



## 2. Spinning Tops

### Science

- Energy
- Fair testing
- Measuring
- Movement

### Design and Technology

- Combining materials
- Evaluating
- Game design
- Gears

### Vocabulary

- Gearing up
- Speed
- Spin
- Stable
- Unstable

### Other materials required

- Coloured pencils or markers
- Paper
- Scissors
- Several square metres of smooth, flat floor space
- Timer or clock

## Connect

One day at the park Sam and Sara saw some other children playing with spinning tops. Their tops spun for a long time before falling over. Great fun! Sam and Sara thought about how to make some tops themselves and in no time they were spinning their own tops. But their tops didn't spin for long and soon their fingers started to hurt from all the spinning. They needed a device that could make the spinning tops spin faster and better!

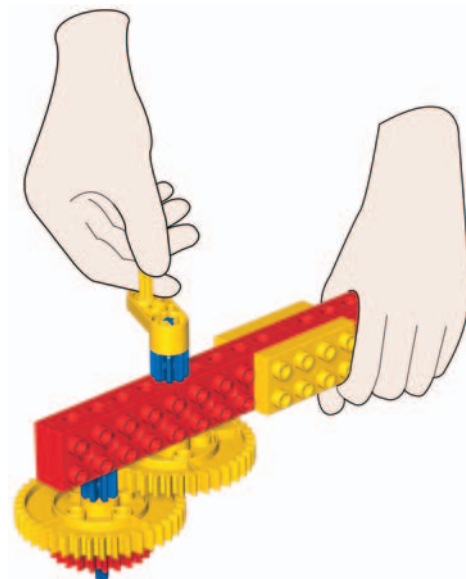
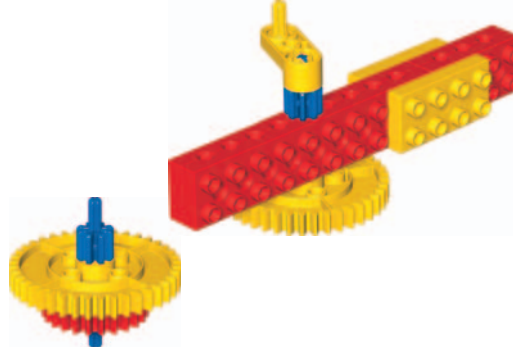
**Can you help Sam and Sara build a device that can make the spinning tops spin?  
Let's find out!**



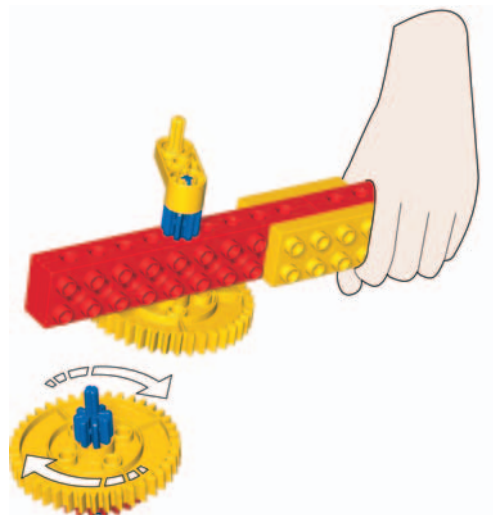
## Construct

Build the Launcher and the Spinning Top using building instruction no. 2

- Hold the launcher and place the gear end of the launcher over the blue gear axle
- The blue gear should mesh with the big yellow gear and spin as you turn the handle



- To launch the top, turn the handle and lift the launcher straight upwards



**Tip:**  
Launching tops requires good coordination skills! Try it yourself.

**Idea:**  
It may be a good idea to let younger children play with the top and launcher before embarking on serious testing.



## Contemplate

### Long or longer?

The top can work in two ways. The yellow gear of the launcher can mesh with both the blue and the red gears of the top. Find out which top will spin longest.

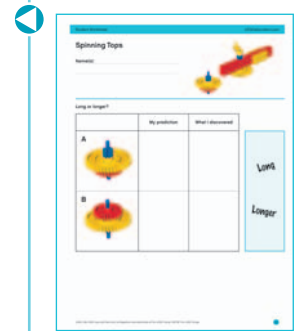
First predict which top will spin for a long time and which top will spin even longer. Write down your predictions using the words on the worksheet.

Next, test how long the tops will spin first using the blue 8-tooth gear and then the red 24-tooth gear. Write down your findings using the words on the worksheet.

	My prediction	What I discovered
<b>A</b> 		Long
<b>B</b> 		Longer

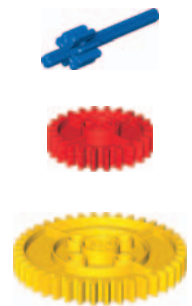
Have the children reflect on their tests by asking questions such as:

- What did you predict would happen and why?
- Describe what happened.
- Was this a fair test?  
*Did you turn the handle in tests A and B at the same speed? Did you test all the tops on the same surface?*
- Describe how the model works.



**Tip:**  
To accurately time how long the tops spin, use a standard measuring timer.

**Did you know?**  
The blue gear has 8 teeth, the red has 24 teeth and the yellow gear has 40 teeth!



## Continue

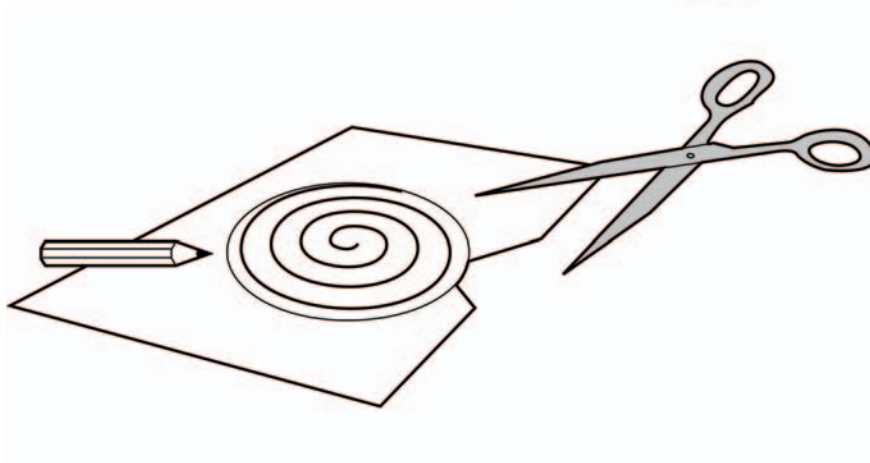
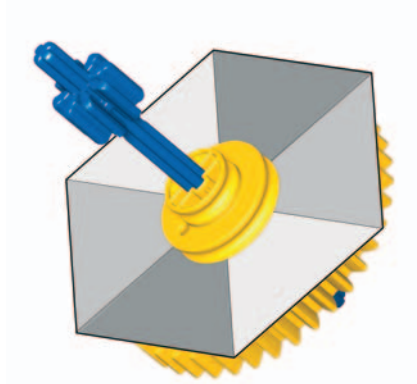
### Can you design your own spinning top?

Design and make your own spinning tops.

Consider which materials and shapes would be best.

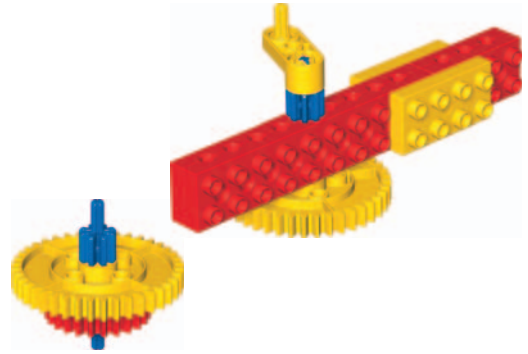
Create amazing optical effects and tops for all sorts of games.

*On the worksheet, draw your best spinning top design.*





# Spinning Tops

Name(s): \_\_\_\_\_  
 \_\_\_\_\_



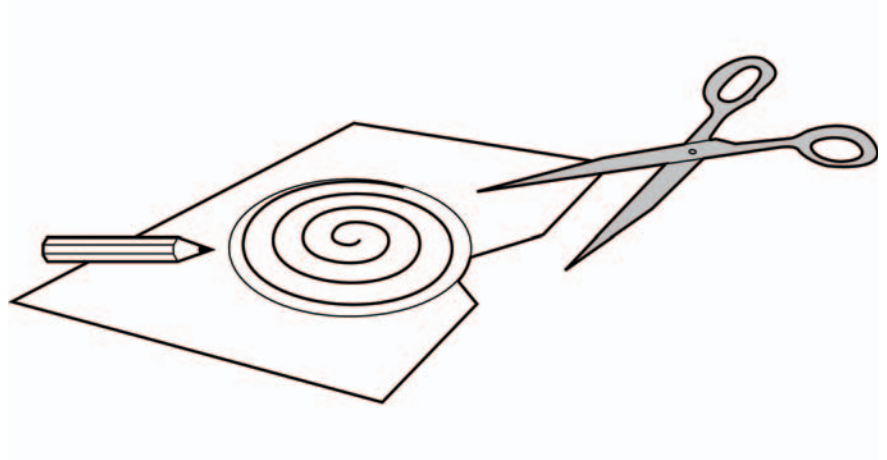
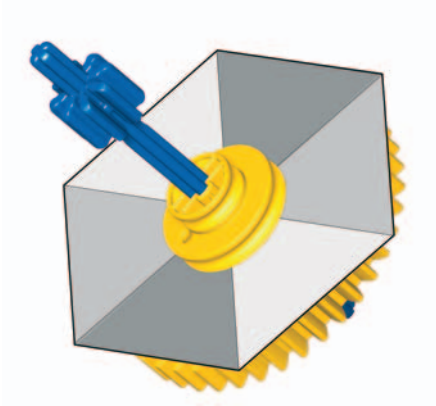
Long or longer?

	My prediction	What I discovered
<b>A</b> 		
<b>B</b> 		

*Long*

*Longer*

Can you design your own spinning top?



Draw your best spinning top design