
PVC Pipe Cord Reel

Name: _____

Date: _____

Description:

The project is a simple reel made of PVC pipe that can be used for extension cords, ropes, hoses etc. It is a project helps students learn and apply basic plumbing skills and produce a practical product that can be used in the shop. PVC fitting skills are

Materials:

½" Schedule 40 PVC Pipe
½" SSS PVC Tee
½" S PVC Cap
PVC Pipe Cement (small brush)
PVC Primer (optional)
Spray Paint (optional)

Tools:

Hack Saw
Steel Tape
Shop Rag
Pencil or Marker

Directions:

1. Gather the necessary PVC pipe materials. Each student needs:
 - 4' – ½" PVC Pipe
 - 4 – ½" PVC Pipe Tee Fittings
 - 4 – ½" PVC Pipe End Caps
2. **MEASURE IT**

Determine the length of each pipe by subtracting the fitting length from the overall dimensions. Record the lengths on your worksheet. Using the steel tape *carefully* measure their PVC pipe and mark lengths with a pencil.
3. **CUT IT**

Place PVC pipe on a saw horse to hold it steady. It works best if the place being cut is as close to end of the saw horse as possible. Use a hacksaw to cut through PVC pipe on the pre-measured lines.
4. **Clean Cut**

Use a shop rag to remove burrs from the ends of PVC pipe that have been cut.
5. **LAY IT OUT**

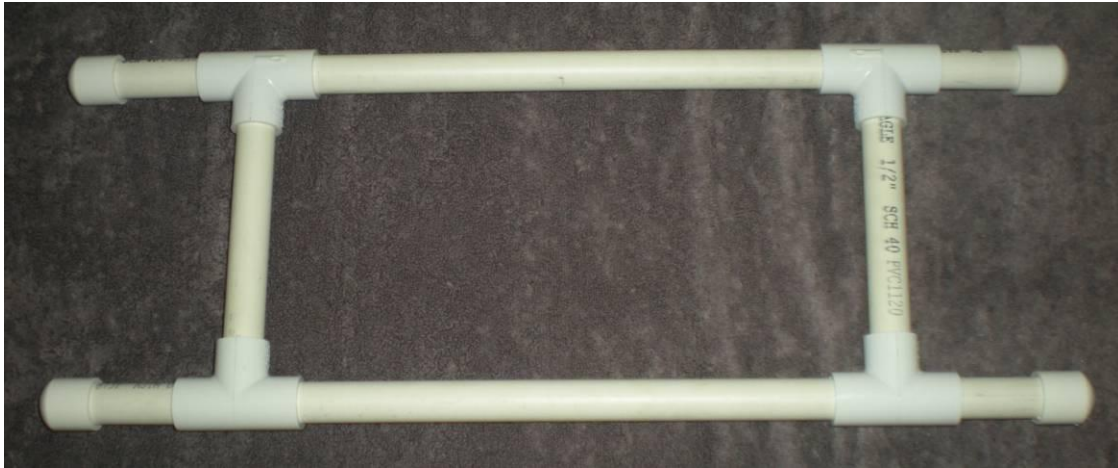
Layout PVC pipe and fittings on a flat surface but do not put them together yet. This helps ensure that pipe is correctly measured and that all fittings are present before putting the project together.

6. PUT IT TOGETHER

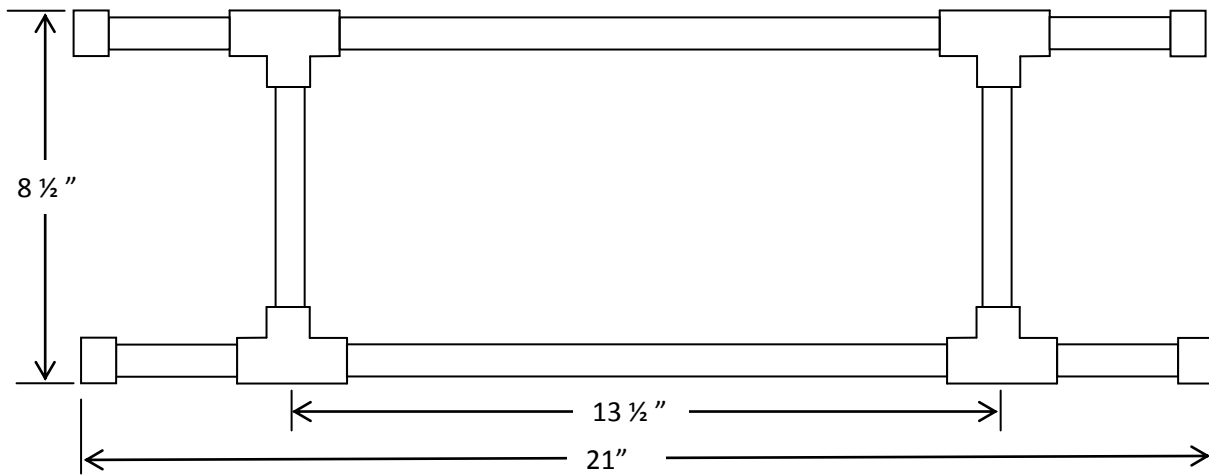
When all of the above steps have been completed, students are ready to put their cord reel together. Optionally prime the pipe (this is not required for pipe under 1" in size, but is good practice). Place a small amount of PVC cement on the inside of each fitting and on the end of the pipe. Press the pipe and fitting completely together giving the pipe a ½ twist. HOLD until set. Assemble both sides first. Place the project on the bench and press flat when assembling the tees to insure that they are aligned. When gluing the two sides together you must glue both tees at the same time.

Notes:

Drawing/Photo:



Project assembled.



Finished Project with a cord.

PVC Pipe Cord Reel Student Worksheet:

Name: _____

Date: _____

Complete this worksheet prior to starting the project.

1. What size and type of pipe is used for this project? _____
2. Draw a sketch of the project and label the dimensions of each pipe.

3. How many feet of pipe will you need to complete this project? _____

4. This project requires _____ different types of pipe fittings. List the name of each fitting, and how many of each you will need:

5. What tools are required to complete this project?

What step is important after cutting your PVC pipe with a saw, and why?

Grading Rubric:

Criteria (+/- 1/8")	Possible	Score
Length	5	
Width	5	
Distance between tees	5	
Project flat and assembled square	5	
General Workmanship (No excess pipe cement, even application of paint)	5	
TOTAL	25	

PVC Pipe Cord Reel Teaching Notes:

Each student needs 4' of PVC pipe to complete this project. You may choose to pre-measure and cut the correct amount for each student, give them the correct length, or give them the dimensions of the finished project and ask them to figure out how much they need. The third choice obviously requires more thought and skills on the part of the student. Buy fittings in bulk or contractor's packs to save money.

Agricultural Standards Met:

- 4.0 Technology Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments:
 - 4.1 Understand past, present, and future technological advances as they relate to a chosen pathway.
 - 4.6 Differentiate among, select, and apply appropriate tools and technology.
- 5.0 Problem Solving and Critical Thinking -- Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques:
 - 5.1 Apply appropriate problem-solving strategies and critical thinking skills to work-related issues and tasks.
 - 5.3 Use critical thinking skills to make informed decisions and solve problems.
- 6.0 Health and Safety -- Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials:
 - 6.2 Understand critical elements of health and safety practices related to storing, cleaning, and maintaining tools, equipment, and supplies.
 - 6.4 Maintain safe and healthful working conditions.
 - 6.5 Use tools and machines safely and appropriately.
 - 6.6 Know how to both prevent and respond to accidents in the agricultural industry.
- B1.0 Students understand personal and group safety:
 - B1.1 Practice the rules for personal and group safety while working in an agricultural mechanics environment.
 - B1.2 Know the relationship between accepted shop management procedures and a safe working environment.
- B4.0 Students understand plumbing system practices commonly used in agriculture:
 - B4.1 Know basic plumbing fitting skills with a variety of materials, such as copper, PVC (polyvinyl chloride), steel, polyethylene, and ABS (acrylonitrile butadiene styrene). (PVC ONLY.)

Objectives:

By successfully completing this project students will be able to:

- Read a plan to obtain critical dimensions
- Measure, cut and layout a PVC pipe project
- Correctly select and use shop tools

Alternate Tools:

A PVC Pipe cutter may be used in place of a hack saw if you would like students to learn how to use more plumbing specific tools. Any size (up to about 1") of schedule 40 PVC pipe may be used for this project, depending on availability.

Safety Review:

- Use of Glue (fumes)

Project Time:

Demonstration: 15-20 Minutes

Build: 90 Minutes

Demonstration Notes:

(Tips, methods to stage the project)

1. Begin by reviewing materials and tools used for the project.
2. Review the plan and show how the plan describes the project.
3. Demonstrate how to measure and mark the PVC pipe with a steel tape.
4. Demonstrate the proper technique for cutting PVC pipe using a table vice.
5. Demonstrate how to use a shop rag to remove burrs from the cut ends of PVC pipe.
6. Layout the project on a flat surface to check for correct measurements and presence of all necessary fittings.
7. Demonstrate the proper technique for gluing and putting together the PVC pipe and fittings.
8. Glue the inside of the fitting and wipe away excess glue to model quality craftsmanship.
9. Demonstrate how to use paint to completely cover the PVC cord reel.

Bill of Materials

Size	Description	Units	Qty/Project	Cost/Unit	Order	Amount
1/2"	Schedule 40 PVC Pipe	9' Pipe	4	\$1.62	9	\$ 14.58
1/2"	PVC Tee Fitting	10 Pack	4	\$2.30	9	\$ 20.70
1/2"	PVC End Cap	10 Pack	4	\$2.40	9	\$ 21.60
					TOTAL	\$56.88

Project adapted from the web by Kelly Hoppin