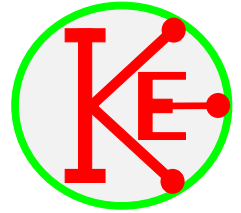


5 Rollers



EQUIPMENT

- Selection of clockwork or wind up items e.g. clockwork radio, wind-up torch or watch etc.
- Old CDs or equivalent discs
- M8 washers
- Matchsticks
- Kebab sticks with point removed
- 9cm lengths of 15mm plastic water pipe with groove filed into the one end
- 10cm elastic bands
- Measuring tapes or metre rules.
- Timers/stop clocks
- Sellotape
- Candle wax or grease for washer
- Wire hooks to help insert rubber bands

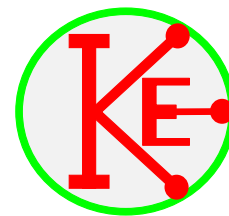
RISKS

Take care when winding up the elastic bands to not over-tighten them so that they snap.

Through this activity you will support your group to:

- Create their own wind-up band roller.
- Compare the speed and duration of their different band rollers.
- Log and share their results, reflecting on how they could improve their design.

Rollers



NAME:

Equipment

To build your roller you will need:-

2 × old CDs or equivalent discs	1 × 9cm long pipe
1 × M8 washer	2 × 10cm elastic bands
1 × Matchstick	2 × small pieces of Sellotape
1 × Kebab stick	1 × wire hook

Construction

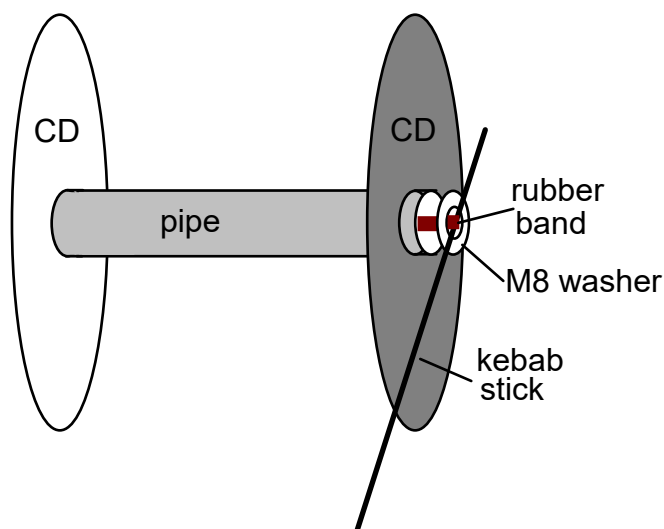
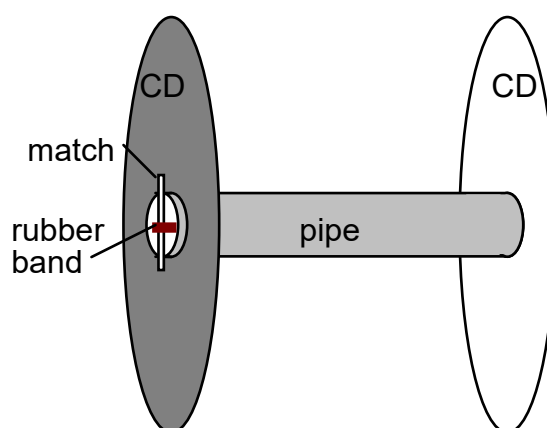
Put the pipe with the grooved end into the hole in a CD.

If it is not a tight fit then remove, the CD, put a small piece of Sellotape along the end of the pipe and try the CD again.

Repeat with more small pieces of Sellotape until the CD fits tight.

Put the same amount of Sellotape onto the other end of the pipe and fit the other CD.

Put the match stick through one end of the rubber band and thread the other end through the pipe. The wire hook will help with this. Adjust the match stick so that it fits in the groove in the pipe.



Pass this end of the rubber band through the washer and put the kebab stick through the end of the rubber band.

It may be worth putting a smear of candle wax or grease onto the side of the washer next to the kebab stick.

Wind up your roller using the kebab stick. Place it on the table and see if it moves.
If it does not move, then wind it up more and try again.

Investigate how far your roller will travel.

How is the distance affected by how much your roller is wound up?

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Add another rubber band to your roller.

How is the distance affected by how much your roller is wound up?

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Where does the energy come from to make your roller move?

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Wind up your roller and note the number of turns.

How far can your roller travel in 2 seconds?

Calculate how fast your roller travelled.

Investigate how can you make your roller travel faster?

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