Cambridge Assessment International Education

Cambridge IGCSE™

DESIGN & TECHNOLOGY **0445/13**

Paper 1 Product Design **October/November 2021**

1 hour 15 minutes

3546568651

You must answer on the two pre-printed A3 answer sheets.

You will need: Two A3 pre-printed answer sheets (enclosed)
Standard drawing equipment
Coloured pencils

INSTRUCTIONS

- Answer **one** question.
- Use an HB pencil for any drawings and a black or dark blue pen for any writing.
- Write your name, centre number and candidate number in the space on **both** pre-printed answer sheets.
- Answer in the space provided on the answer sheets.
- Do **not** use an erasable pen, staples, paper clips, glue or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You may use standard drawing equipment, including coloured pencils.
- At the end of the examination, hand in your named A3 answer sheets. Do **not** fasten them together and do **not** punch holes in the sheets or tie with string.

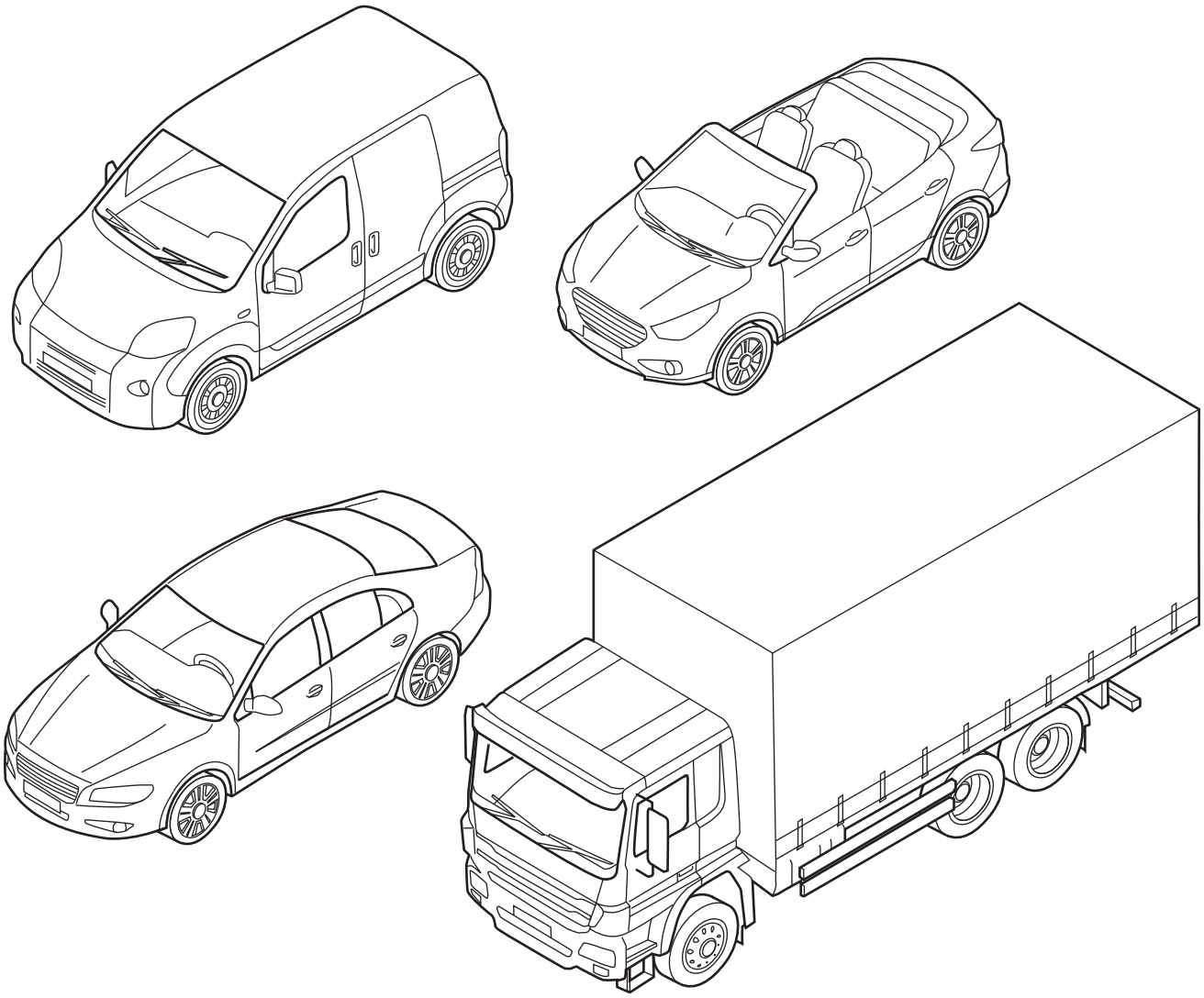
INFORMATION

- 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.

This document has **4** pages.

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

1 Children enjoy riding on sit-on toy vehicles.



Design a sit-on toy vehicle suitable for a three to four-year-old child. The child should sit astride the vehicle and be able to steer it.

(a) List **four** additional points about the function of such a sit-on toy vehicle that you consider to be important. [4]

(b) Use sketches and notes to show **two** methods of steering such a toy vehicle. [4]

(c) Develop and sketch **three** separate ideas for the sit-on toy vehicle. [12]

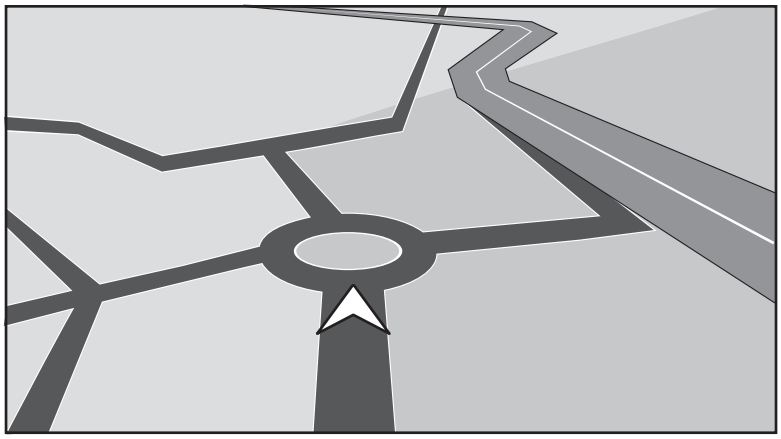
(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]

2 Teenagers learning to drive cars need to be taught how to navigate different types of road junction.



Design a game suitable for teenagers that would help them to understand how road junctions should be navigated.

(a) List **four** additional points about the function of such a game that you consider to be important. [4]

(b) Use sketches and notes to show **two** methods of forming model vehicles for such a game. [4]

(c) Develop and sketch **three** separate ideas for the game. [12]

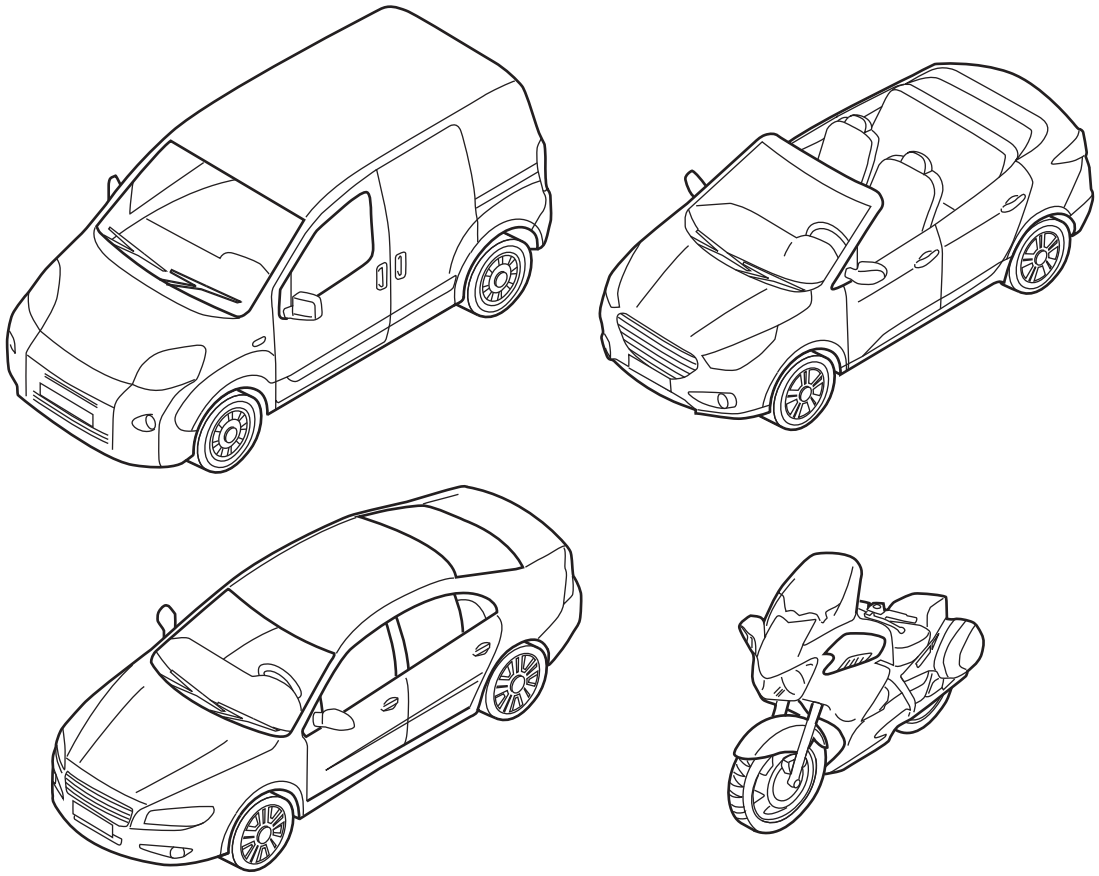
(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]

3 Toys can be made more interesting for children to play with when they involve movement.



Design a toy vehicle that will be propelled by an elastic band. The toy should have an additional moving feature.

(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 of producing rotational movement from an elastic band. [4]

(c) Develop and sketch **three** separate ideas for the toy. [12]

(d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]

(e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]

(f) Suggest **two** suitable specific materials for the solution you have drawn in part **(e)** and give reasons for your choice. [4]

(g) Outline a method that could be used to manufacture **one** part of your solution drawn in part **(e)**. Include the names of the tools used. [6]