CAMBRIDGE
International Education

Cambridge O Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

DESIGN & TECHNOLOGY **6043/01**

Paper 1 Product Design **For examination from 2028**

SPECIMEN PAPER **1 hour**

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.
- You may use standard drawing equipment, including coloured pencils.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].
- All dimensions are in millimetres unless otherwise stated.

This document has **10** pages.

Answer **all** questions.

1 Figure 1.1 shows a design for an adjustable desk lamp.

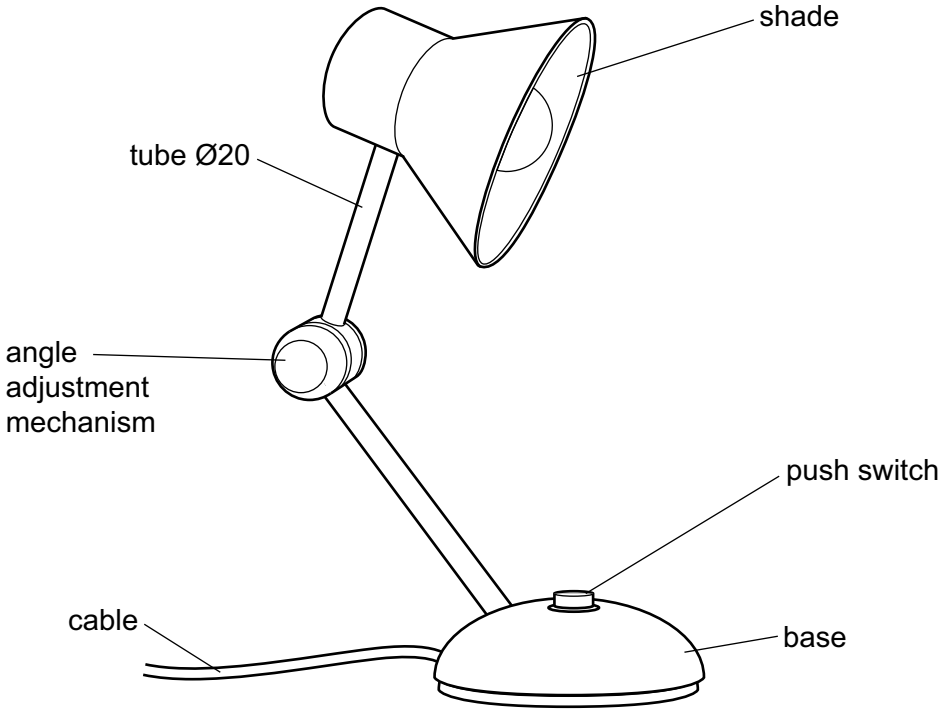


Figure 1.1

(a) Explain **one** way each of the following would have influenced the design of the adjustable desk lamp.

(i) aesthetics

.....

.....

..... [2]

(ii) sustainability

.....

.....

..... [2]

(iii) where the product will be used

.....

.....

..... [2]

(b) Use sketches and notes to show how the design for the **base** of the desk lamp could be developed to temporarily attach to a desk.

Your idea will be assessed on the communication of the idea **and** suitability of the idea.

[6]

(c) Use sketches and notes to show a design for a suitable **angle adjustment mechanism** for the desk lamp.

Your idea will be assessed on the communication of the idea **and** suitability of the idea.

[6]

(d) State **two** reasons why a model would be made of the angle adjustment mechanism for the desk lamp before the lamp is manufactured in quantity.

1 .....

.....

2 .....

.....

[2]

(e) Explain **one** way the design of the desk lamp could be modified to meet the needs of people with limited hand movement.

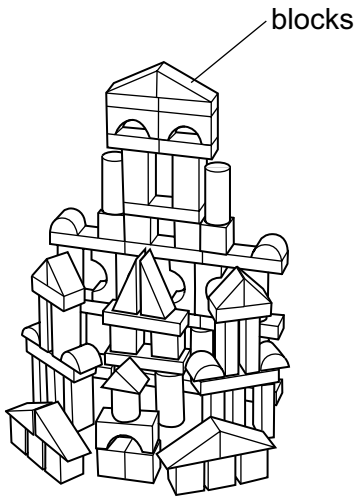
.....

.....

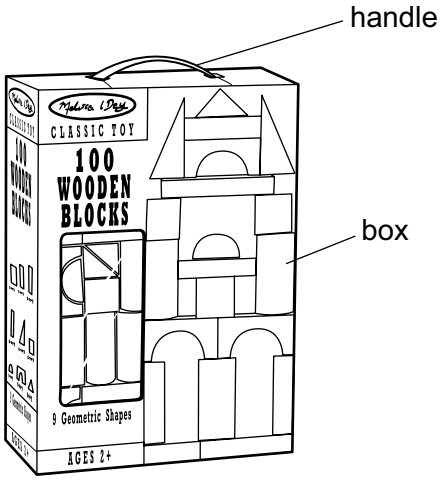
.....

..... [2]

2 Figure 2.1 shows details of a child's building block set.



blocks
material: softwood
quantity: 100



handle
material: 2 mm thick thermo polymer
assembly: slots and tabs

box
material: 4 mm corrugated cardboard

Figure 2.1

(a) The child's building block set is made of **three** different materials.

Complete Table 2.1 to show details of the materials used to make the parts of the child's building block set.

Table 2.1

part	classification	material	why the material is suitable
blocks	softwood	.....	....
handle	thermo polymer	.....	Flexible so that the handle can bend when the box is picked up.
box	papers and boards	corrugated cardboard	....

[4]

(b) A pencil could be used to mark out the blocks. Name **two** other tools or pieces of equipment that could be used to accurately mark out the blocks.

1 .....

2 .....
[2]

(c) Name an appropriate tool or piece of equipment that could be used to accurately cut out the following parts:

handle .....

box. .....
[2]

(d) State **two** different finishes that could be applied to the softwood blocks.

1 .....

2 .....
[2]

(e) Explain **one** reason why a temporary joining method is used to join the handle to the box.

.....

.....

..... [2]

(f) Different drawing techniques were used when designing and making the box.

Complete Table 2.2 to show **two** drawing techniques and their uses.

Table 2.2

drawing technique	use
.....	to show the flat shaped piece of material required to make the box
flowchart	....

[2]

3 Figure 3.1 shows a child's pedal toy.

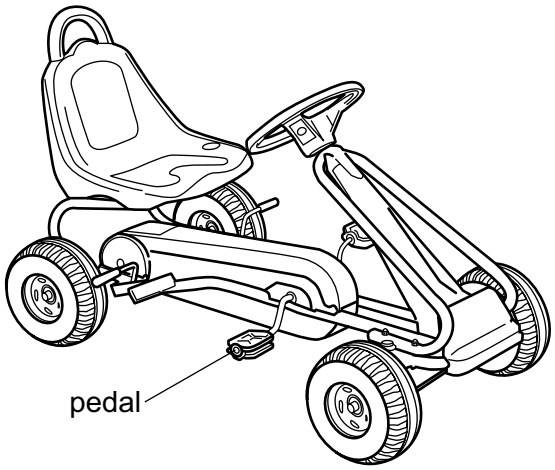


Figure 3.1

(a) Use sketches and notes to show **one** example of each of the following in the design of the child's pedal toy.

(i) a shell structure

[2]

(ii) a compressive force

[2]

(b) Figure 3.2 shows the sprocket and chain drive that is used on the child's pedal toy.

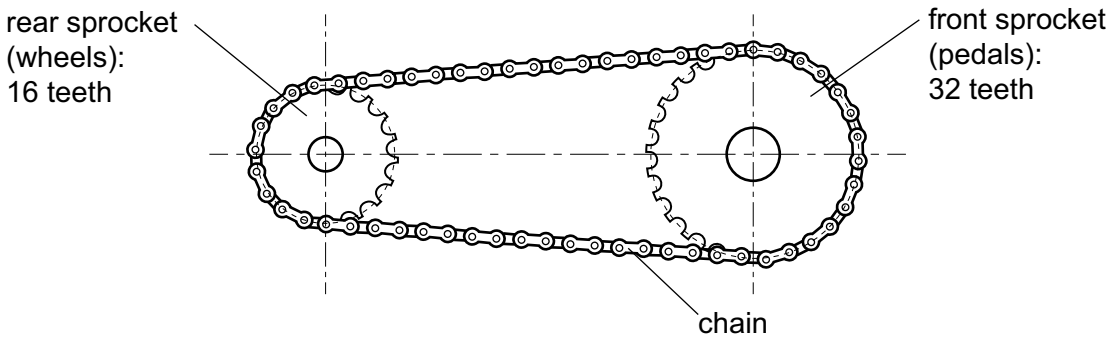


Figure 3.2

(i) Explain the impact the different number of teeth on the front and rear sprockets has on the movement of the child's pedal toy.

.....

.....

.....

..... [2]

(ii) Add labelled arrows to Figure 3.3 to show the conversion of motion in the pedal toy.

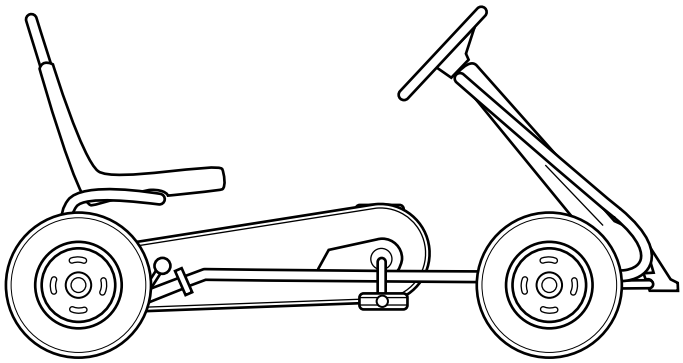


Figure 3.3

[2]

(c) Use sketches and notes to show a modification that would improve the appeal of the child's pedal toy by adding a battery-powered electronic circuit. Include details of the components to be used in the circuit.

[6]

