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Spinning Shelves (Teacher Version)

Facts About Friction

Friction is a force that works against motion. Do you see friction at work in the picture?

How does the skier in picture A move easier than in picture B? *The smooth snow and the sharp edges of the skis reduce friction more than the rubber shoes and blades of grass.*

Lazy Susan

Materials:

- Marbles (same size)
- 2 jar lids,

1. Place just enough marbles inside the smaller lid to fill it.

2. Use a lump of sticky tack to attach the top of the smaller lid to the bottom of the plate's centre.

3. Set the larger lid onto the marble-filled smaller lid.

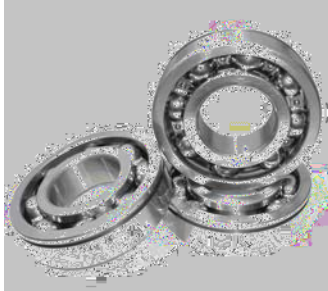
4. Fill the plate with snacks, and set the Lazy Susan in the middle of the table for everyone to reach by spinning!

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Talk About It!

1. Why does the Lazy Susan spin freely?
The marbles keep the two lids from touching, acting like ball bearings to reduce friction for a smoother action.

2. Why did the marbles all have to be the same size?
Otherwise the smaller ones would not touch both lids and wouldn't roll the lid.



Real & Rolling

Beside the table-top version we made today, Lazy Susans are also a useful storage invention for a cramped kitchen! How do you think the Lazy Susan in the picture works?



The two levels spin so that people don't have to strain and reach so far into the corner of the cupboard.

Clever Carting

The Problem: The Pyramid builders back in ancient Egypt had a tricky issue to tackle: How could they overcome friction to move stones to the top of a pyramid?

The Solution: The clever Egyptians build Earth ramps around the pyramid and hauled the stones on log sledges (a sled on logs). What seemed impossible became possible when friction was reduced.



Make Your Own Sledge!

Try pushing a book across a smooth floor or tabletop using your pinkie. Now, line up 6 pencils evenly underneath the book and push again. What's the difference?

Compare the action of the pencil sledge to the Lazy Susan. *The sledge set-up makes things back and forth, while the marbles allow for circular motion, or free motion if not in the caps.*



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