LEGO CONSTRUCTION !

AKA How I Learned to Stop Worrying and Drop the Bot

AIMS

- Construct a chassis to withstand the dreaded 3-foot drop test
- Complete a robot which shall withstand the trials of competition
- Learn general mechanical engineering principles
- Examine the parts given to you

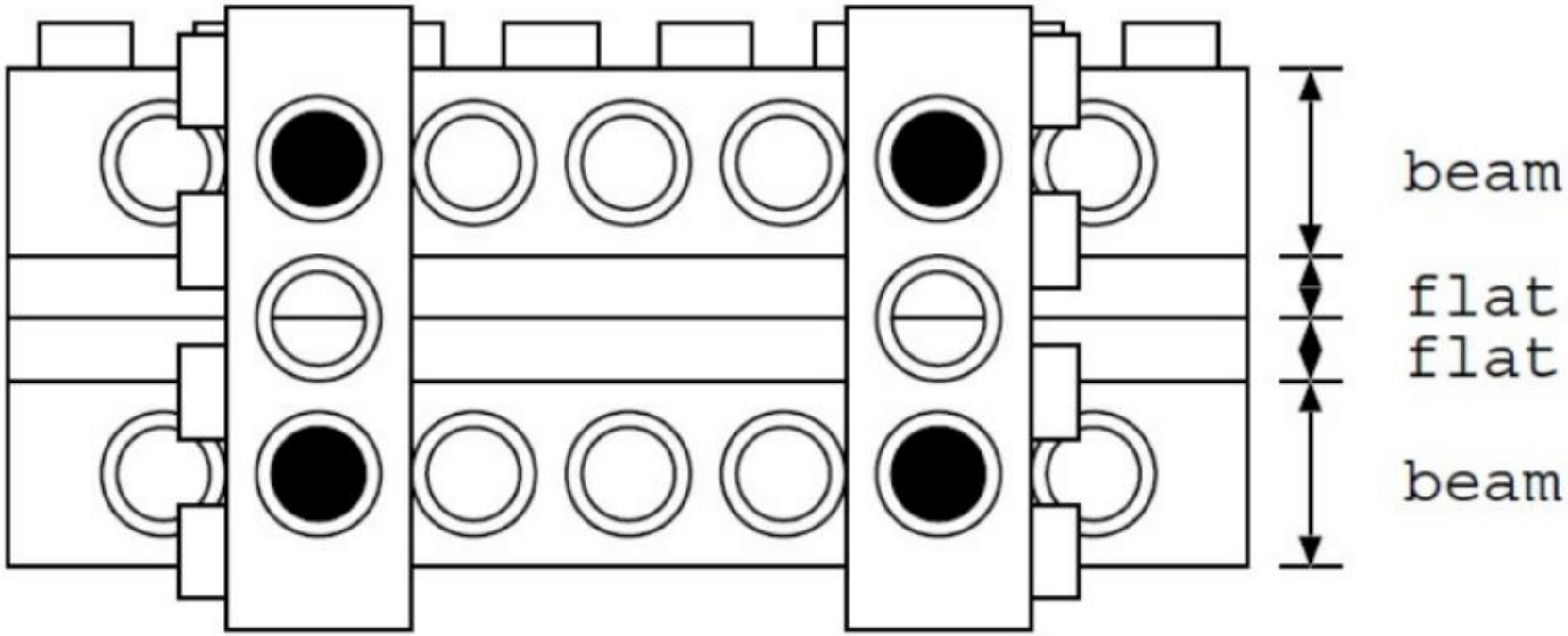
Legos

- Legos are plastic! They bend!
- Gearboxes and other kinetic parts do not like bending
- Construction of rigid chassis and gearbox and tight motor housings are essential
- Certain Lego parts are MUCH BETTER for given tasks than others

Chassis Construction

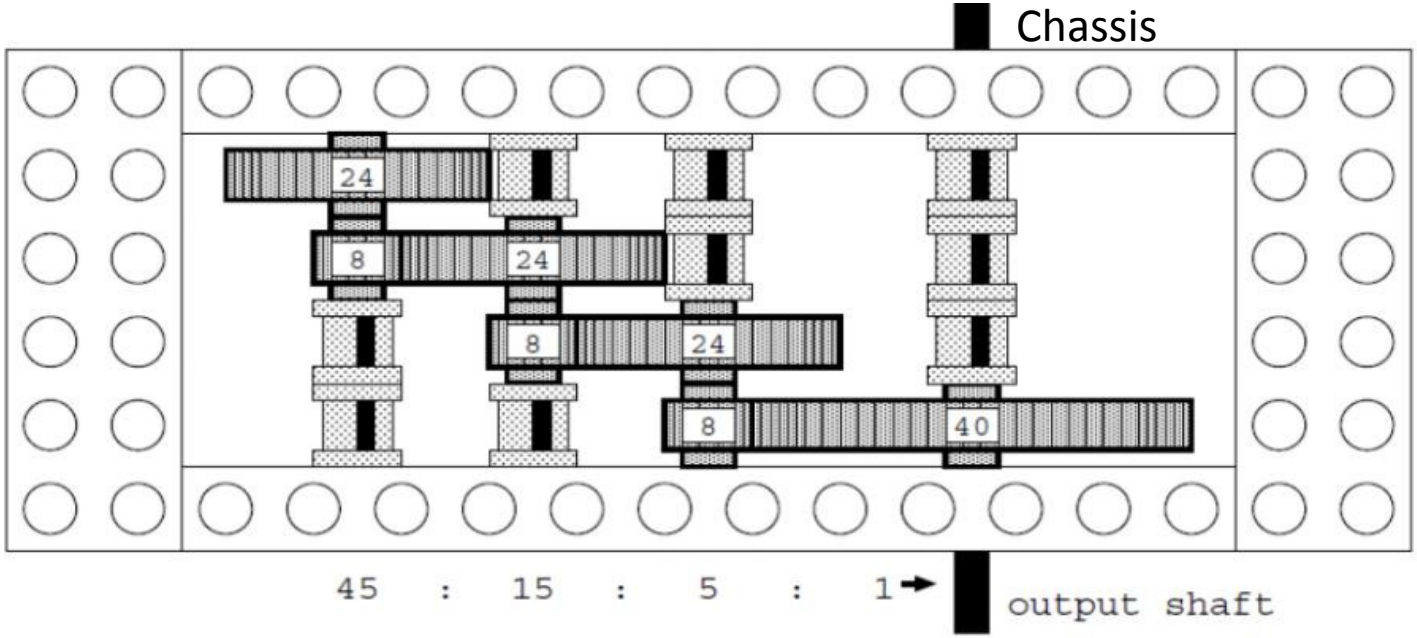
- Use beams (1 x something)
- Longer is better
- Don’t be frugal
- Plates will not “glue” your robot together by themselves
- For horizontal and vertical support, make your chassis at least 2 beams high and 2 beams wide
- BRACE FOR IMPACT

Bracing



Use BLACK pegs

Gearboxes



- Use spacers to ensure gears don't slide
- Rigid gearbox and motor enclosure to ensure proper connection
- (Don't grind your gears)

Wheels

- If possible, enclose your wheels
- For unpowered, non-steering wheels, use casters or tires without rubber (to decrease friction)
- Use large rear wheels, smaller front wheels (balance)
- You CAN use the belt (like a tank), but not recommended

Auxiliary Motors

- Servos usually do not require gearing
- Use tape and tight motors housings
- If need be, chains can connect gears across the robot but are hard to use
- Worm gears not recommended (inefficient, wear heavily)

Remember

- Legos are designed with specific ratios in mind, so if things don't fit perfectly, don't try to force it
- Building takes time; if possible, make a code-tester robot
- Brace your chassis with black pegs (grey pegs are loose)
- Three feet hath slain many a robot – don't let the fall befall yours!