Prepare a freehand sketch of a dolly approximately 2' x 3' using two fixed and two swivel casters. Fasteners should not project above the top surface. A convenient means to hand-carry the dolly should be provided.

Prepare layout, detail, and assembly drawings as assigned.
Problem 17-5

The clamp shown in the freehand sketch needs to be developed further and sent on to be manufactured in the shop.

a. Prepare a layout drawing of the clamp.
b. Prepare detail drawings of the clamp.
c. Prepare an assembly drawing and a parts list for the clamp.
**GIVEN:** A layout drawing of a wood shop clamp. Prepare detail and assembly drawings as assigned.
Conceptual views of a toggle clamp are shown in the freehand sketches. When pivot B on the toggle clamp arm ABT passes below the line of centers between A and C the pressure at P causes the elastic head to compress. Then B is “locked” in position and the object under the elastic head at P is clamped securely. A typical compression distance is approximately 1.5 mm. The adjustments at E accommodate different sizes of objects.

a. From the information given, prepare a layout drawing to establish the remaining dimensions of the components, the pivot point locations, and the bolt hole locations.

b. Prepare detail drawings of the components.

c. Prepare an assembly drawing and parts list for the toggle clamp.
**GIVEN:** A layout drawing of adjustable dividers. Prepare detail and assembly drawings as assigned.
**GIVEN:** A layout drawing of an adjustable compass. Prepare detail and assembly drawings as assigned.

**ITEM 7**
An air-actuated cylinder is to be used to bend a specimen in a fatigue test apparatus. The air cylinder and the specimen are shown in the partially completed layout drawing. You are to devise a means to support the cylinder and the specimen and to provide adjustments as indicated.

a. Complete the layout drawing with a design that provides the support and adjustments.

b. Prepare detail drawings of your design.

c. Prepare an assembly drawing with a parts list of your design. When you draw the cylinder in the assembly drawing, use phantom lines. Purchase parts such as motors, reducers, generators, and cylinders often are drawn with phantom lines.
**GIVEN:** A layout drawing of an adjustable lifting clamp. Prepare detail and assembly drawings as assigned.
The corrosion bath shown is rocked back and forth by an arm which is coupled to a variable-speed drive mechanism. Corrosive liquid is sloshed over the test specimens. The equipment was originally built by a skilled mechanic from sketches which have been misplaced or destroyed. Detail and assembly drawings of this testing equipment are needed by another company to build their own bath. From the information given in the sketches, do the following:

(a) Prepare a layout drawing of the bath equipment.
(b) Prepare detail drawings of the components.
(c) Prepare subassembly drawings of the shaft A supports and the container for the plastic bath.
(d) Prepare an assembly drawing with a parts list for the bath equipment.
Problem 24-16 (RDP)

Modify the roller assembly shown as follows:

1. Make the shaft, part No. 3, 1" diameter x 3" long.

2. Change the roller, part No. 2, to have a bronze bushing 1" inside diameter, 1.25" outside diameter x 1.6888" long; FN-2 Fit for the 1.25" diameter and RC-3 for the 1" inside diameter.

3. Change the supports, part No. 1, to have set screws to keep the shaft, No. 3, from turning.
Problem 17-24

An overall length of 9 inches for the assembly of the yoke, the screw-center, and the hooks. Make the yoke and hooks of medium carbon steel, AISI 1045. (Refer to Table 47 in the Appendix.) Make the hooks at least ¼" thick, and use ½"-20UNF threads or larger for the screw-center.

MUST INCLUDE:

<table>
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<td>PURCH</td>
<td>LOCK NUT-HEX</td>
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<td>1/4-20 UNC</td>
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<td>1/4-20 UNC X 1 1/2 L.G.</td>
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<tr>
<td>4</td>
<td>PURCH</td>
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<td>HOOK</td>
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<td>SCREW-CENTER</td>
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Chapter 17
Problem 17-19

Assume that you are a designer-drafter employed by a large company which designs and produces yard tools for average homeowners. Your company has received a request for a bid on 100,000 wheelbarrows, of approximately a 5 cubic foot capacity. You are given a freehand sketch of a wheelbarrow to more accurately determine dimensions, sizes, and the buyout requirements (fasteners and the wheel).

Assume that the time constraints require that you establish a selling price for the wheelbarrow because your company’s quotation department must meet a major deadline on another project. An approximate method of quickly setting a selling price is to calculate a “price-per-pound” of existing wheelbarrows already on the market.

Then multiply the weight of your wheelbarrow design times the price per pound for an approximate selling price.

You may need to visit a hardware store to obtain data or find an appropriate catalog. One of your colleagues said that his wheelbarrow was approximately $2 per pound.

Time is a constraint so:

a. Prepare a layout drawing of the wheelbarrow and estimate its weight.

b. Calculate a price per pound of existing wheelbarrows and establish an approximate selling price.

c. Prepare an assembly drawing with a parts list for the wheelbarrow.