DESIGN GUIDE: PINHOLE CAMERA

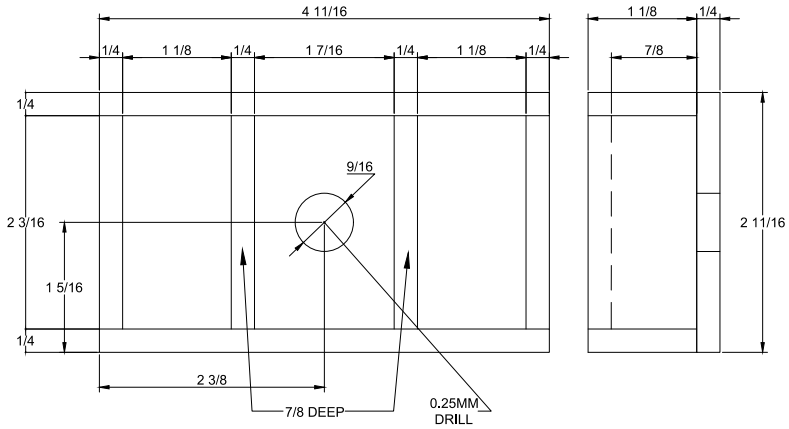
NAME: _____

1. On a blank piece of paper or graph paper, draw a labeled diagram of a pinhole camera that inspired you while you were researching. Include a minimum of three labelled details that you thought were important, and make a note of the URL or book where you saw the camera so you can find it again. Staple your sketch to this handout.

2. Using the constraints listed below, build a prototype of your pinhole camera using cardboard, tape, a small piece of aluminum pop can with a 0.25mm pinhole, and any other various materials you might need to create your winding mechanisms.

   Constraints:

   - Your camera must be light-tight (ie, the only light getting in to the film at any time is from the pinhole ONLY).
   - Your camera requires a removable light-tight back to load and access the film.
   - Your camera requires a 0.25mm pinhole in a small piece of the side of an aluminum pop can (minimum 1.5cm square, or a circle with 1.5cm diameter). Design a way to mount this piece of metal to the middle of the front of your centre compartment.
   - The pinhole must only ever be open to let light through for a short amount of time to expose the film. Design a shutter that covers the pinhole at all times to protect your film, but easily opens when you are ready to take a picture.
   - You must design two winding mechanisms: a "film advance" one to wind the fresh film across the back of the centre compartment and into the left compartment, and a "rewind" one to wind it back into the original canister before opening the camera to remove the film. Keep in mind the following:
     - o You can ask for a used film container at any developing location. Carefully tape the end of the new roll of film to the snipped end of the used roll. Design a winding mechanism on top of your left compartment that turns the spool on the OLD film roll to pull the new film out of the right compartment into the canister on the left. When the film no longer winds, you know the roll is finished. Next, have a winding mechanism on the RIGHT compartment to rewind the film back into the original spool. When the film no longer winds, you know that the film strip is safely back inside the canister and the camera can be opened.
     - o To ensure you are winding the film far enough to prevent double exposure (overlapped photos), but not so far that you waste film between shots, come up with a way to standardize your winding mechanism (one idea is to count the number of "sprocket" holes that need to pass across the back of your centre compartment and include a noisemaking clicker mechanism that allows you to count holes by listening as you wind).
   - Your camera's internal dimensions must match the following diagram:



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3 Make your plans for building your camera out of wood. Decide on wood type, thickness, dimensions, fastenings, joinery, winding mechanisms, door / back closure design and mechanism, shutter mechanism, and the ordered steps for making it. Use the space below for your first draft, and make new lists as your design develops, making sure that you note the dates on each list. Hand in all copies of your plans so your teacher can observe how your plans developed and what steps you took to solve problems along the way.

Materials list:

Tools list:

Safety Considerations and Precautions:

Procedure ROUGH DRAFT: (Include key steps and instructions)

Labelled sketch: Draw a labelled sketch of your design and staple it to this page to hand in.