



# be cool grandpa

## Nailed It!

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Inspired by, Be Cool Grandpa

Center of Mass: the point at which the distribution of mass is equal in all directions and does not depend on a gravitational field.

**Time:** Gather 11 same size nails and a block of wood

**Activities:** 1 plus. Fun party trick.

**Skill level:** easy - Adult help to get started.



### materials:

- Eye protection
- 11 Nails. All the same size. I prefer 6" nails.
- Small block of wood. 5"x 5" works
- Hammer



### instructions for activities:

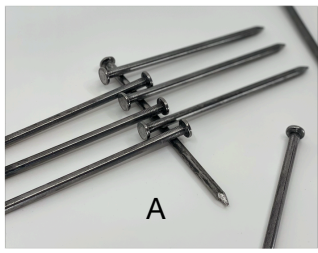
Step 1) Using your hammer, nail one of the nails into the center of the block of wood.

#### The set up

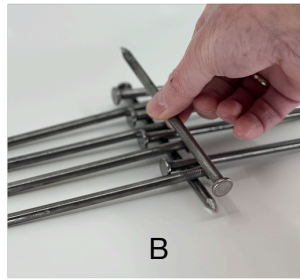
Step 2) Pile the other nails around the block of wood and ask a friend or family member to "balance all these (10) nails on the one standing nail in the block of wood".

Step 3) Let them try many different ways, don't rush them. You can give them some hints, such as, "find the center of gravity".

## How it's done



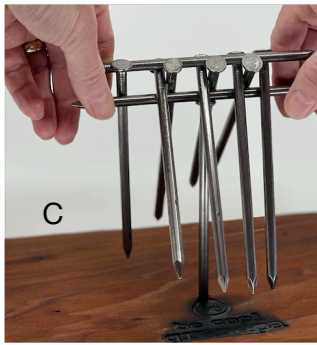
Step 4) Start by placing one nail in front of you and then laying each nail opposite each other over the first nail. *Image (A)*



Step 5) Then place the last nail in the opposite direction. This locks it all together. *Image (B)*

Step 6) Carefully hold each end of the nails and lift all the them onto the one standing nail in the block of wood. Find the balancing point then let go of the nails and they will balance on top of the base nail. *Image (C)*

Step 7) Stand back and admire your “center of mass” at work.



## grandpa's thoughts:

This is a fun party trick that illustrates the center of mass (or gravity). It's so cool just to see all the nails balancing on one nail. It defiantly has a “wow” moment.

Explore other “center of mass” activities and learn what role gravity plays.