



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**DESIGN AND TECHNOLOGY**

**0445/13**

Paper 1 Design

**May/June 2010**

**1 hour 15 minutes**

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment

**To be taken together with the optional paper for which you have been entered in one session of 2 hours and 15 minutes.**

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name in the spaces on **both** printed Answer Sheets.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **one** question.

Write/draw your answers in the spaces provided on the Answer Sheets.

You may use a calculator.

At the end of the examination, fasten all your work securely together.

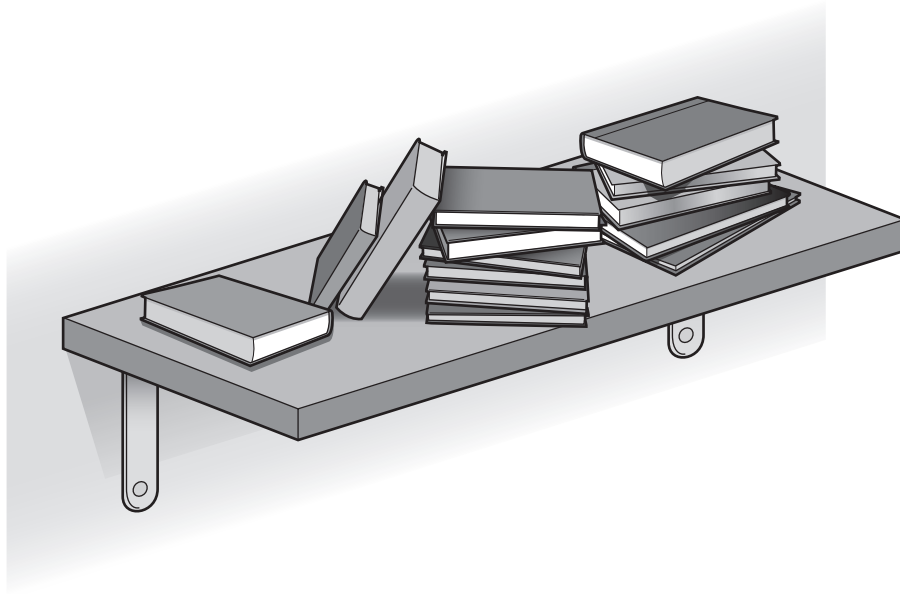
The number of marks is given in brackets [ ] at the end of each question or part question.

\* 3 5 3 9 8 2 9 3 1 7 \*

This document consists of 4 printed A4 pages and an Insert.

Answer **one** question only on the A3 pre-printed answer sheets provided.

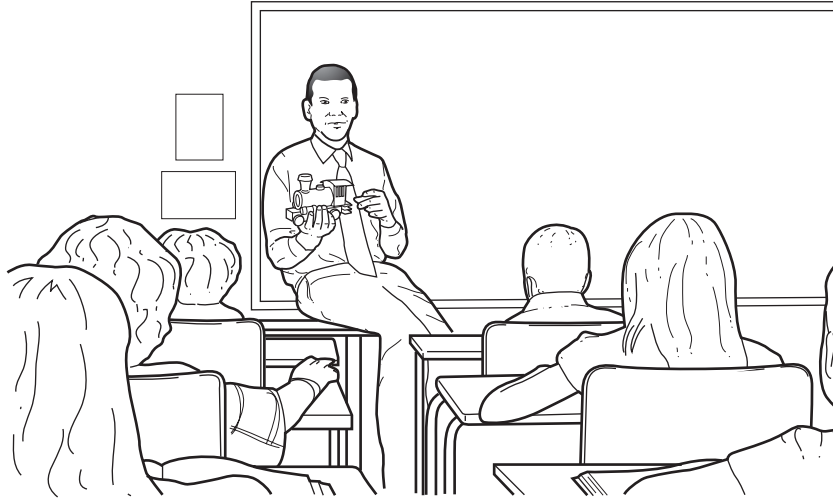
- 1 Design and Technology textbooks collect dust and often get damaged when being stored in a school workshop.



Design a storage system for about 20 textbooks of maximum size 300 mm × 220 mm × 20 mm. It should be possible to see the textbooks in the storage system.

- (a) List **four** additional points about the function of such a storage system that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods by which items such as storage systems can be fixed securely to walls. [4]
- (c) Develop and sketch ideas for the storage system. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]

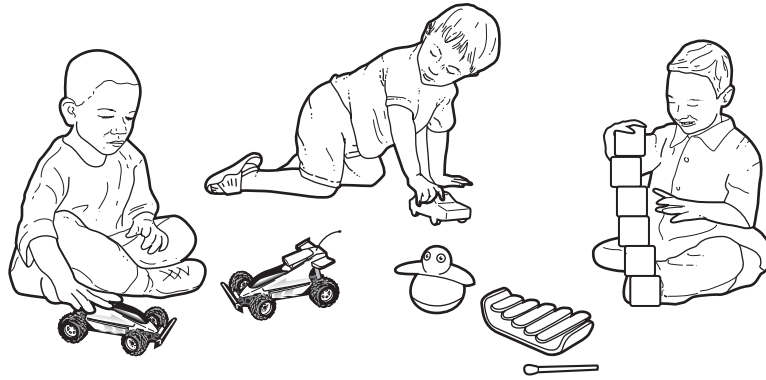
- 2 A teacher in a junior school needs to show how linear motion can be converted to rotation.



Design a simple 2D or 3D working desktop model to show how this conversion takes place.

- (a) List **four** additional points about the function of such a model that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods by which card or other lightweight materials can be fixed together to form moving joints. [4]
- (c) Develop and sketch ideas for the model. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method of producing a prototype of the model in the school graphics studio. [6]

- 3 Children enjoy playing with toys, particularly those that create movement or sound.



Design a simple pull-along toy that includes some form of mechanical movement or sound effect.

- (a) List **four** additional points about the function of such a toy that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods by which movement or sound could be created in toys. [4]
- (c) Develop and sketch ideas for the toy. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]