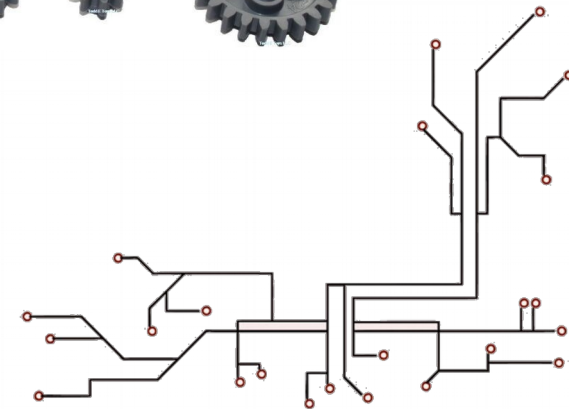
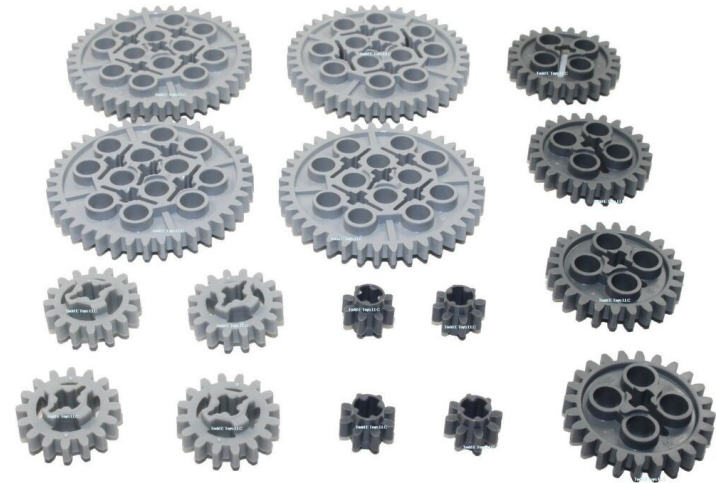
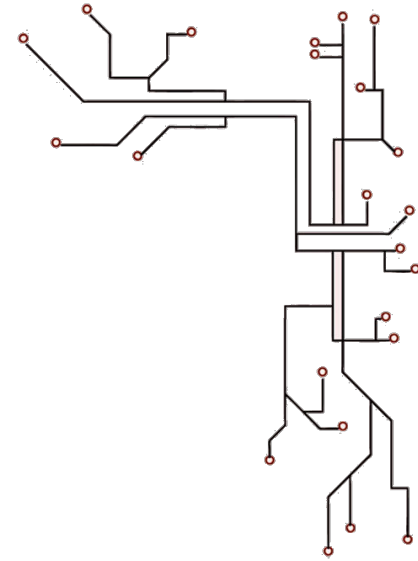


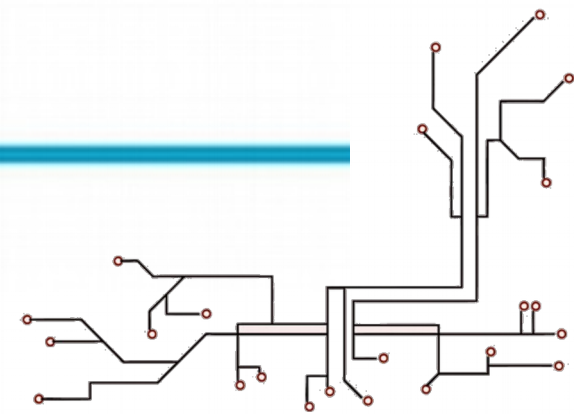
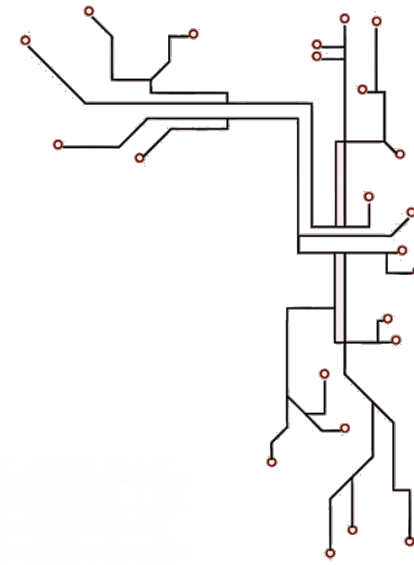
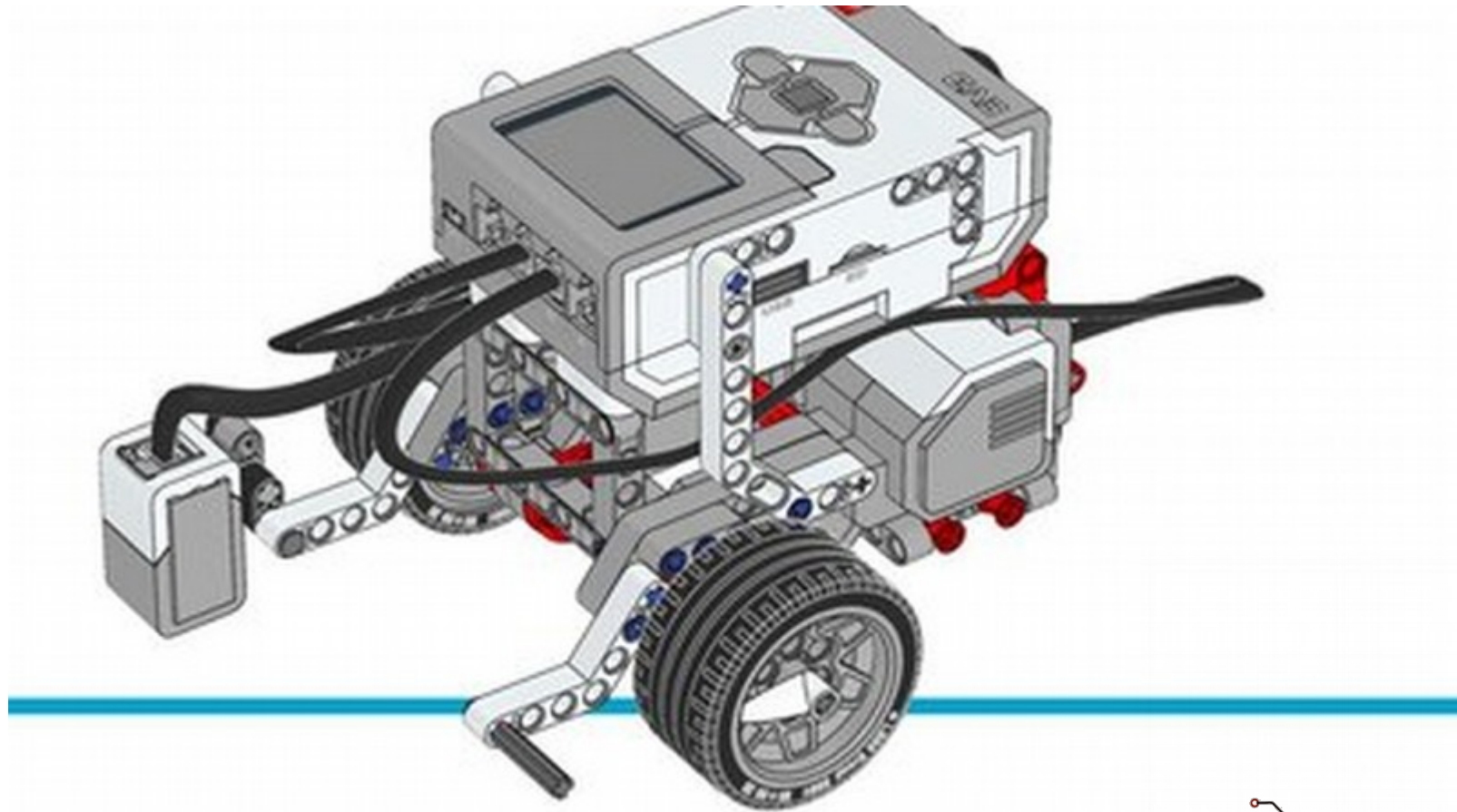
Drag Racing – Gear Up!

- 2-Wheel Robots (Review)
- The Need for Speed
- Gears – What’s the Deal?

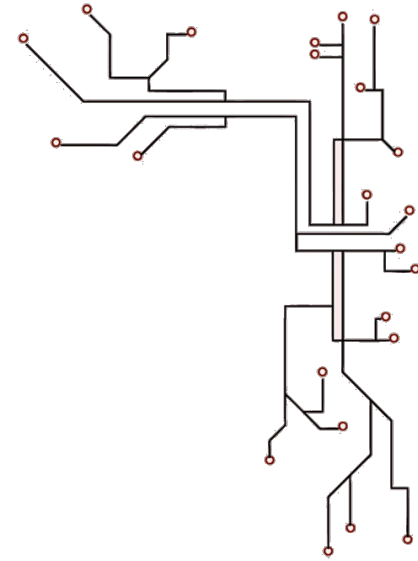
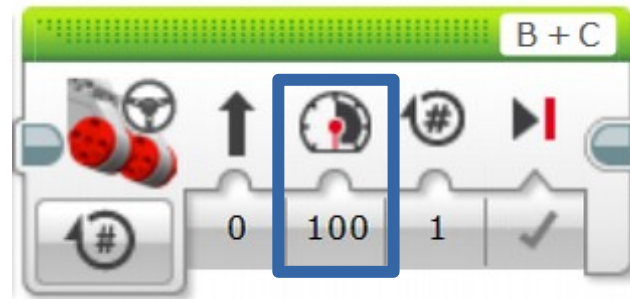


EV3 Robot Educator

Review 2-Wheel Mechanics



Moving Faster

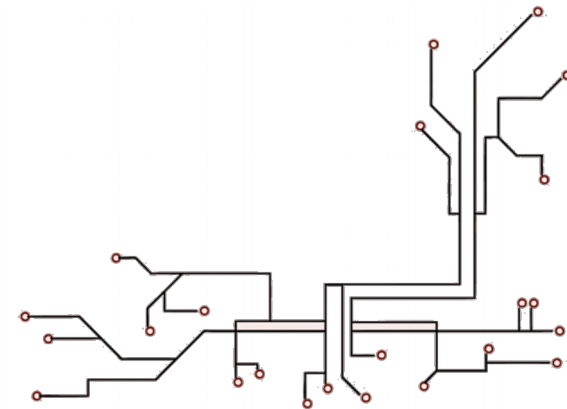


The Large Motor has a top speed of **~2.8 revolutions per second**.

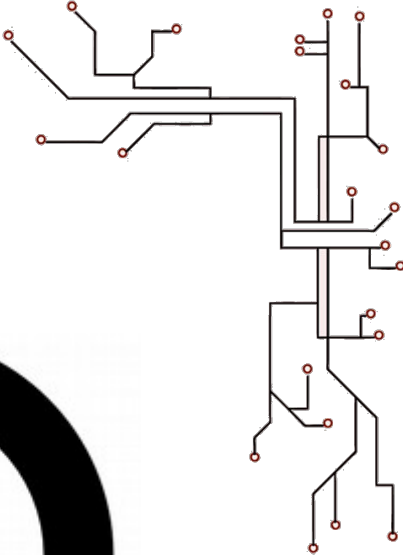
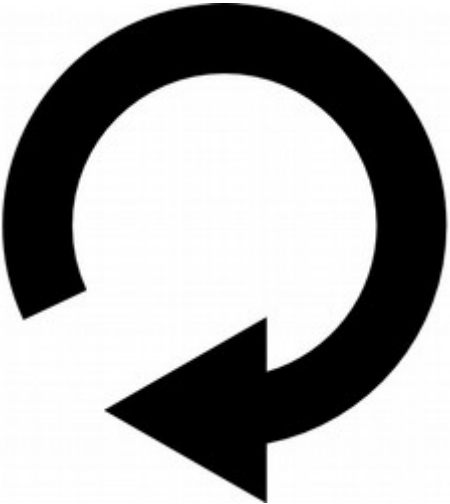
Given that top speed, what can we do to move faster?

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Wheel Circumference

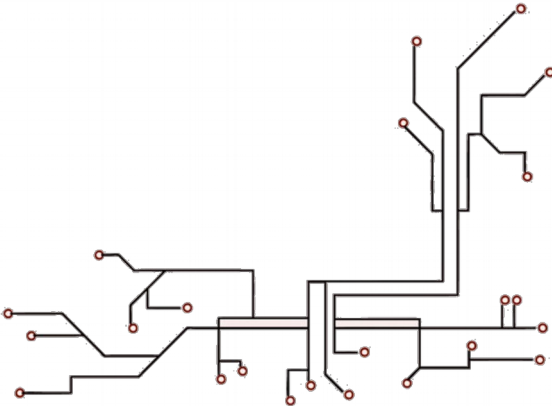


Same rotational speed:

Small Wheel vs. Large Wheel?

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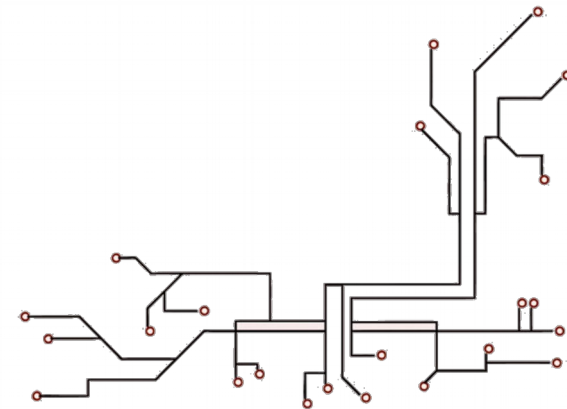
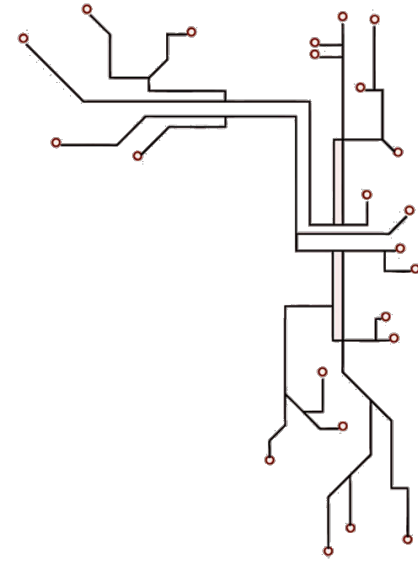


All Grip / No Slip



- Remember Weight Distribution & Grip
- Don't Let Wheels Slip!

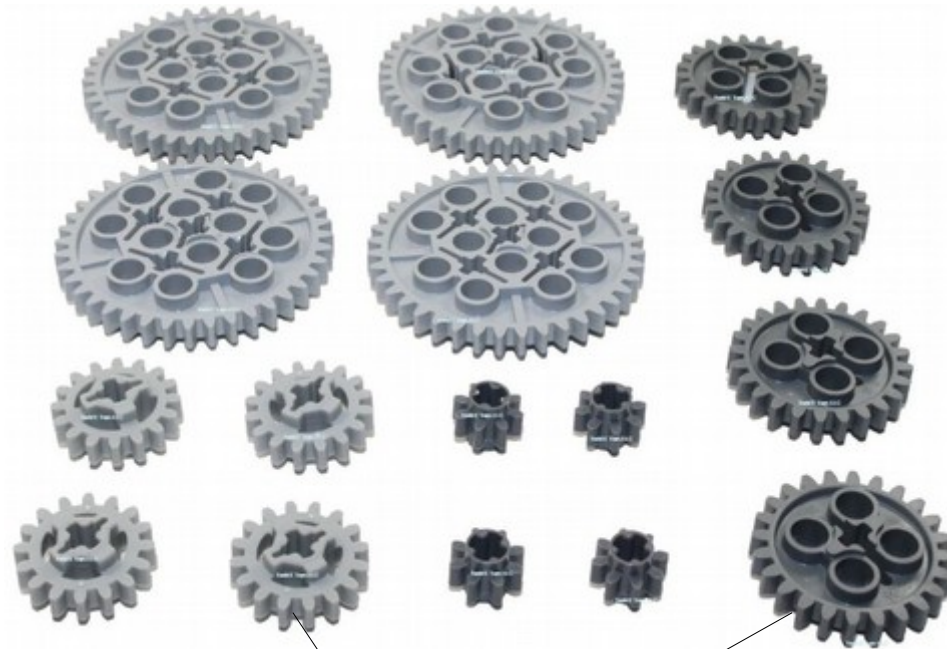
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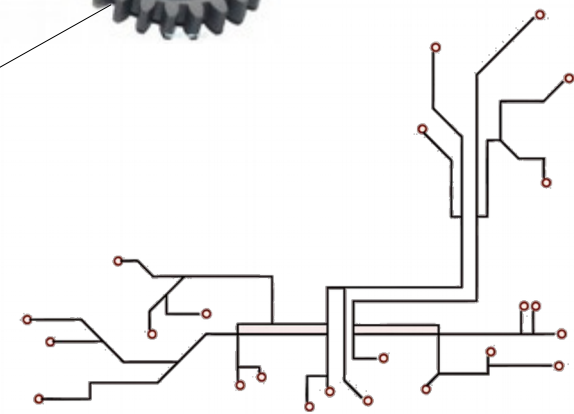
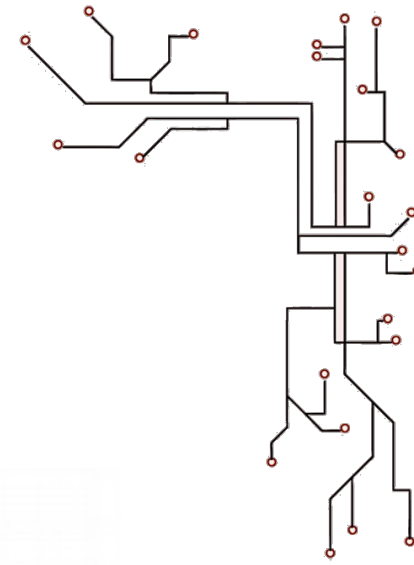
Spur Gears

Gearing Up To Speed Up

With Spur Gears:



Teeth

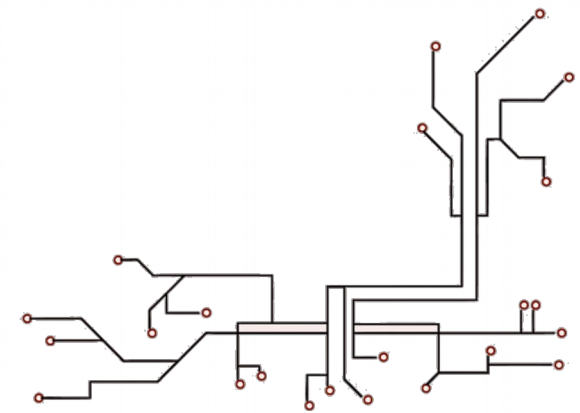
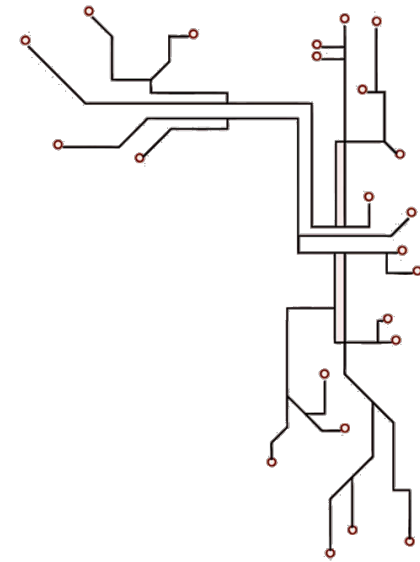
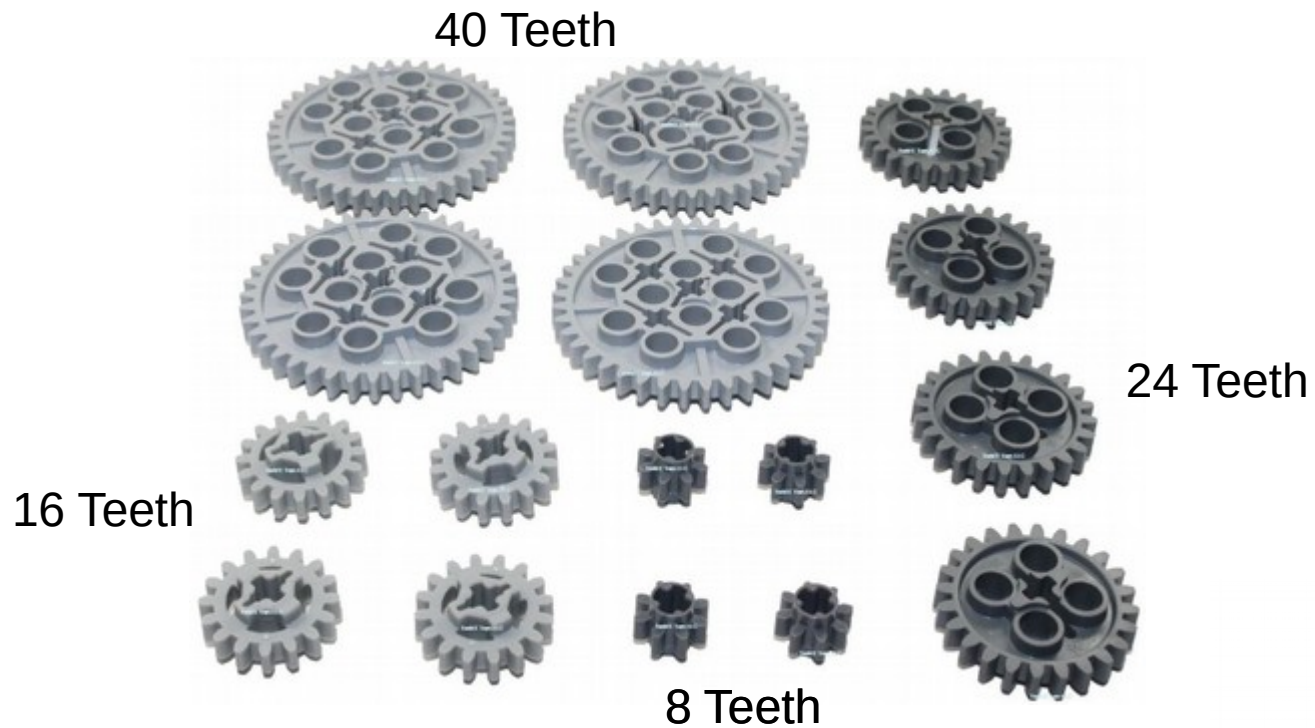


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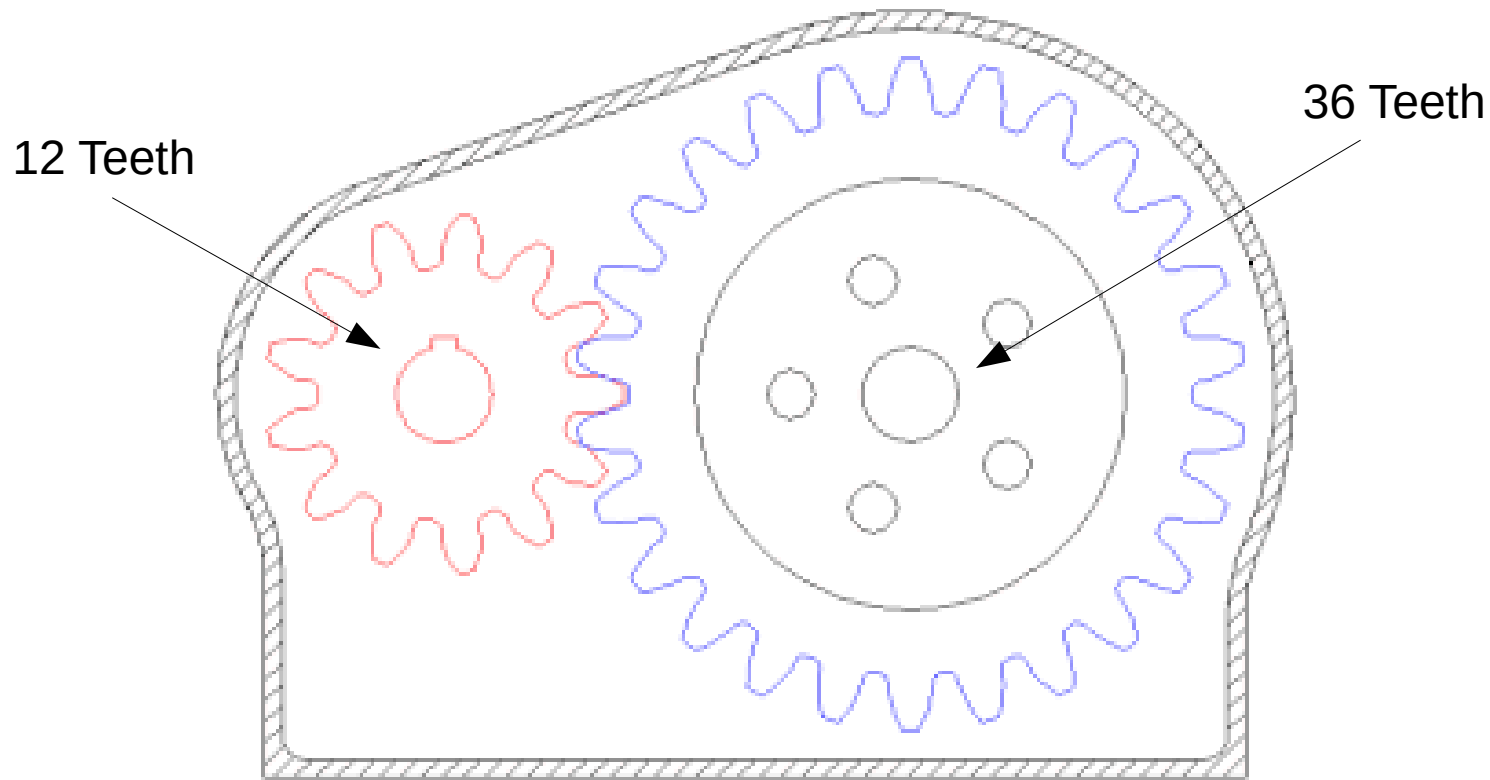
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EV3 Spur Gears

Spur Gear Teeth



Gear Ratio

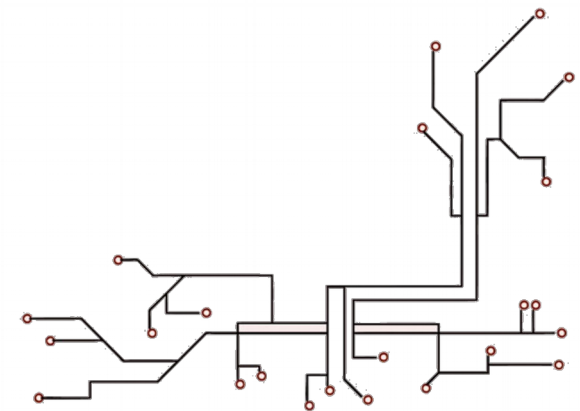
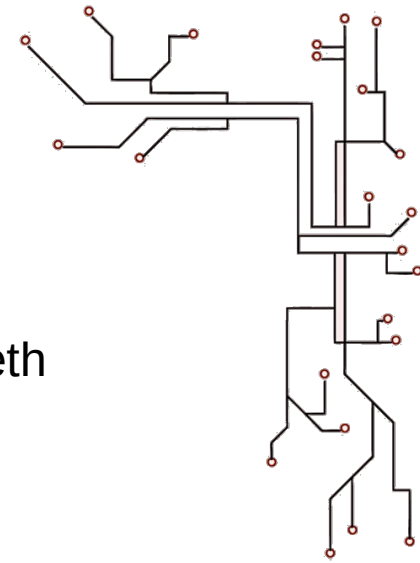


12 : 36 or **1 : 3**

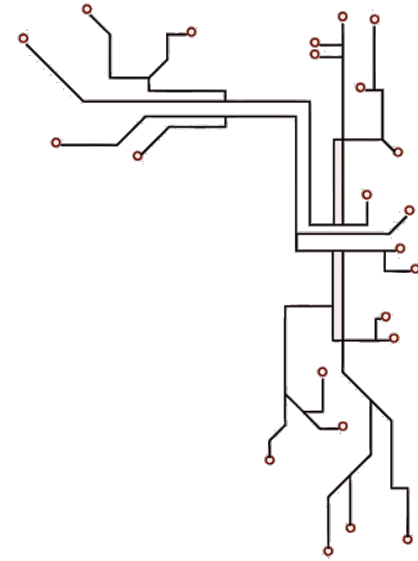
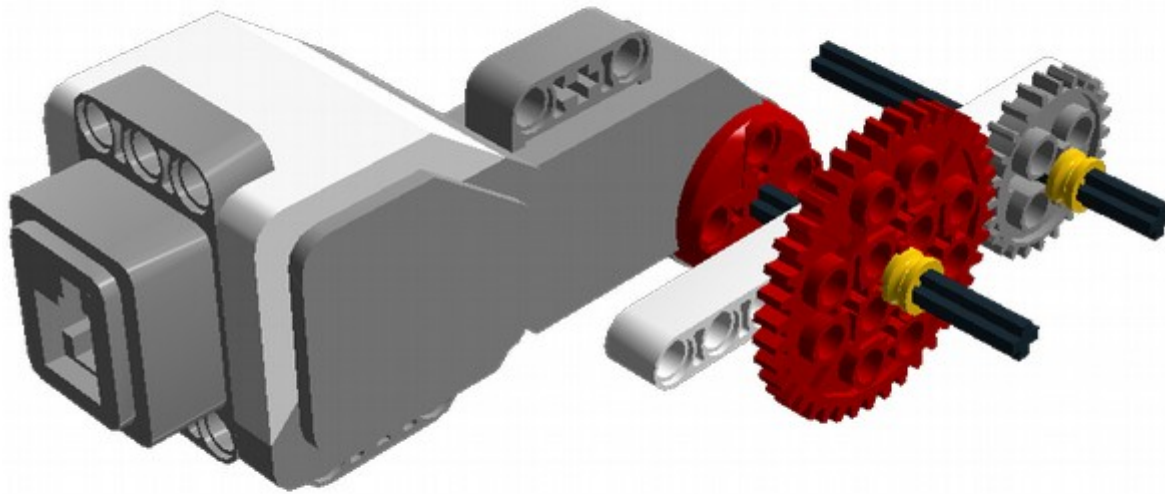
Small Gear Rotates 3x Faster

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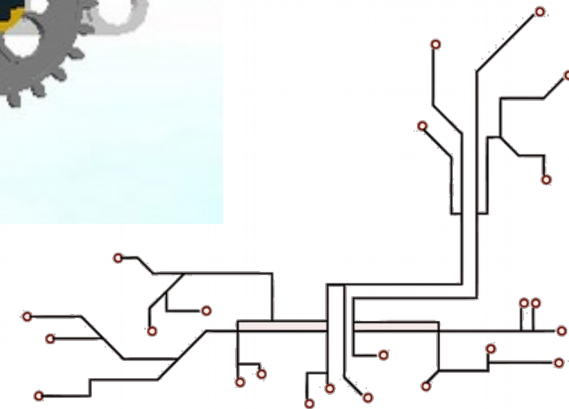
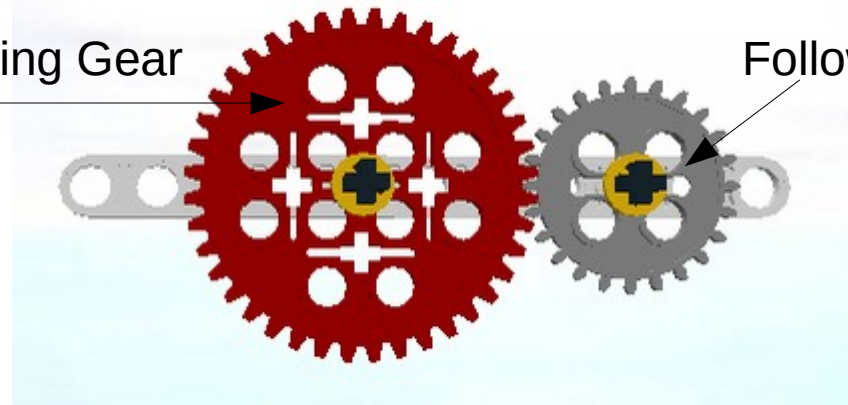


EV3 Spur Gears

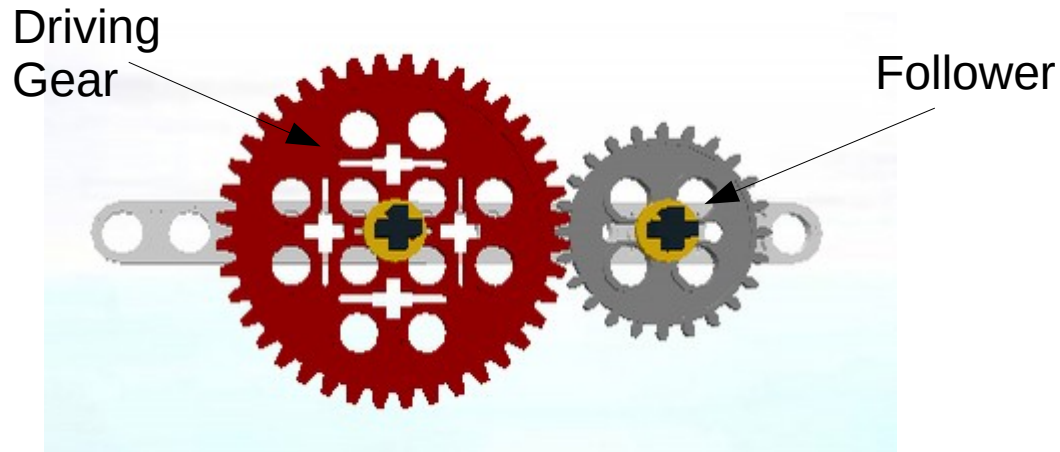


Driving Gear

Follower



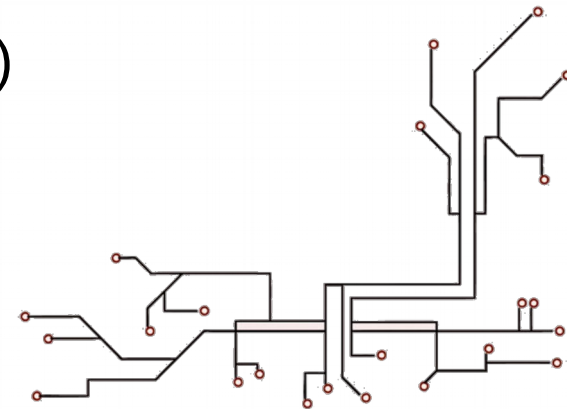
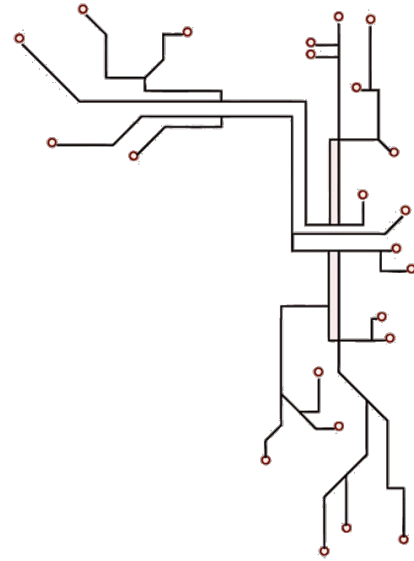
Driver vs. Follower



24 : 40 or 24/24 : 40/24 or 1 : 1.67

Small Gear Rotates **1.67x Faster**

(but *loses some torque* – easier to stop axle)

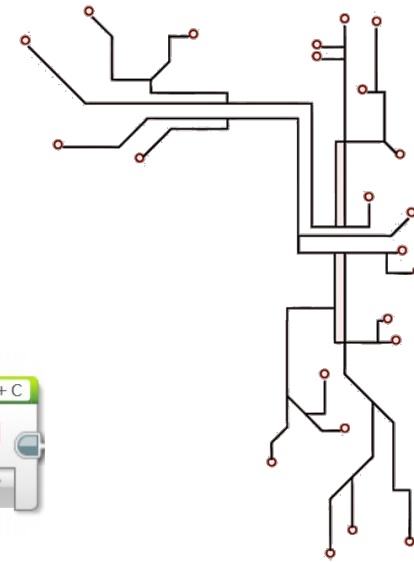


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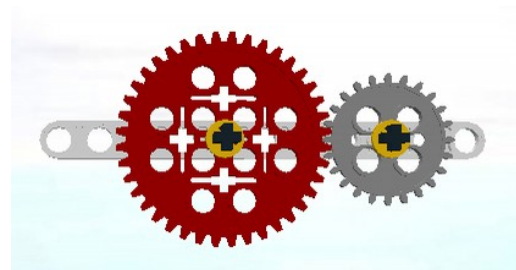
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Moving Faster

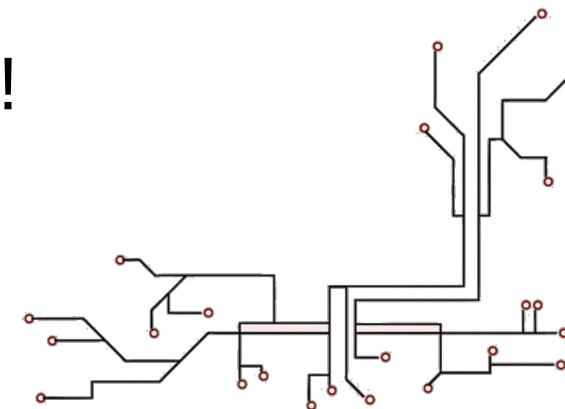
- **Wheel Circumference**



- **Gears**



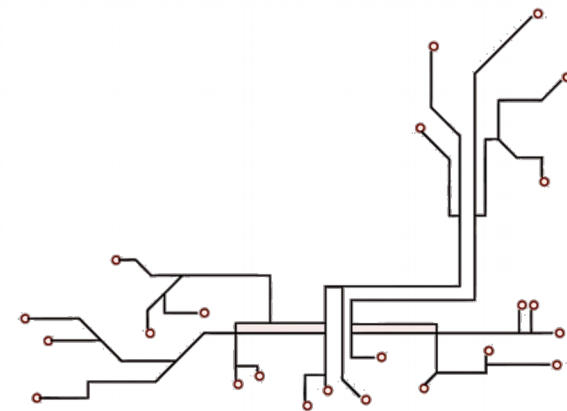
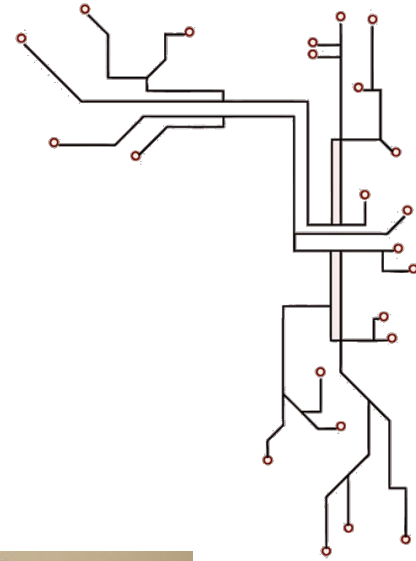
- ... And Don't Forget **Grip!!**



Drag Racing

How fast can *your* robot go?

Let's RACE!



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