# Big Doghouse

## Purpose:

As students learn to interpret orthographic projections, it is useful for them to interact with many different examples of objects and their corresponding drawings to develop an intuitive understanding of this relationship. Most of the objects used in this curriculum are relatively small and can fit in a student’s hand. This object, on the other hand, is large enough that students have to walk around it and feel it from different perspectives to identify all the features that correspond to the drawing. This helps students develop the skill of piecing together multiple parts of the object and multiple parts of the drawing to create a mental model of the entire object.

## Functionality:

This object is a life-sized doghouse. It is built to match the Big Doghouse Multiview Handout from lesson D3. It is large enough that several students can explore it at a time.

If it is not practical to build this model, an instructor could make an orthographic projection of an already-available object (such as a desk or bookshelf) using the conventions established in this curriculum and have students inspect that object along with its drawing.

## Construction:

The most important thing about building this structure is that it matches the details specified in the handout. All dimensions on the handout are in feet. Any other details are optional and may be adjusted as needed to make the construction more convenient. Any measurements listed on the drawing should be matched carefully. Any dimensions not labeled can be approximated from the drawing, but do not need to be exact. For example, the height of the door should be close enough that it matches the overall shape of the drawing but does not need to be a specific measurement. Note that the door is intended to be centered in the front wall. However, since all measurements are rounded to the nearest tenth of a foot, the midpoint is labeled as 1.3’ instead of 1.25’.

Depending on where you intend to place the doghouse, you can build it with or without a floor. In the original offering of this curriculum, it was built with a floor and then placed on a dolly so that it could be easily rolled in and out of the classroom when needed.

### Parts List

* Sheet - 1/2” plywood is recommended, but other building materials could be used.
  + Roof: 3’ x 4’
  + Left wall: 3’ x 3.5’
  + Right wall: 2.5’ x 3.5’
  + Front wall: 3.5’ x 3’ sloping to 2.5’ with cutout for door.
  + Back wall: 3.5’ x 3’ sloping to 2.5’
  + Floor (optional): 2.5’ x 3.5’
* Fasteners, as needed

## Graphics:

An orthographic projection of the doghouse. This plan drawing is the same image as the handout that students will use when inspecting the doghouse and interpreting the orthographic projection.

The front view, in the bottom left, shows the front wall of the doghouse, including the shape of the doorway and the slope of the roof. The top view, above, shows the outline of the roof and the location of the walls set inside from the edge of the roof. The right view shows the right side and the surface of the roof as it slopes down.