

Build your own science equipment activity

Balance

Balances can be made from a variety of easy-to-find materials. You can substitute materials from the suggested list below.

What you need:

- Ruler
- Cardboard
- Nail
- 2 foam drinking cups
- String
- 2 small paper cups
- 2 metal paper clips
- Washer



What to do:

1. Cut a piece of stiff cardboard into a rectangle that measures 12 in. long by about 1 in. wide.
2. Draw a line across the width of the cardboard at its center.
3. Draw lines across the width of the cardboard 1 in. from each end.
4. Use a thin nail to punch a hole on each of these lines, $\frac{1}{4}$ in. from one long edge of the cardboard.
5. On the center line, punch a second hole $\frac{1}{4}$ in. from the other long edge of the cardboard.
6. Invert two tall foam drinking cups. Make a shallow groove across the center of the bottom of each cup.
7. Push a thin nail through the second center hole that you made in the cardboard.
8. Use the drinking cups as support stands by fitting the ends of the nail into the grooves on the cups.
9. Unbend two paper clips to form hooks.
10. Attach the hooks to the holes at the ends of your balance beam.
11. Use string to hang a small paper cup from each hook.

Activity tips:

- Small washers can be used as masses. Or, use the smallest masses from an actual set of standard masses.
- A piece of pegboard having two rows of nine holes each can be substituted for the stiff cardboard.
- If you are using pegboard, make a support stand by attaching a wooden dowel to a wood base, and then put a nail through one of the center holes of the pegboard and into the dowel near its top.

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Graduated cylinders

Small graduates can be made from tall, thin jars made of plastic or glass.

What you need:

- Tall, thin plastic or glass jars
- Paper
- Standard graduate or measuring spoon or cup
- Waterproof marker
- Tape



What to do:

1. Obtain a suitable jar and clean it thoroughly.
2. Cut a piece of paper about $\frac{1}{2}$ in. wide and about 1 in. less than the height of the jar. Tape the paper strip along the side of the jar. One end of the paper strip should be even with the bottom of the jar.
3. Use a standard graduate to add water in 10 mL increments (or equal increments of your choice) to the jar. Make a line and record the volume on the paper strip in waterproof marker each time.
4. Place a piece of clear, waterproof tape over the paper strip.

Activity tip:

- An olive jar can be the optimal size and shape for making a graduated cylinder.

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Magnets

Students can make their own temporary magnets, using a variety of materials found in the home or classroom.

What to do:

1. Hold the metal object to be magnetized in one hand. Hold a strong bar magnet in the other hand.
2. Stroke the metal object 30 times with the same end of the magnet.

What you need:

- Iron or steel objects such as knitting needles,
- nail files, nails, or bobby pins
- Strong bar magnet

Activity tips:

- Always stroke the object in the same direction.
- Do not bang or drop the objects once they are magnetized.

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Magnifier

Use household materials to enlarge objects and examine with greater detail.

What to do:

1. Fill the jar completely with water, so that there will be no air space when the lid is put in place.
2. Screw the lid on securely.
3. Lay the jar on its side on a sheet of newspaper and look through the jar at the print.

What you need:

- Clear glass jar
- Water

Activity tips:

- Olive jars and instant-coffee jars work best.
- CAUTION: Remind the students to be careful not to drop the glass jars.

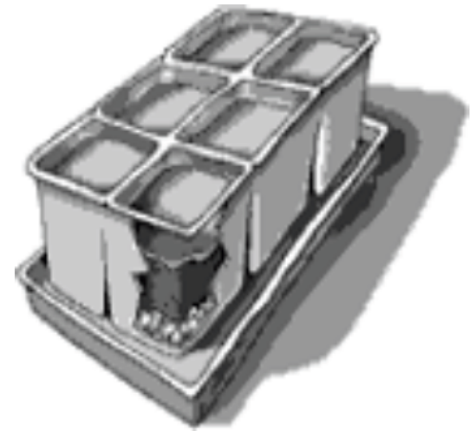
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Planter

Planters can be made in various sizes, depending on your needs. Soil can be varied as well.

What you need:

- Paper cup, plastic gallon milk jug, paper milk carton, or egg carton
- Gravel
- Loam
- Fine soil
- Plant Seeds

**What to do:**

1. Select a container of a suitable size for the purpose and wash the container thoroughly.
2. If necessary (as with a plastic milk jug), cut off the top section so that the planter is 4–5 in. deep.
3. Punch one or more holes in the bottom surface of the container to provide drainage.
4. Add layers of soil as follows:
 - About ½ in. of gravel
 - About 3–4 in. of loam
 - A sprinkling of very fine soil
5. Moisten the soil and plant seeds.

Activity tip:

- The planter can be placed in a pan, on a pie plate, or on a piece of aluminum foil turned up at the edges.

Build your own science equipment activity

Test-tube stands

Test-tube stands can be made from blocks of wood of various sizes and from other materials.

OPTION ONE | What you need:

- 2-inch-deep block of wood
- Drill

What to do:

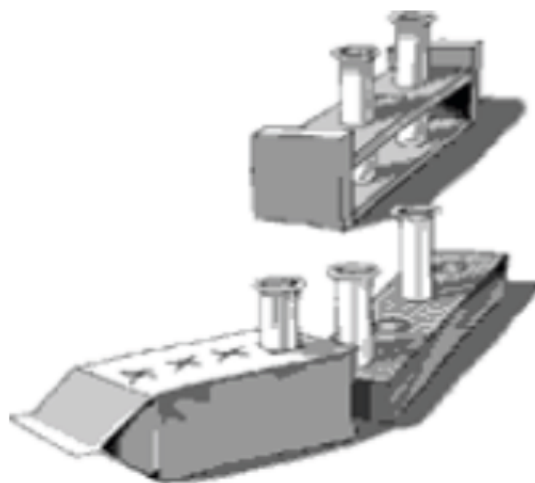
1. Obtain a block of wood that is at least 2 in. deep. The length of the block of wood can vary, depending on how many test tubes you want the finished stand to hold.
2. Drill holes 1 in. deep in the wood at about 2 in. intervals. The diameter of each hole should be slightly larger than the diameter of the type of test tube that you will be using.

OPTION TWO | What you need:

- $\frac{1}{4}$ – $\frac{1}{2}$ -inch-thick block of wood
- 1-inch-thick block of wood
- 2 blocks of wood 3–4 inches deep
- Drill
- Screws or nails

What to do:

1. Obtain a block of wood that is at least 2 in. deep. The length of the block of wood can vary, depending on how many test tubes you want the finished stand to hold.
2. Drill holes 1 in. deep in the wood at about 2 in. intervals. The diameter of each hole should be slightly larger than the diameter of the type of test tube that you will be using.



Activity tips:

- Select the dimensions of wood pieces based on the size and number of the test tubes you desire to support.

OPTION THREE | What you need:

- 1 clean, $\frac{1}{2}$ gallon cardboard milk container
- Utility knife

What to do:

1. Lay the container on its side and cut several X-shaped slits in the carton.
2. Test tubes pushed through the slits will stand upright in the container.

Build your own science equipment activity

Specimen box

Seeds, minerals, rocks, and other small samples can be organized and stored in a simple specimen box.

What you need:

- Egg carton
- Marker
- Paper
- Tape



What to do:

1. Obtain a clean cardboard egg carton.
2. Use a marker to number the pockets, 1–6 along the unhinged edge and 7–12 along the hinged edge.
3. Punch one or more holes in the bottom surface of the container to provide drainage.
4. Mark a grid on the paper that is 6 squares in length and 2 squares in width.
5. Number the boxes to correspond to the pockets in the egg carton. (The numbers should be written small and in one corner of each box.)
6. Tape or glue the paper to the inside cover of the egg carton.
7. As you store specimens in the box, write the name of each specimen on the grid in the appropriate box.

Activity tip:

- The planter can be placed in a pan, on a pie plate, or on a piece of aluminum foil turned up at the edges.

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