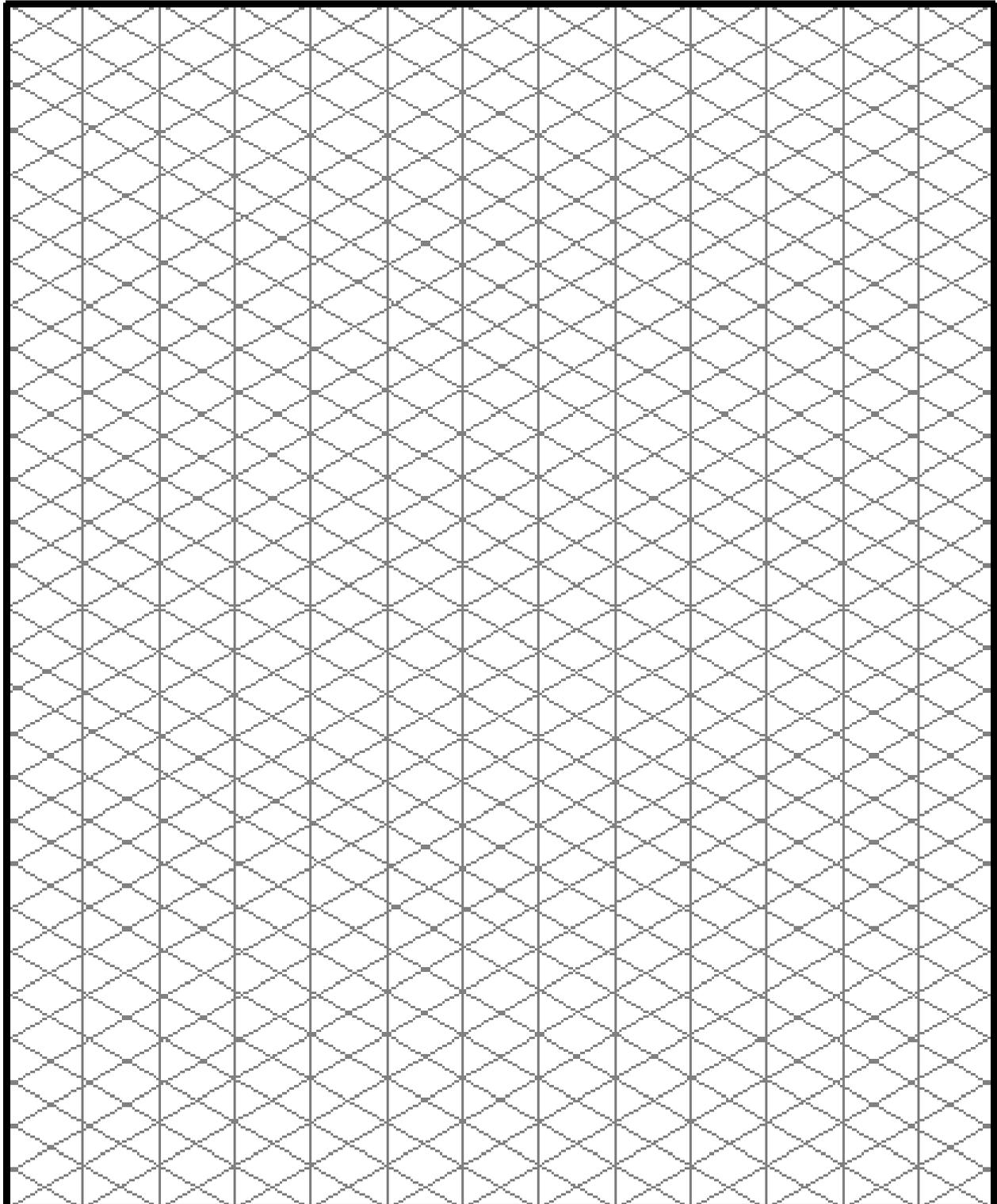
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**35. Study the mobile phone seen opposite. Using the isometric grid at the bottom of the page, sketch an accurate 3D version**

**Add realistic colour and detail  
8 marks**



End of questions