



MAKING A SIMPLE PENDULUM CLOCK

HOMESCHOOL SCIENCE LAB SHEET

NAME: _____ DATE: _____ COURSE/LEVEL: _____

OBJECTIVE

Build a simple pendulum clock and understand how a pendulum's swing controls time.

SCIENCE IDEA

A pendulum swings back and forth in a regular pattern. This steady motion can be used to keep time.

SAFETY FIRST

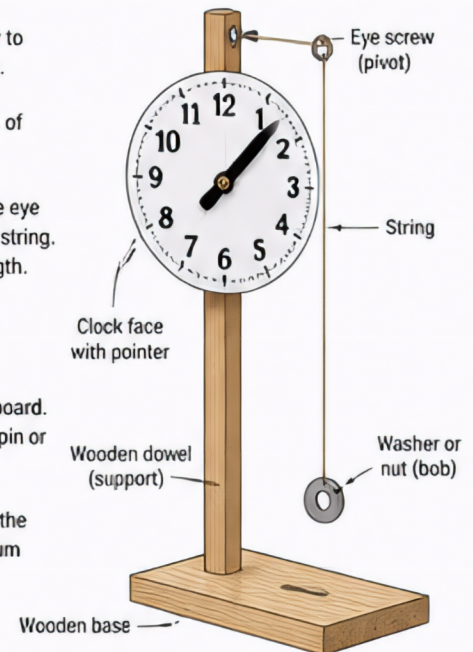
- Ask an adult for help with tools.
- Be careful with sharp or pointed tools.
- Keep the workspace clean and dry.

MATERIALS

- ☐ 1 wooden board (base) – about 12 in (30 cm) long
- ☐ 1 wooden dowel or stick – about 10 in (25 cm) tall
- ☐ 1 small eye screw
- ☐ 1 piece of string – about 24–36 in (60–90 cm)
- ☐ 1 metal washer or nut (pendulum bob)
- ☐ 1 clock face (printable template)
- ☐ 1 paper or cardboard (for pointer)
- ☐ 1 push pin or brad fastener
- ☐ Ruler or
- ☐ Pencil
- ☐ Drill or screwdriver (for eye screw)
- ☐ Scissors
- ☐ Glue or tape

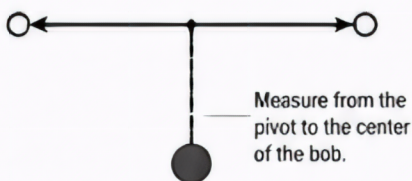
ASSEMBLY STEPS

1. Build the stand: Attach the wooden dowel vertically to the base board near one end. Make sure it is secure.
2. Add the hook: Screw the eye screw into the top end of the dowel.
3. Make the pendulum: Tie one end of the string to the eye screw. Tie the washer or nut to the other end of the string. The string length (pivot to bob) is the pendulum length.
4. Make the clock face: Print or draw a clock face and attach it to the front of the dowel.
5. Make the pointer: Cut a pointer from paper or cardboard. Attach it to the center of the clock face with a push pin or brad so it can move freely.
6. Set the time: Gently swing the pendulum and move the pointer so it does not touch the string. Your pendulum clock is ready!



SETTING THE PENDULUM LENGTH

The length of the pendulum affects the time for one swing (period). For a simple starting point, use a length of about 12–16 inches (30–40 cm) from the pivot (eye screw) to the center of the bob. You can adjust the length to improve time keeping.



TEST AND OBSERVE

1. Start with a small swing (about 10–15 degrees).
2. Time 20 swings (from one side to the other and back is 1 swing).
3. Record your time in the table below.
4. Adjust the pendulum length and test again.

Test #	Pendulum Length (pivot to bob)	Time for 20 Swings (seconds)	Time per Swing (seconds)	Notes
1				
2				
3				

Time per Swing = (Time for 20 Swings) ÷ 20

THINK AND EXPLAIN

1. What happens to the time per swing when you make the pendulum longer? _____
2. What happens to the time per swing when you make the pendulum shorter? _____
3. Why do you think pendulum clocks use the same steady swing to keep time? _____

 **CHALLENGE:** Can you adjust your pendulum clock so that 20 swings take as close to 20.00 seconds as possible? (That would be 1.00 second per swing!)