Gears & Mechanisms

Simple Gear

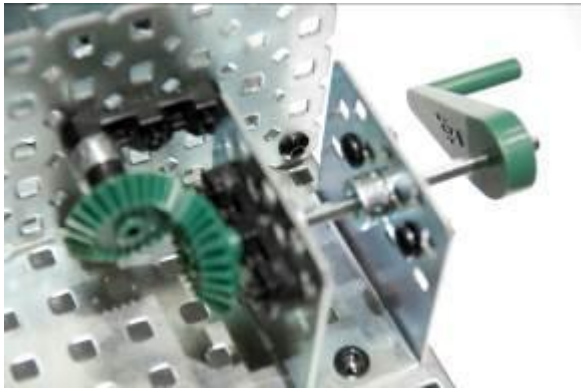
1. Identify the input and output gears.
2. What is the gear ratio of gear train ?
3. In gear train from input to output does the speed increased, decreased, or constant?
4. In gear train from input to output does the torque increased, decreased, or constant?
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. Do the gears move in the same or in the opposite direction?
7. Give at least one real world example of something that uses a simple gear.

Simple Gear Train with Idler

1. Identify the input and output gears.
2. What is the gear ratio of gear train ?
3. In gear train from input to output does the speed increased, decreased, or constant?
4. In gear train from input to output does the torque increased, decreased, or constant?
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. Do the gears move in the same or in the opposite direction?
7. Give at least one real world example of something that uses a simple gear train with idler.

Bevel Gear

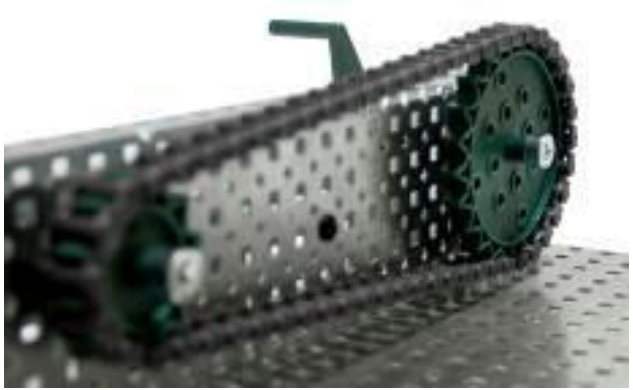
1. Identify the input and output gears.
2. What angle is input to output?
3. What is the gear ratio?
4. In gear train from input to output does the speed increased, decreased, or constant?
5. In gear train from input to output does the torque increased, decreased, or constant?
6. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
7. Do the gears move in the same or in the opposite direction?
8. Give at least one real world example of something that uses a bevel gear.



Requires gears, not included in iQ super kit

Chain Drive

1. Identify the input and output gears.
2. What is the gear ratio of gear train ?
3. In gear train from input to output does the speed increased, decreased, or constant?
4. In gear train from input to output does the torque increased, decreased, or constant?
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. Do the gears move in the same or in the opposite direction?
7. What is an advantage of a chain drive?
8. Give at least one real world example of something that uses a chain drive.



Requires gears, not included in iQ super kit

Compound Gear

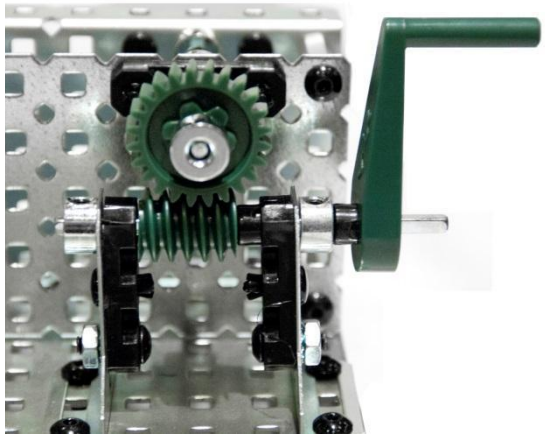
1. Identify the input and output gears.
2. What is the gear ratio of gear train ?
3. In gear train from input to output does the speed increased, decreased, or constant?
4. In gear train from input to output does the torque increased, decreased, or constant?
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. Do the gears move in the same or in the opposite direction?
7. Give at least one real world example of something that uses a compound gear.

Belt Drive

1. Identify the input and output gears.
2. In gear train from input to output does the speed increased, decreased, or constant?
3. In gear train from input to output does the torque increased, decreased, or constant?
4. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
5. Do the gears move in the same or in the opposite direction?
6. What happens when you cross the belt?
7. What is an advantage of a belt drive?
8. Give at least one real world example of something that uses a belt drive.

Worm and Wheel

1. Identify the input and output gears.
2. Identify the worm & the wheel.
3. What is the gear ratio ?
4. In gear train from input to output does the speed increased, decreased, or constant?
5. In gear train from input to output does the torque increased, decreased, or constant?
6. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
7. What is the angle of input to output?
8. What is an advantage of a using a Worm and Wheel?
9. Give at least one real world example of something that uses a simple gear.



Requires gears, not included in iQ super kit

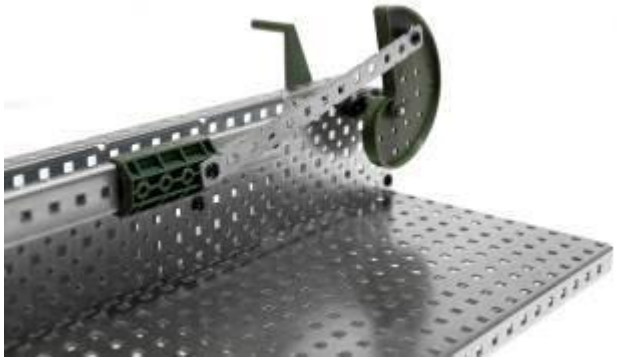
Rack and Pinion

1. Identify the input and output gears.
2. Identify the rack and the pinion.
3. What is the type of input movement? (rotary, reciprocating, or linear)
4. What is the type of output movement? (rotary, reciprocating, or linear)
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. If the diameter of the pinion gear were increased, would the rack move a shorter or longer distance with one revolution of the axle?
7. Give at least one real world example of something that uses a rack and pinion.

Requires gears, not included in iQ super kit

Crank and slider

1. Identify the crank and slider.
2. The input to this system is what type of motion (rotary, reciprocating, or linear)?
3. The output of this system is what type of motion (rotary, reciprocating, or linear)?
4. If the diameter of the crank gear were increased, would the slider move a shorter or longer distance?
5. Is the flow of power reversible? (Can you make the crank gear turn by pushing the slider?)
6. Give at least one real world example of something that uses a crank and slider?



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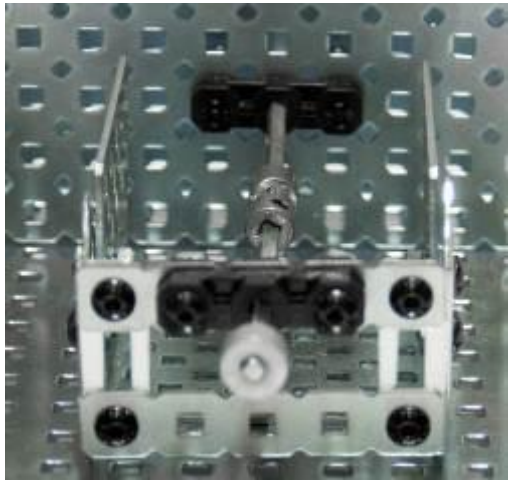
Universal Joint

1. What is the angular range between the input shaft and the output shaft in which this mechanism will work? (acute, right, or obtuse)
2. Is the speed increased, decreased, or constant?
3. Is the torque increased, decreased, or constant?
4. What is the speed ratio of the input shaft to the output shaft?
5. Is the flow of power reversible? (Can you make the input shaft turn by turning the output shaft?)
6. Do the input and output shafts turn in the same direction?
7. Give at least one real world example of something that uses a universal joint?



Requires gears, not included in iQ super kit

Differential Gear

1. What types of gears does it use?
2. What is the purpose of a differential gear?
3. Give at least one real world example of something that uses a differential gear?

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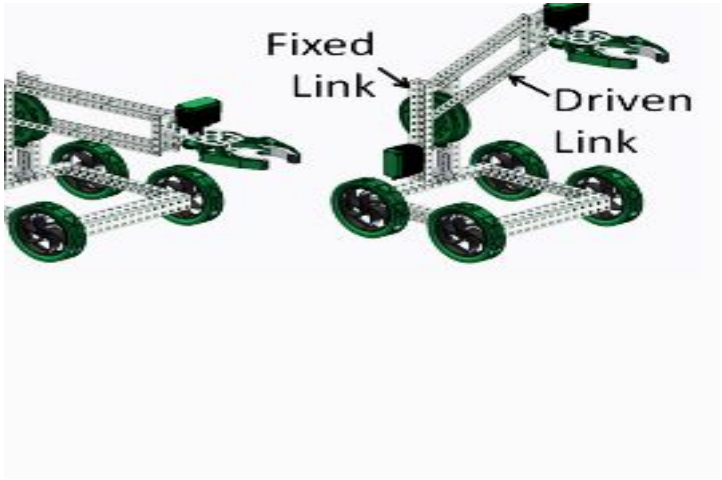
Four Bar Linkage

1. What is an advantage?
2. What is a disadvantage?
3. Give an real world example:

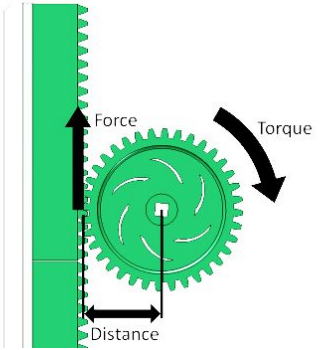


Rotating Joint

1. What is an advantage?
2. What is a disadvantage?
3. Give an real world example:

Elevator Lift

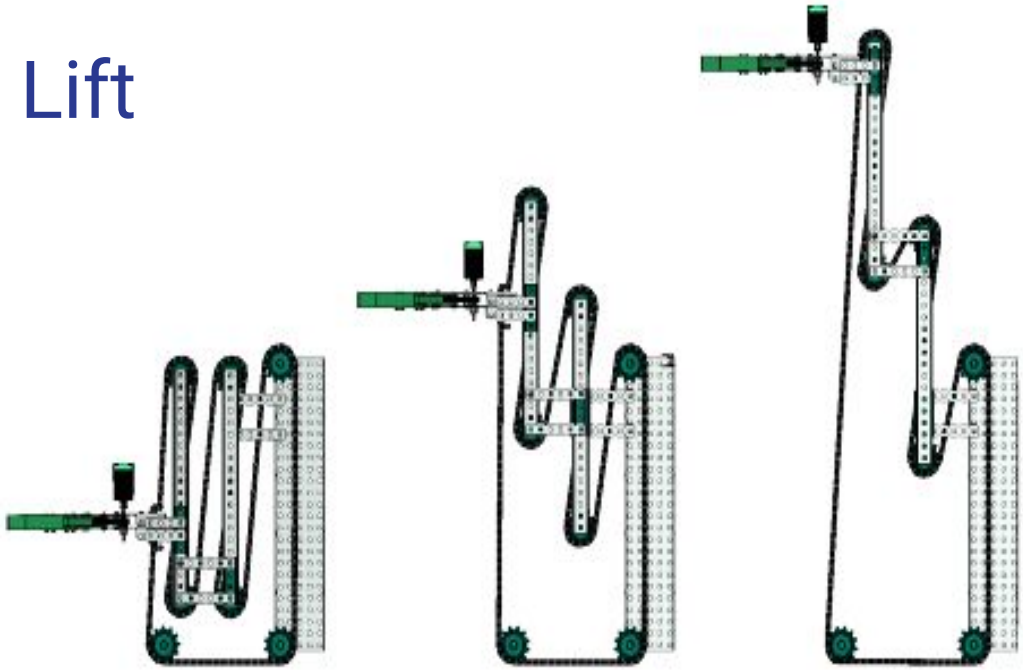
1. What is an advantage?
2. What is a disadvantage?
3. Give an real world example:



Requires gears, not included in iQ super kit

Multi-Stage Elevator Lift

1. What is an advantage?
2. What is a disadvantage?
3. Give an real world example:



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