

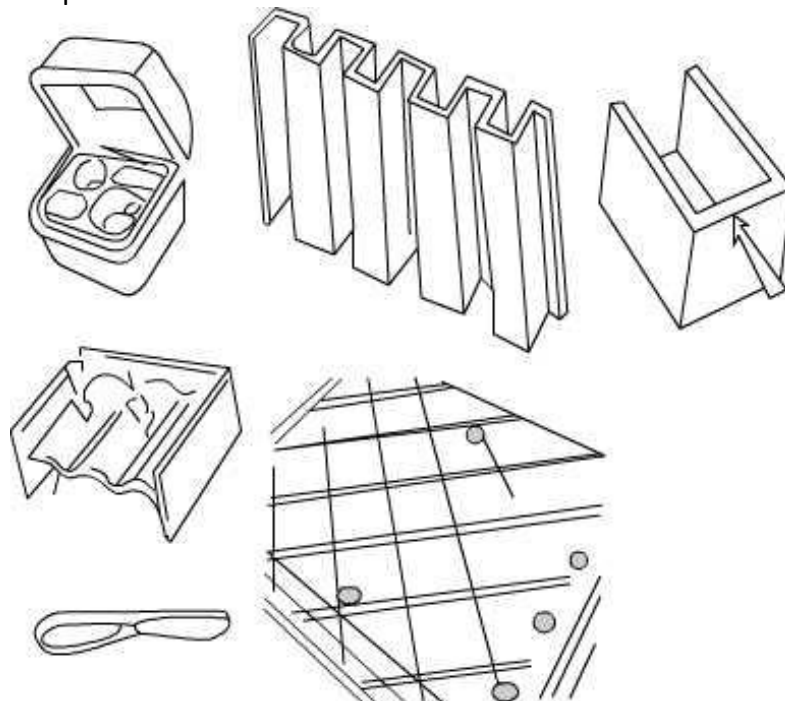
## Grade 8 Technology Worksheet

### Reinforcing technique

#### Reinforcing techniques

1. Whenever large areas of materials are to be stiffened and strengthened, webs, ribs and flutes are added or surfaces are corrugated. These sorts of shapes are found inside outer packets and provide stiffness in one direction and a kind of crumple zone in another. Forming the internal shape of a container, for example a box of biscuits or a food tray container from an airline, creates webs which stiffen the plastic.

Look at the examples below.



- 1.1 In your own words, describe what you understand by webs, ribs and flutes.  
[6 marks]
  - 1.2 State why the design is good in resisting forces in each example. [8 marks]
  - 1.3 Give examples of three items, each using one of the above techniques. [6 marks]
- [20 marks]

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### Suggested Solutions

Question number	Possible marks	Answers
1	6 marks	1.1 Webs are cross ridges that form a web of strengthening material as in F, or they can be indentations, strengthened to support something like a food packaging tray in an airline, as in A. Ribs are a ridge of hard material to hold the shape, as in the plastic knife in E. Flutes are folds to distribute the forces as in B, C and D.
	8 marks	1.2, 1.3
	6 marks	In A, the fold over the edges strengthens the edges against compression and possible collapse and the web indentations are stronger than a flat surface. Example – lunch box lids, chocolate and biscuit boxes.
		In B, the flutes act as a strong reinforcement Example: crash barriers. In C, the flutes in the card box act as a strengthening material where the force is distributed and this strengthens the flat surface of card. Example: cardboard boxes. In D, the flutes distribute the compressive force. Example: roof tiles. In E, the ribs strengthen the flexible plastic knife, making it stiffer and easier to cut with. In F, the cross webbing on the diagonal is strong and can be used in certain packaging.

[20 marks]