There are many ways to create a sorting mechanism. The illustration shows how the sample sorter works.

#3 Particles cannot pass through Screen A holes. They are conveyed over and off.

Screen A has openings #1 and #2 can pass through.

Screen B has openings only #2 particles can pass through.

#1 Particles pass through Screen A holes onto Screen B. They cannot pass through Screen B holes. They are conveyed over and off.

#2 Particles pass through Screen A and Screen B holes. They are conveyed over and off.

Screens must be agitated and usually angled to move and sift particles. You will create a motor drive with linkages to move the screens.
### BEAN SORTER EXAMPLE MECHANISM

#### Step #1
Cut six 125mm (5in) dowels and press them into 4 connector strips as shown.

- **10mm (3/8in)**
- **300mm (uncut)**

#### Step #2
Press two hole plates onto the uprights from step #1.

#### Step #3
1. Cut off an adaptor pin.
2. Tap or push the motor shaft into the adaptor pin from.
   
   **Warning:** Do not hold the motor from the side when pushing on the adaptor pin. Holding the motor from the side could cause the motor back to fall off.
3. Press on a 10 tooth gear.
4. Place the motor assembly into a motor mount.

#### Step #4
- Attach the motor assembly using machine screws and nuts. Leave Screw B loose to allow the motor mount to pivot on screw A.

**Motor Assembly from Step 3**

**3-6 volt Motor**

**Adaptor Pin**

**10 Tooth Gear**

**Motor Mount**

**#10 x 25mm (1in) Machine Screws**

**#10 Nuts**

**Warning:** Do not hold the motor from the side when pushing on the adaptor pin. Holding the motor from the side could cause the motor back to fall off.

**Note:** The project motor is design to run on 3-6 volts DC.
**Bean Sorter Example Mechanism**

**Step #5**
Ream the two holes marked with a Ø. This will allow a dowel to spin in the holes.

**Step #6**
1. Cut a 165mm (6.5in) dowel and insert it into a 50 tooth gear.
2. Place a stop clip or slide stop as shown.

**Step #7**
Insert the gear assembly from Step #6 into the reamed hole from Step #5.

**Step #8**
Place a 20 tooth gear on the back side of the dowel inserted in step #7.

**Step #9**
1. Cut a 150mm (6in) dowel and insert it into a 40 tooth gear.
2. Determine what hole the loose dowel and gear assembly should be in to mesh with the 20 tooth gear. Ream the hole.
3. Insert the dowel and gear assembly into the reamed hole.
**Step #10**

Place a perpendicular block on the end of the dowel from step #9. It’s a good idea to place a washer in between the perpendicular block and hole plate.

![Diagram of perpendicular block and washer](image)

- Complete the “Gears Activity” sheet if this box is selected.

**Step #11**

It is now time to make the frames for the sorting screens. Make two of the frames shown below.

![Diagram of frames](image)

- Cut dowels A and B (we are not telling your how long) to hold the one frame from Step #11 at an angle. These dowels can me moved later to change how your the screen moves material.

- This is a great time to spin your gears (by hand or powering your motor (3-6 volts)).

Don’t forget to make two.
**Step #13**

Attach the bolt and connector strip as shown.

- #10 Nut
- #10 Locking Nut
- 2in #10 Screw

- 300mm (12in) Uncut Connector Strip
- 16mm (5/8in) Machine Screw
- #10 Washer

Do not ream the perpendicular adaptor.

**Step #14**

Experiment with the hole position of the connector strip on machine screw X. Turn the gears (with the motor or by hand). Find what hole placement will provide the best movement for your screen.

Ream holes for machine screw X.

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Linkage movement can be further slowed and power increased using pulleys. Above is a sample configuration.

Screen material can now be attached to your frames and placed on your sorter.