

“Alternate Use of Materials” Practice Challenges

Supplies:	4 Paper Towels in one strip	50 Straws
	5 Pieces of Paper	100 Paper Clips
	1 Roll of Masking Tape	20 Toothpicks
	2 Toilet Paper Tubes	2 Envelopes

Challenge One

With all the materials on the table in front of you, make all the straws “stand up” using only two additional kinds of items. Time: 5 minutes.

- Possible Answers:
- Stand them up inside the toilet paper tubes.
 - Make a cylinder out of one or two pieces of paper, tape it together, and place the straws inside.
 - Bend the paper clips at 90° angles inserted into the straws to make them to stand.
 - Tape them all together and stand them up.

Challenge Two

Make a bridge to span a 12” space between two chairs or tables that will hold 100 paper clips using three additional kinds of items. Time: 5 minutes.

- Possible Answers:
- Insert ends of straws inside each other to make them longer than 12”. Bundle them together with tape. Secure the ends to the chairs or tables with tape.
 - If you wish to strengthen the straws, place toothpicks inside.
 - Insert toothpicks inside the ends of straws, hooking two straws together. Tape the ends to make a stronger joint.
 - Double the paper towels to cross the space and tape them to the chairs or tables.

Challenge Three

Make the tallest structure you can using only two kinds of items. Time: 5 minutes.

- Possible Answers:
- Straws and tape.
 - Straws and paperclips.
 - Rolled pieces of paper and tape.
 - Rolled pieces of paper with toothpicks stuck through the paper.
The toothpicks can be used both lengthwise and crosswise for connecting and strengthening.

Challenge Four

Move a book across a table 2’ without touching it. Time: 5 minutes.

- Possible Answers:
- Roll across on straws.
 - Roll across on toilet paper tubes.
 - Roll across on toothpicks.
 - Place book on the paper towels and pull it across.
 - Stick some tape on the book and pull it across using the tape.

Challenge Five

Make the five pieces of paper stand up at least 3” tall using any two additional items. Time: 5 minutes.

- Possible Answers:
- Fold the paper in half and stand up like a teepee.
 - Roll the paper into a column, tape the edge and stand the column up.
 - Place the pieces of paper on top of the toilet paper tubes (standing on their ends).
 - Fold the paper insert it into bent paperclips and stand it up.

Challenge Six

Using the straws for a surface, make a structure that will hold as much weight as possible. Time: 5 minutes.

- Possible Answer: Make a raft with straws, tape and toothpicks.

Challenge Seven

Using only the paper and tape, make a stand to hold a book at least 4 inches off the table horizontally. Time: 5 minutes.

- Possible Answer: Roll the paper into columns and tape. Stand the four columns in the four corners of the space the book will take and lay the book on the pillars.

Challenge Eight

Make a hat using all the items that fits on two people at the same time. Time: 5 minutes.

- Possible Answers: Anything goes!

Other Ways to use these Challenges

- Vary the time allows from 10 minutes to 3 minutes.
- Change the materials.
- If the team continually uses one or two types of materials, eliminate those items, and do the Challenges again without those items.
- Ask them to always use an item to solve each Challenge that they normally never or infrequently use (e.g. the envelope or the toothpicks).
- Add more Challenges.

Goals of these Challenges is to have a team

- Consider alternative uses of materials provided.
- Understand a material can be used in many ways.
- Work as a team.
- Enjoy themselves.