

**LESSON: Papermaking****GRADE:****1****OBJECTIVES:****Measurement & Data-****Measure lengths indirectly and by iterating length units.**

- **1.MD.A.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object.

**MATERIALS & RESOURCES:**

- Link for video on papermaking:  
<http://www.kidsgardening.com/growingideas/projects/nov02/pg1.html>
- Book- *Paper by Kids*, Grummer
- Rulers
- 4 blenders
- 4 wooden frames of different sizes (in the range of 5"x7" to 8"x10") with window
- 4 plastic tubs (large enough to dip frames in)
- Large recycled plastic tubs
- 4 pieces of felt or blotter paper (larger than frames)
- Sponges
- Paper scrap
- Possible Additions:
  - Dryer lint
  - Small flowers
  - Leaves
  - Pieces of foil
  - Water
  - Paper towels

**PRESENTATION:**

Talk with students about how people of ancient cultures had to write on clay tablets until paper was invented. The ancient Egyptians and Chinese developed a way to make paper out of plants and water, which was a lot easier to carry around than clay! Explain that the class is going to make paper, by recycling old scraps of paper.

**DIRECTIONS:**

1. Ask students to look for paper that needs recycling. The best kinds for making paper: old envelopes, copy paper and junk mail. For added interest, kids may want to bring in small pieces of foil, colored construction paper, dried flower petals and small leaves, thread, and even dryer lint!
2. Incorporation of math objective: As a class, or in small groups, compare the pieces of recycled paper brought in by students. Each student should have a ruler with which to measure aspects such as length and width, sizes of envelope windows, etc...
3. Ask students to tear their scraps into pieces of approximately one inch.
4. Soak the scraps in plastic containers overnight to soften the fibers.
5. Divide class into 4 groups and have them go to their stations. Each station should have a blender about  $\frac{1}{2}$  -  $\frac{3}{4}$  full of water, screens, felt or blotters, paper towels, newspaper, plastic tubs with 2---3 inches of water, and the torn paper scraps.
6. Students should add a handful of paper scraps to the blender and puree on medium speed.
7. Pour blender contents into the tub.
8. Carefully, angle the screen into the tub until it's horizontal, and gently shake screen from side to side to distribute the pulp evenly on the screen.
9. Lift screen up, allowing water to drip back into the pan.
10. Lay paper towels over the paper and invert screen onto blotter or felt.
11. Press with sponge to remove excess water. Slowly lift screen by pulling up on one edge of the frame. Add flowers or threads at this time.
12. The new paper will stay on the paper towels.
13. Move paper to drying area and put a layer of newspaper, towel, or felt over it, pressing with your hands or a rolling pin. You can pile up layers as new papers are made, and lay books or boards on top to keep it flat.
14. Later, turn the paper every so often to let it dry.

**TIME:****75-90 min**

## **PROCESSING THROUGH THE SIX PILLARS**

### **WHAT:**

- The Egyptians and Chinese found a way to make paper out of plants and water.... what if they had given up and not tried to do their very best to find a better way?

### **SO WHAT:**

- Can you remember a time when you listened to a new idea with an open mind?
- Can you think about other old scraps or things that may be considered junk that can be used in new ways? (jewelry out of old buttons, fabric scraps to make quilts, etc.)?

### **NOW WHAT:**

- It's the same way at school or home. When you are doing your school work or home chores, keep working until you are finished and know you have done your very best. Never give up!