Vex Robotics Summer Camp Day 3

Advanced Mechanical – Lifts

- In everyday mechanics, we use tools that can lift objects and people
- Can you think of any?

Advanced Mechanical – Lifts

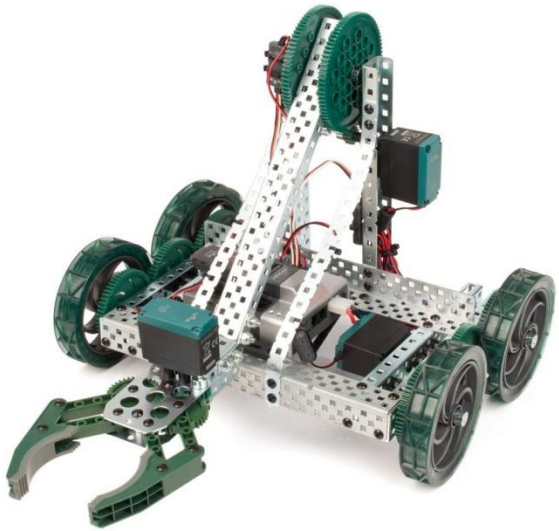
- Cranes
- Elevators
- Car jack

Advanced Mechanics – Basic lift

- The basic lift is an arm that has one pivot point and lifts an object off the ground

Advanced Mechanics – Basic Lift

- In vex, we motor the pivot point of the arm and use a claw or another hooking tool to lift objects up.
- When motoring the arm, you must gear it down 1:5 at least efficient torque. Remember, lower speeds equal higher torque, that is why cranes are slow when they pick heavy objects.



Advanced Mechanics – Scissor Lift

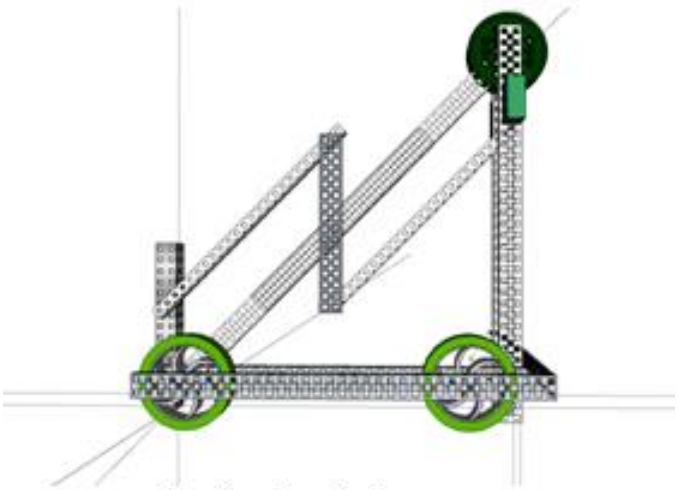
- Lifts using a scissor construction on the bottom

Advanced Mechanics – Scissor Lift

- In vex, we use linear slides so that the bottom of the lift can slide back and forth
- https://www.youtube.com/watch?v=VDlcRDiGYO4

Advanced Mechanics – Linkages

- Is a lift that is attached through linkages between the metal
- When gear rotates, metal and its connected parts moved up
- Must be geared down 1:5 at least
- The amount of linkages determines name of lift, below we have a 6 bar linkage



A simple six bar

Advanced Mechanics – Linkages

- A more visual example of linkage
- https://www.youtube.com/watch?v=4Yr2np7993E

Challenge

- Using one of the three lifts that we have learned, build and program a robot that will stack cubes on the pole while driving with remote. The robot that stacks the most cubes in a given time period wins!