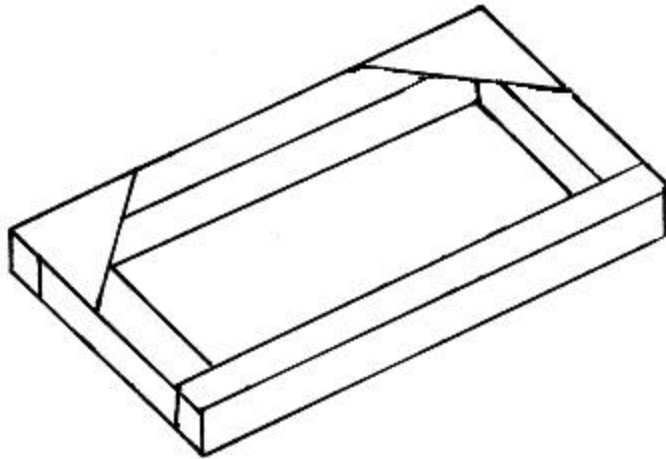


## Grade 8: HYDRAULICS AND PNEUMATICS LIFTER

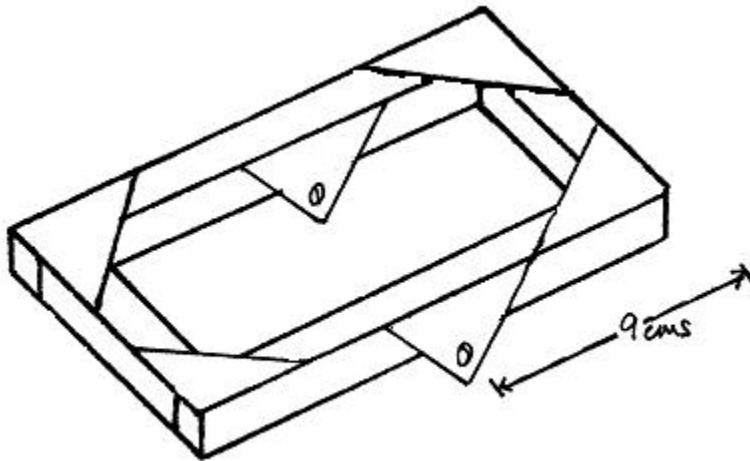


**Required:**

3 rectangles with gusset corners,  
each 20cm by 10cm

**Materials for each rectangle:**

2 pieces 20cm long  
2 pieces 8cm long  
8 cardboard corners

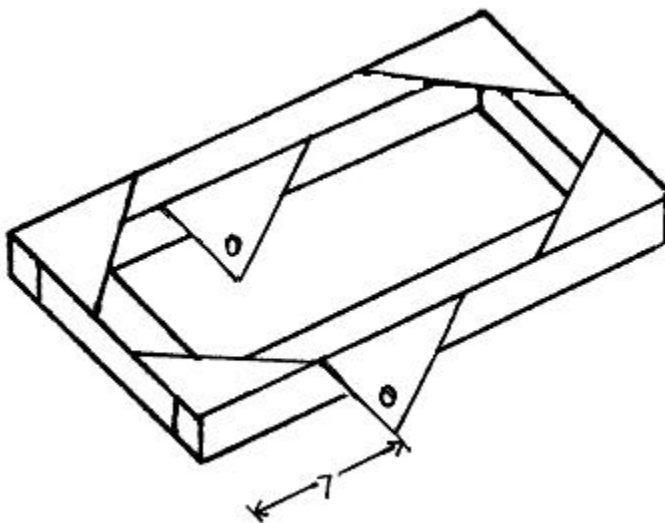


**Required:**

4 axle holders placed 9cm  
from one end of one of the  
rectangles

**Materials:**

4 axle holders with 5mm holes



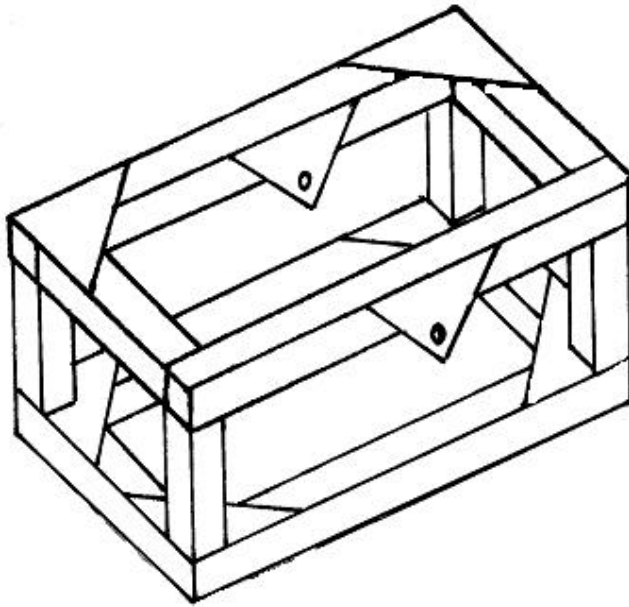
**Required:**

4 axle holders placed 7cm  
from one end of one of the  
other rectangles

**Materials:**

4 axle holders with 5mm  
holes

## Grade 8: HYDRAULICS AND PNEUMATICS LIFTER

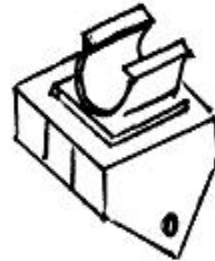


### Required:

A 3-dimensional structure made from connecting the unused rectangle to the rectangle with axle holders 9cm from one end.

### Materials:

4 pieces each 4cm long  
8 corner connectors

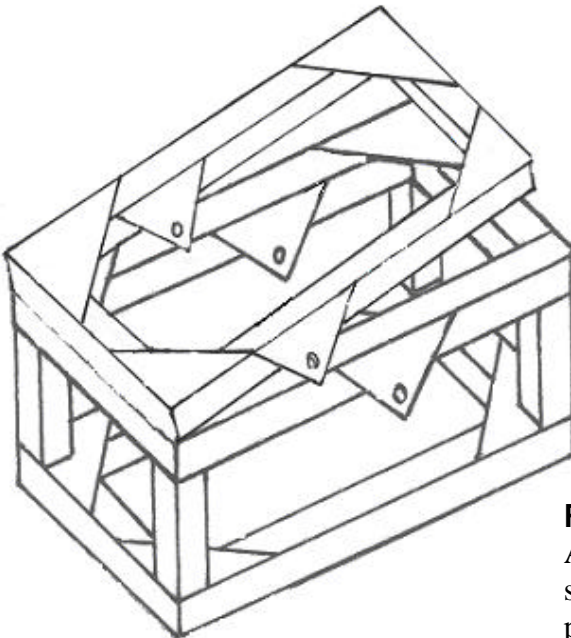


### Required:

A structure to hold a syringe

### Materials:

3 pieces 3.5 cm long  
2 axle holders, trimmed when glued  
1 syringe mounting clip



### Required:

The rectangle with axle holders 7cm from one end, connected to the cuboid using a hinge

### Materials:

1 cardboard hinge 2cm by 10cm

### Required:

A lifter, completed by adding the axles and the syringes. One axle goes through a hole drilled in the plunger of the actuating syringe, that syringe is then mounted on the small platform held by the other axle

### Materials:

2 20ml syringes with tubing  
2 lengths of dowelling each 12 cm long  
10 mini washers

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