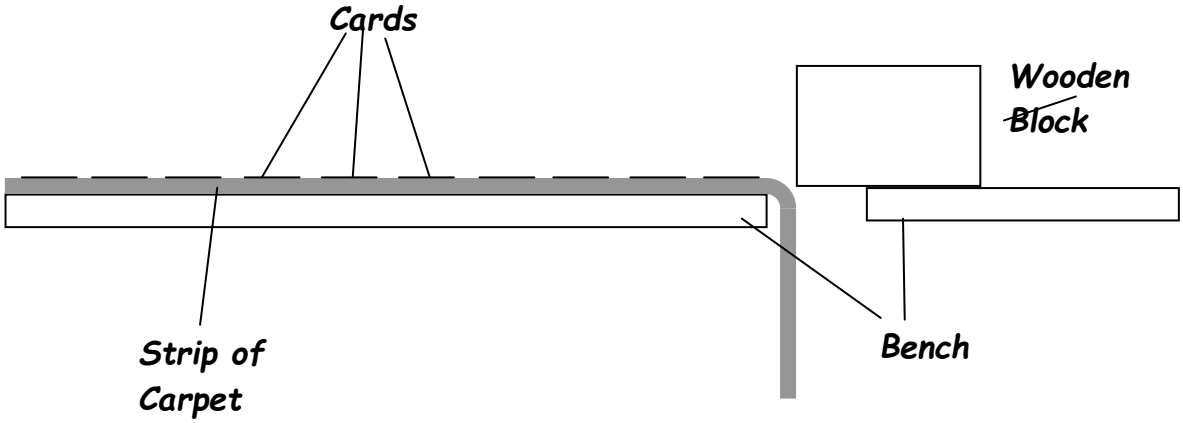
ACCRETIONARY PRISM

Purpose
To show how an accretionary prism is built up by thrusting at a subduction zone and to show how the sequence of strata is formed.

In this activity the wooden blocks represent a continental plate and the carpet represents an oceanic plate. The cards represent layers of sediment with "a" being the oldest and "g" the youngest.

Instructions
Activity I To show how an accretionary prism is built up.
1. Set up the apparatus as shown in the diagram



2. Place the hardboard pieces in a row on the piece of carpet.

3. Sketch the apparatus and describe it in geological terms.

4. Pull the carpet slowly down between the tables. Stop when the last piece of hardboard has reached the subduction zone.

5. *Describe what has happened and make a labelled sketch.*

Activity II To explain the sequence of strata found at accretionary prisms

Set up the apparatus as shown in the diagram

1. *Place seven pieces of the brightly coloured card labelled "a" side by side along the strip of carpet to represent a layer of sediment.*

2. *Pull the carpet down until the card nearest the subduction zone begins to tip.*

3. *Lay down all the cards labelled "b" on top of the "a" cards which are still lying flat. These represent a new layer of sediment deposited on top of the "a" layer.*

4. *Repeat instructions 3 and 4 with cards labelled "c, d, e, f, and g" until all the cards have reached the subduction zone.*

5. *Describe what has happened in geological terms and make a labelled sketch.*

6. *Draw a section or diagram to show the order of the beds in the subduction zone. Mark the base of the card "a" as a thrust fault.*

Teacher's Section

Requirements

Coloured cards 10cm by 7.5cm. There should be seven of a bright colour labelled "a". 6 of a different colour labelled "b" and 5 of another colour labelled "c" etc up to "g"

2 wooden blocks 30cm by 10cm by 5cm one of which is nailed to a strip of carpet 2.5m long and 10cm wide (this should be on the left hand side of the diagram).

Two desks with a small gap between them.

The apparatus

A wooden block is nailed to a strip of carpet 2.5m long and 10cm wide. This is placed on a desk with 10cm of carpet hanging down the gap between adjacent desks. The other wooden block is placed on the end of the adjacent desk.

Notes

This is best used as a class demonstration or for small groups of students to play with.

If you only have a long bench the single block of wood can be placed on a piece of L shaped plywood held onto the table with a G clamp see photo below.

Time

20 minutes

Results

This should result in a series of thrust slices each getting younger in the direction of subduction but the slice with the youngest beds is at the bottom. The sequence should be like this, (a is oldest bed, \=thrust, and subducting plate is moving to the right).

abcdefg \ abcdef \ abcde \ abcd \ abc \ ab \ a

Accretionary prism

On the right hand side a board has been attached to the table using a G clamp (blue) instead of using two adjacent tables.