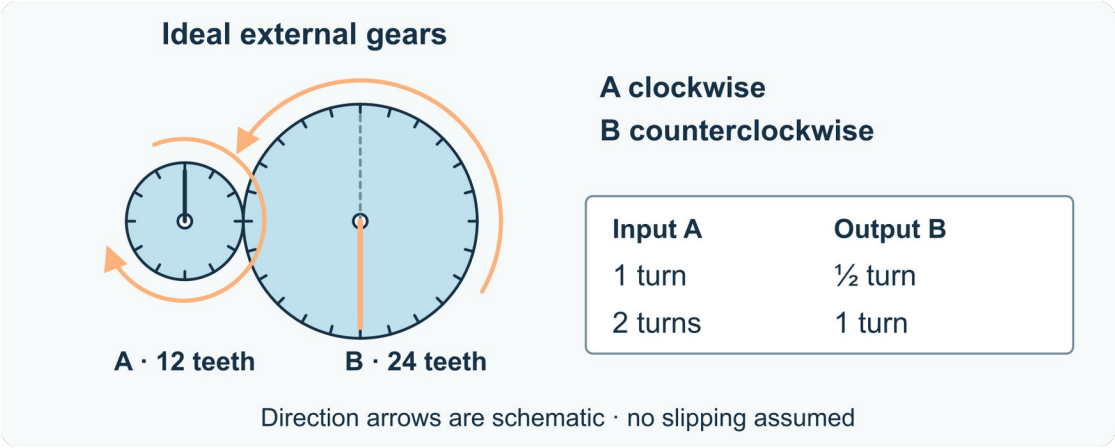
Explain an invented mechanism

How can a sequence of labelled drawings show where motion goes?

Trace the input and output of a fictional two-gear display without building a machine.

Investigate | 10-20 minutes, or one small comparison | Scrap paper and a pencil or pen, The supplied original model; no account, purchase or online search needed

Start here Draw two touching circles. Label the smaller input A: 12 teeth, and the larger output B: 24 teeth.



One input turn becomes half an output turn

1 Name the input

Choose which gear a fictional handle turns. Mark A with an arrow; this example uses clockwise input.

2 Follow the contact

For two external gears that mesh without slipping, the second turns in the opposite direction. Mark B counterclockwise.

3 Track a turn

One turn of A passes 12 teeth through the contact. That moves 12 of B's 24 teeth: half a turn. Show the same starting mark on a second sketch.

4 Explain the model

Add an input-to-output caption. Keep your explanation to direction and turns; the sketch does not prove a real mechanism will work.

Original model a rotating sign

These are ideal external gears in an invented desk-display drawing, not tested hardware.

• A has 12 teeth; B has 24. Their sizes and tooth counts stay fixed.

• A turns clockwise once; B turns counterclockwise half a turn.

• Two turns of A would move B through one complete turn.

What this example can show The model assumes gears mesh without slipping. It does not calculate friction, strength or the force needed.

A different way

Trace the contact with a finger, point to the labelled arrows, or describe the turns while someone else marks them.

If you want to go further

Draw an equal-sized third gear touching B. Work out its direction and turns before changing the drawing.

Something to notice

Which claim follows from the tooth counts, and which claim would require a real test?

Read or explore more

Horizon topic Mechanisms Machines

https://launchhorizonhq.com/learn/mechanisms-machines/

Horizon topic Engineering Drawings

https://launchhorizonhq.com/learn/engineering-drawings/

Horizon topic Engineering

https://launchhorizonhq.com/learn/engineering/

TeachEngineering, University of Colorado Boulder Get in Gear

https://www.teachengineering.org/activities/nyu_getingear_activity1

OpenStax, Rice University Simple Machines

https://openstax.org/books/physics/pages/9-3-simple-machines