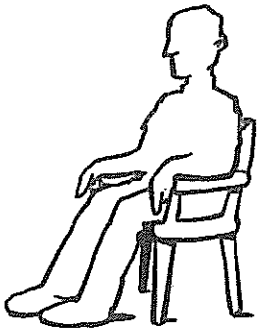
(1)

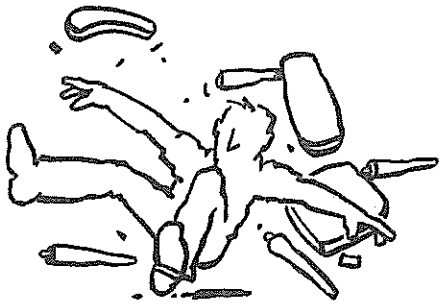
There are two basic kinds of load on any structure: **static** (a load that is still) and **dynamic** (a moving load).

**Q2** Identify the load in each case below.



_____ load

_____ load

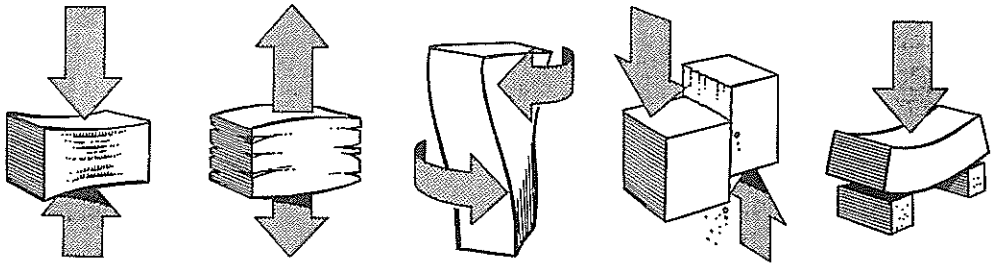


Structural failure

**Q3** Look at the drawing of structural failure above. Then complete this sentence:

Structural failure has occurred because the structure has failed to withstand a _____ load.

**Q4** Use the word bank to identify the different kinds of force that act on a structure.

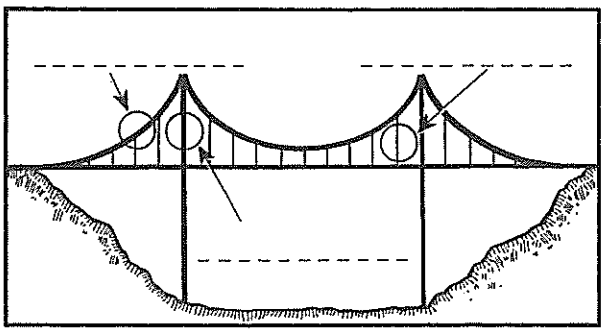


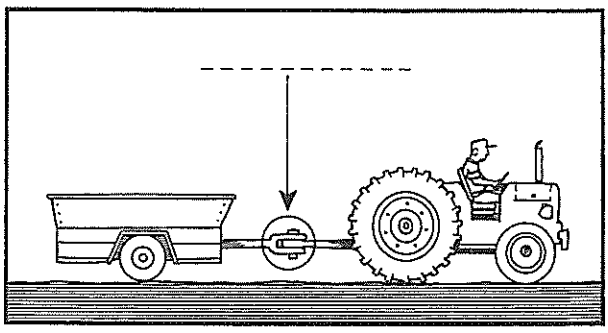
_____ _____ _____ _____ _____

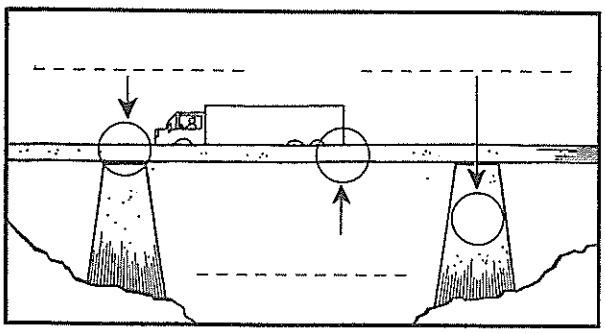
**Word Bank**

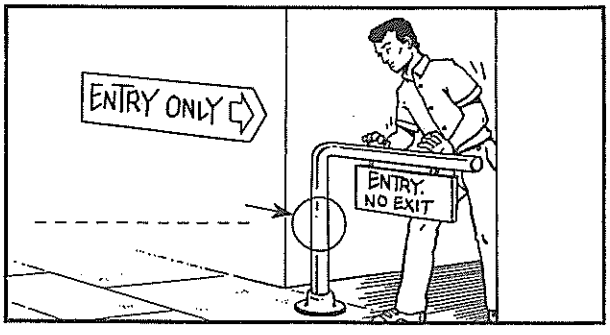
Bending
Compression.
Shear
Tension
Torsion

**Q5** Study these structures and then identify the forces that act on them (circled). Write your answers on the broken lines provided.



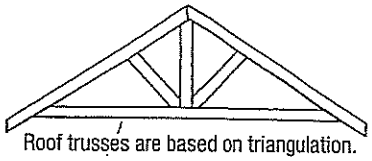






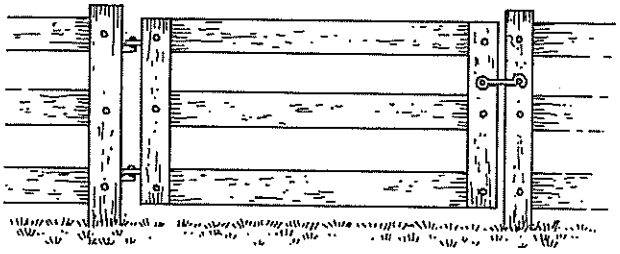
(2)

A structure can be made more rigid by building it out of triangular shapes. This is known as **triangulation.**

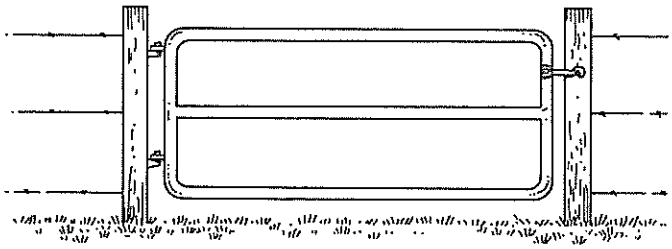


Roof trusses are based on triangulation.

**Q6** Sketch where you would attach a bracing member in each case below, given that wood is strong in compression and steel is strong in tension.

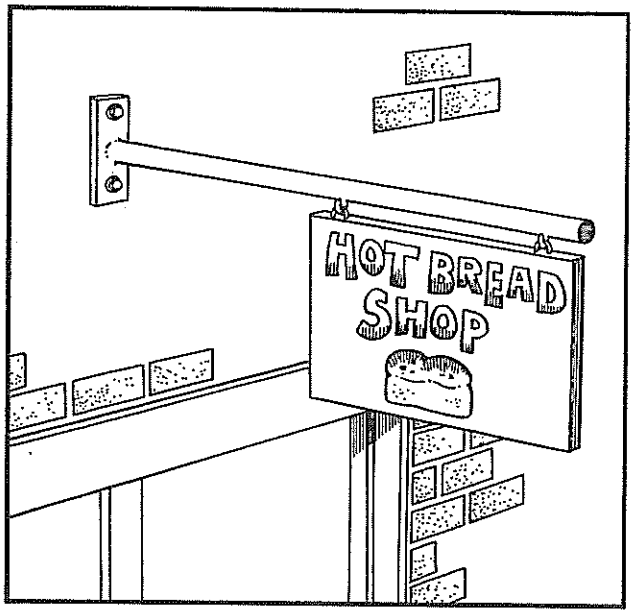


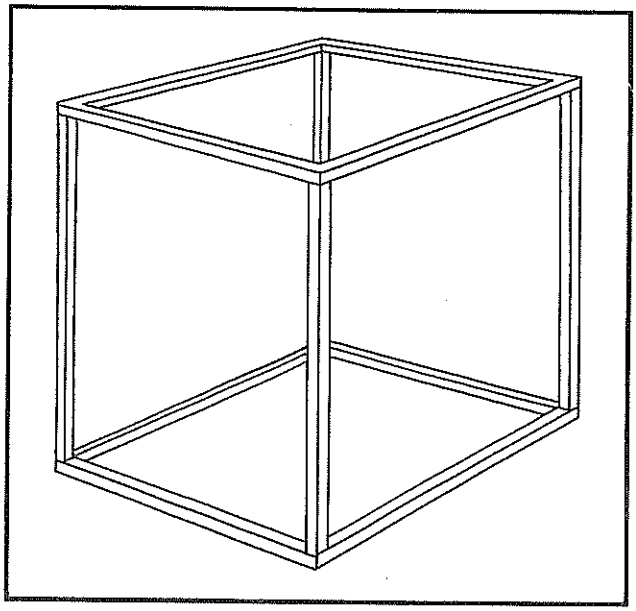
A wooden gate



A steel gate

**Q7** Show how you can make each structure below more rigid: the sign and the cube box.



**Q8** Sketch some of the ways in which this thin, flat sheet of material can be made more rigid.