

Creativity College

PAPER PILE

Inspired by the late Harold Growsoyski, creativity teacher extraordinaire, this is a challenge that's super-simple to present - but not so simple to do well!

Challenge:

Build a system using a single sheet of paper and four inches of tape that can support as many reams of paper as possible as high as possible.

Typical time for this task:

20 minutes.

Materials:

For the final system itself, one sheet of 8 1/2 x 11 copy paper and four inches of cellophane tape. The testing will go more smoothly if a separate sheet is provided specifically for use as a base. If this is done, make it clear the base sheet should remain whole, flat and function only as an attachment plane to hold the system elements taped to it. It's also useful to provide a separate supply of paper in order to encourage the testing of various ideas before a final system is selected.

While not necessary, using a different color of paper for the final system simplifies keeping any test scraps from winding up as the final system.

Using wrapped reams of paper for experimentation generally beats them up and leaves them scattered about the room. Creativity College recommends requiring builders to find their own test loads, such as books, and save the reams for the final test.

Tools:

Scissors and rules for each team.

For testing purposes a clip board (ideally with the clip removed) or other small board is useful to pre-load the system in order to stabilize it for easier loading. (See below.)

Evaluation:

A smooth level table top is essential.

Have each group place its system on the table and optionally place a small board on top of its construction. This pre-loading does add a few ounces of extra weight but it makes loading the first five-pound ream of paper so much easier.

Additional reams are loaded until the builders decide to stop and ask for the solution to be measured. This risk factor of "when to stop" adds greatly to the drama and provides some wonderful glimpses of group dynamics.

At this point look for the lowest corner and measure its height above the table top to the nearest centimeter (using centimeters relieves the need to use fractions of an inch). Multiply the number of reams times the number of centimeters to get a comparative performance score. Announce this formula in advance, so it can be considered in the design process.

After measuring, it's irresistible not to test the system to the point of collapse!

Alternative: specify a given height, say three inches, and simply count the number of reams supported just before collapse. This simplification is good for younger groups. However, it tends to showcase craftsmanship more than innovation or group dynamics.

Tips:

Try to catch the falling paper during any collapses to keep the packages intact for the group testing next as well as for jam free use in the copy machine.

Teachable Moments:

Ask, "What is the best balance between a system's load carrying capacity and its height?"

Watch and talk about how each group made the decision as to when to stop loading and havits system measured - or fail to do so and earn a score of zero.

Craftsmanship and simplicity both likely count in terms of performance. Which groups showed the most care and made the best choices?

Point out to young groups that if a one sheet system holds eight reams of paper it is supporting 4,000 times its own weight. Ask could they support four thousand classmates on their shoulders?

Note: as the system becomes taller any given load is geometrically more difficult to support (and clearly that's why we start with a minium system height of one inch).

Again, for a younger group, ask how one can most easily determine the weight of a single sheet of paper. Answer: weigh a thousand on a bathroom scale and divide.