

Centre Number	Candidate Number	Name
---------------	------------------	------

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**DESIGN AND TECHNOLOGY**  
**DESIGN AND COMMUNICATION**

**0445/01**  
**0446/01**

Paper 1 Common Core

October/November 2005

**1 hour 45 minutes**

Additional Materials: A3 Drawing paper  
Standard drawing equipment

**To be taken together with the optional paper for which you have been entered in one session of 2 hours 45 minutes.**

**READ THESE INSTRUCTIONS FIRST**

Write your name, centre number and candidate number in the spaces at the top of this page and on all separate answer paper used.

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.

**Part A**

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

**Part B**

Answer **one** question.

Write or draw your answer on A3 drawing paper provided.

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.

You may use a calculator.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use	
<b>Part A</b>	
<b>Part B</b>	
<b>TOTAL</b>	

2

## Part A

Answer **all** questions in the spaces provided.

- 1 Cars are available in a range of colours. Some colours are more popular than others and this may vary from year to year as fashions change.

Draw a chart to represent the following car sales for 2003 and 2004.

Colour	2003	2004
red	20%	18%
silver	35%	40%
black	8%	8%
white	25%	22%
others	12%	12%

2 Fig.1 shows a small pedal tricycle for children up to the age of 8 years.

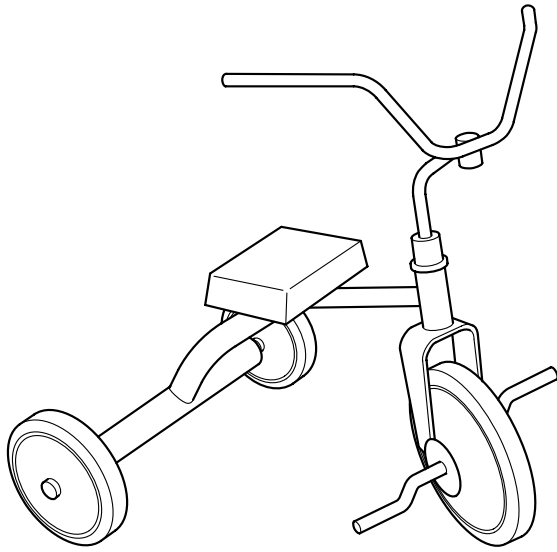


Fig. 1

(a) Identify **two** parts of the tricycle that could be dangerous or uncomfortable for a child.

(i) ..... [1]

(ii) ..... [1]

(b) Use sketches and notes to show how **each** of these parts could be improved.

(i)

[2]

(ii)

3 Complete the table below showing specific materials, their uses and suitable finishes

Material	Use	Finish
Steel	Child's swing	
Teak	Garden furniture	
	Cutlery	None
Pine	Fence	

[4]

4 Explain **two** ways by which energy can be lost when converting from one form to another.

(1) ..... [2]

(2) ..... [2]

5 (a) Name a **permanent** method of joining:

(i) wood to wood; ..... [1]

(ii) metal to metal. .... [1]

(b) Name and sketch a method of fixing a metal shelf bracket to the side of a wooden cupboard.

Name ..... [1]

Sketch

[2]

5

6 Use drawings to show each of the following types of motion.

(a) Oscillating motion

[2]

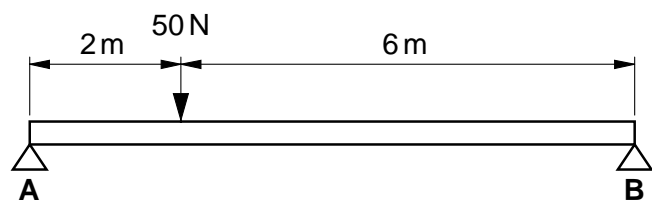
(b) Linear motion

[2]

7 Use a drawing to show what is meant by the following statement.

A piece of material 500 x 150 x 30.

8 Fig. 2 shows a simple beam supported at **A** and **B** with a load of 50 N at the point indicated.



**Fig. 2**

Calculate the values of the reactions at **A** and **B**.

.....

.....

.....

..... [3]

9 'One-off' products go through several stages before being ready for despatch. Arrange the following stages in the correct order. The first one has been completed for you.

- Manufacture
- Customer order
- Despatch
- Order materials
- Design

1 Customer order

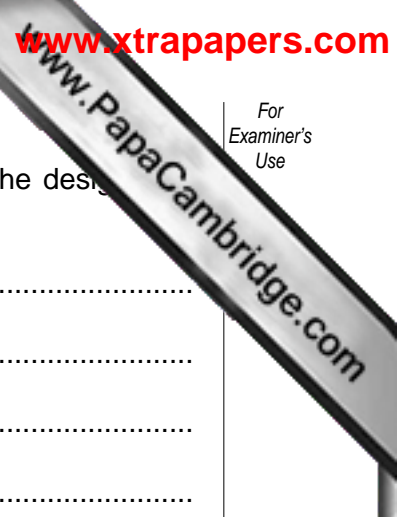
2 .....

3 .....

4 .....

5 .....

[3]



10 Use **two** examples to explain how anthropometric data would be used in the design of a chair.

.....

.....

.....

.....

.....

.....

..... [4]

## Part B

Answer **one** question using the A3 paper provided.

11



The storage of wet umbrellas at the entrance of a building can be a problem.

Some form of storage system for up to four umbrellas would prevent water dripping on the floor.

- (a) List **four** points about the function of such a storage system that you consider to be important. [4]
- (b) List **four** points about the appearance of such a storage system that you consider to be important. [4]
- (c) Develop and sketch ideas for the storage system. [15]
- (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 your problem. [18]
- (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. [7]



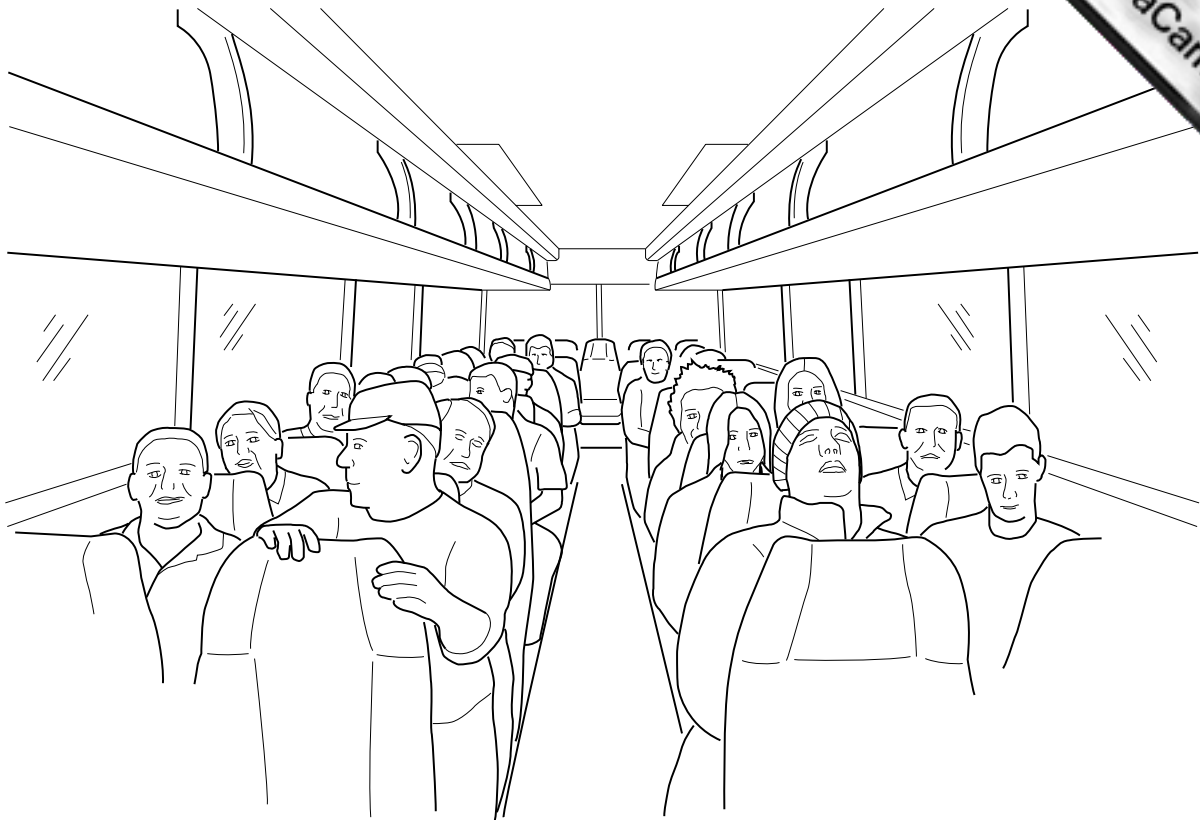


People in your local community enjoy meeting at different times during the day for light refreshments and a talk.

The local council has decided to run a competition for a design for a new coffee shop. The final decision will be based on the consideration of models of these designs.

- (a) List **four** facilities for the coffee shop that you consider to be important. [4]
- (b) List **four** materials that could be used to model the coffee shop. [4]
- (c) Develop and sketch ideas for the coffee shop. [15]
- (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 your problem. [18]
- (f) Explain how the use of computers might assist in the design of such a model. [4]
- (g) Use sketches and notes to describe how the model would be constructed. [7]

13



It is easy for travellers to fall asleep on a bus or train and so miss their destination.

Some form of personal warning system, to inform them when they need to get off, would be very helpful.

- (a) List **four** points about the function of such a system that you consider to be important. [4]
- (b) List **four** forms of output that could be used to alert somebody when the destination is approaching. [4]
- (c) Develop and sketch ideas for the warning system. [15]
- (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 your problem. [18]
- (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. [7]



People who live in flats and high-rise buildings often have nowhere to dry their washing.

Some method of holding clothes to allow them to dry, which could be suspended from a window, would be very helpful.

- (a) List **four** points about the function of such a dryer that you consider to be important. [4]
- (b) List **four** safety issues that need to be taken into account in the design and use of such a dryer. [4]
- (c) Develop and sketch ideas for the device. [15]
- (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 your problem. [18]
- (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. [7]

