

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

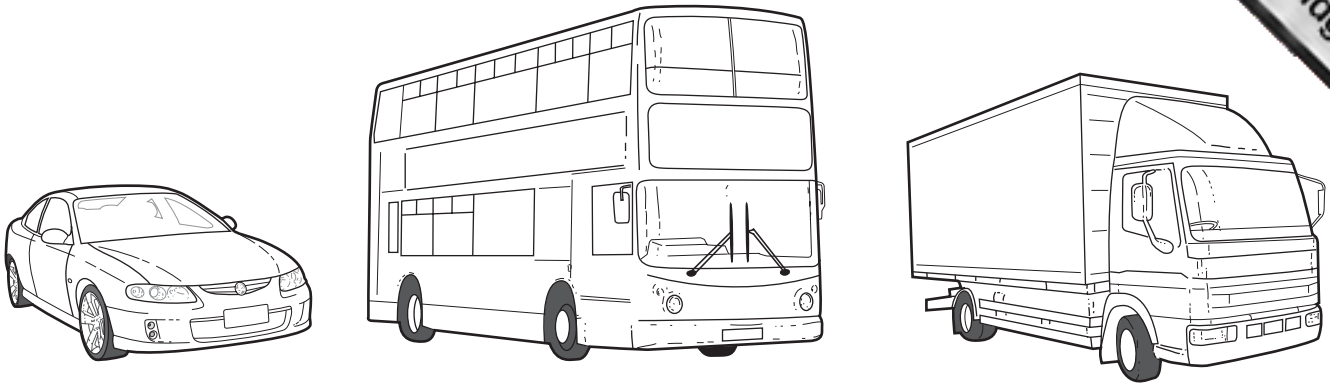
- 1 Pupils going to and from school often have to carry large quantities of heavy books and equipment each day.



A wheeled carrier that could carry these heavy items and be stored easily when at school would be very useful.

- (a) List **four** points about the function of such a carrier that you consider to be important. [4]
- (b) Draw **two** different types of temporary fixing that might be used to hold together materials. [4]
- (c) Develop and sketch ideas for the carrier. [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 your 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]

2 Models are often used to help promote the sale of different types of motor vehicle.



A kit for a self-assembly cardboard model is to be given away by a manufacturer to promote a new vehicle.

- (a) List **four** points about the function of such a model that you consider to be important. [4]
- (b) Draw **two** types of temporary joint that could be used to join card. [4]
- (c) Develop and sketch ideas for the self-assembly cardboard 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 your problem. Include construction details and major dimensions. [12]
- (f) Give **two** examples of how computers could be used in the design and/or manufacture of such a model. [4]
- (g) Design a box for the transportation of 50 self-assembly cardboard model kits so that the content of the box is obvious. Show how the box would be assembled. [6]

- 3 Many people enjoy camping in the countryside but washing facilities are not always available.



A temporary shower that could be transported easily would be very popular.

- (a) List **four** points about the function of such a shower that you consider to be important. [4]
- (b) Explain **two** possible ways of providing suitable pressure for the shower water, which will be collected from a nearby stream. [4]
- (c) Develop and sketch ideas for the shower. [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 your 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]