



Everyday Engineering

Strike a Balance

What you need:

- Paper towel tube
- Ruler
- Pennies (or nickels, metal washers, etc.)
- Tape



What you do:

1. Clear a space on a flat surface like a table or the floor.
2. Tape your paper towel tube to your work surface so it doesn't roll around. The open, or circle end, should be facing you.
3. Balance your ruler on your paper towel tube. The ruler should sit perpendicular to your tube to form a + shape.
4. Once your ruler is balanced add one penny to each end of the ruler. Try adding 3, then 5 pennies to each end of your ruler. Remember, your ruler must remain balanced, or parallel to your table. (Note: Pennies do not have to be stacked.)
5. Try moving the position of the ruler on the paper towel tube if needed. But, it must be able to balance on its own at the end of each challenge!

Things to try:

- Add twice as many pennies to one end of the ruler than the other. For example, add two pennies to one end of the ruler and four pennies to the other, or five pennies to one end and ten to the other.
- Stack six (or five, three, however many you can!) pennies on one end of the ruler and none on the other end. How does the position of your ruler need to change?
- Try balancing a second and third ruler on each end of your first ruler – almost like you are making an H out of your rulers. Once these rulers are balanced, try the penny stacking challenges again!