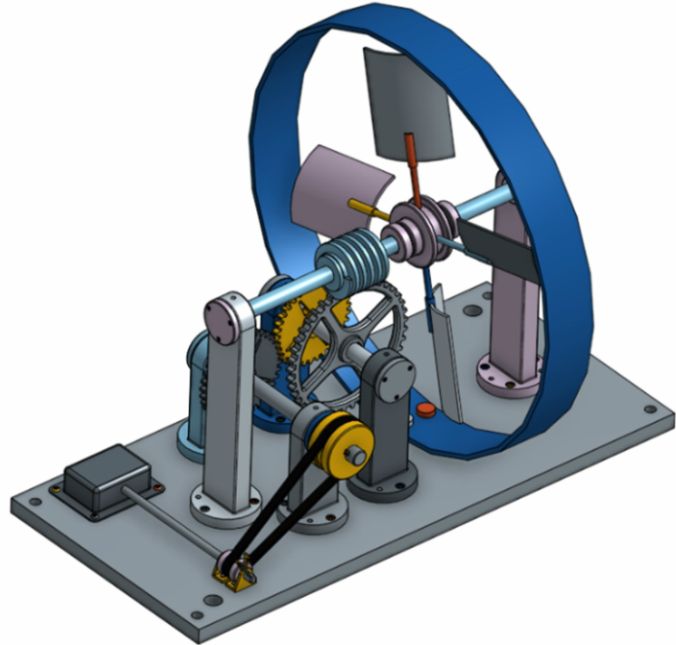


Assembling In-Context Parts

Goals:

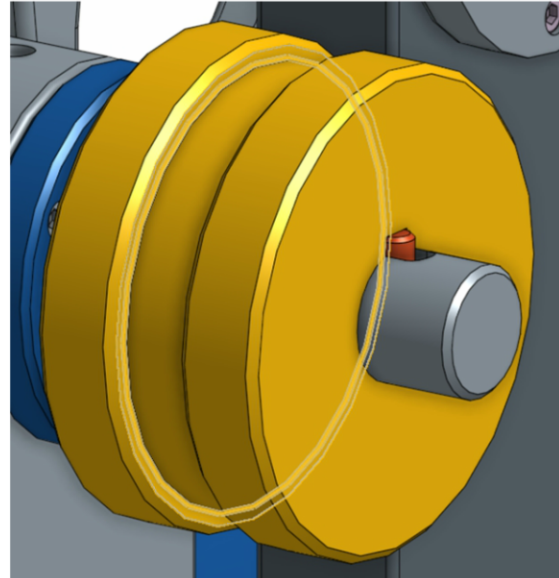
1. Create a part within a part studio that enables the assembly to operate properly.
2. Practice in-context modeling.
3. Learn which mates to apply between parts.



Assembling In-Context Parts

Instructions:

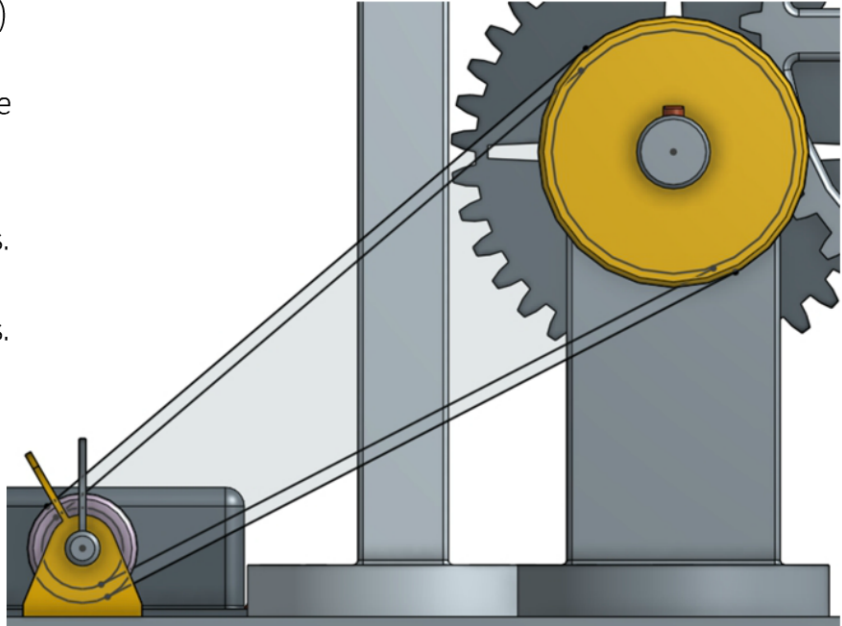
1. Open the Onshape document "[Onshape Instructor Kit - 4.2.1 - Assembling In-Context Parts](#)".
2. Create a new sketch on the left inside face of the large yellow pulley.



Assembling In-Context Parts

Instructions:(continued)

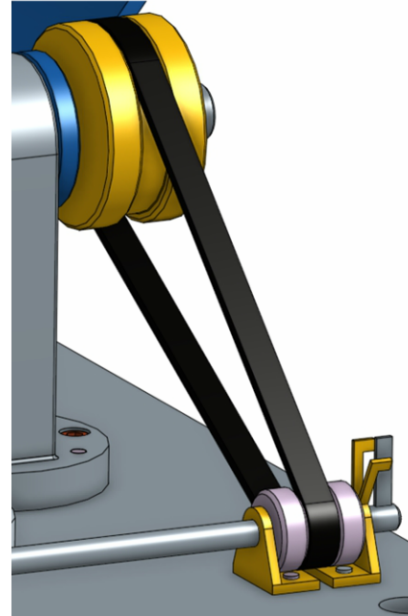
3. Create the sketch shown in the image to the right. Be sure to project the inside faces of the pulleys onto the sketch planes. Also make sure that all of the lines are tangent to the circles.



Assembling In-Context Parts

Instructions:(continued)

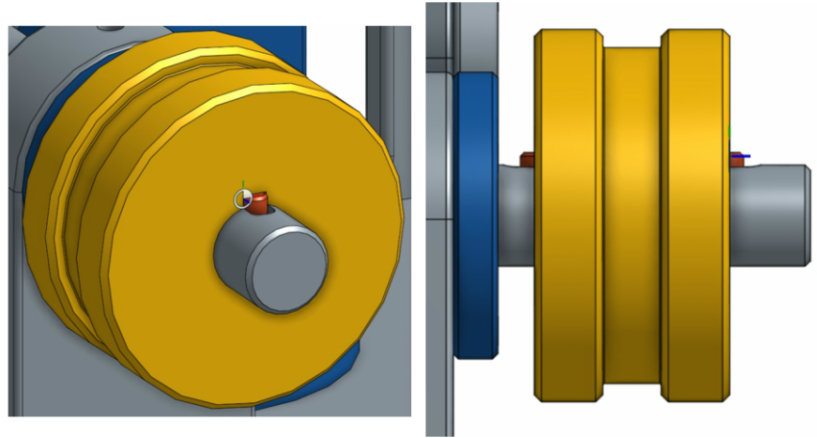
4. Extrude the belt up to the right inside face of the large pulley.



Assembling In-Context Parts

Instructions:(continued)

5. Switch over to the assembly tab.
6. Insert the large yellow pulley and the belt into the assembly.
7. Add a slider mate to allow the pulley to slide along the pinion pulley key.
8. Add a planar mate between the exterior face of the large pulley and the mate connector attached to the pinion pulley key.

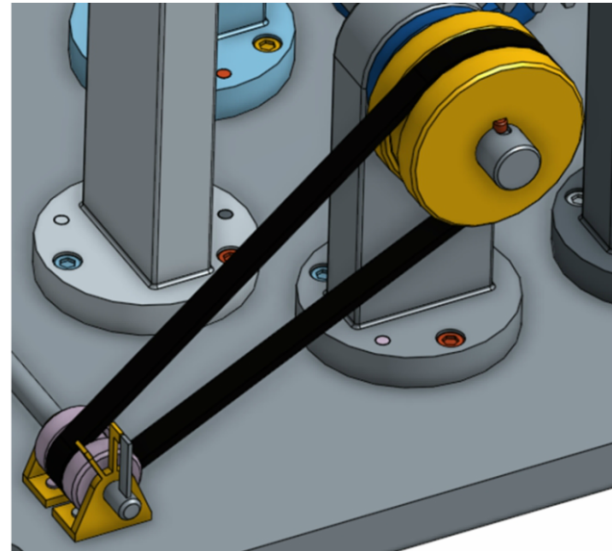


(Hint: The mate connector can be accessed by expanding the part "Pinion pulley key" in the Instances list.)

Assembling In-Context Parts


Instructions:(continued)

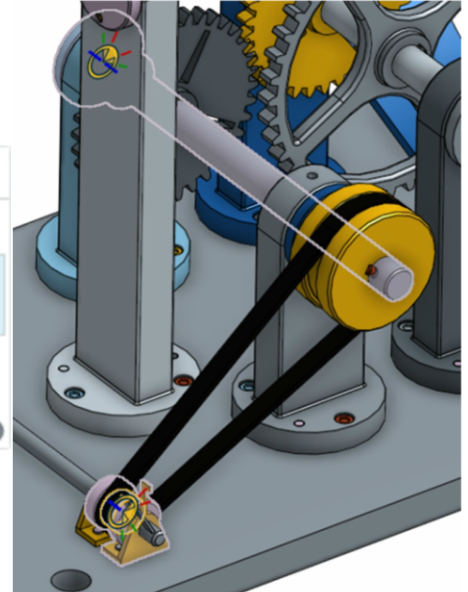
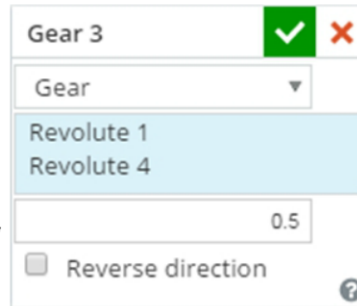
9. Add a revolute mate to position the belt on the large yellow pulley.
10. Add another revolute mate to position the belt on the small pulley.



Assembling In-Context Parts

Instructions:(continued)

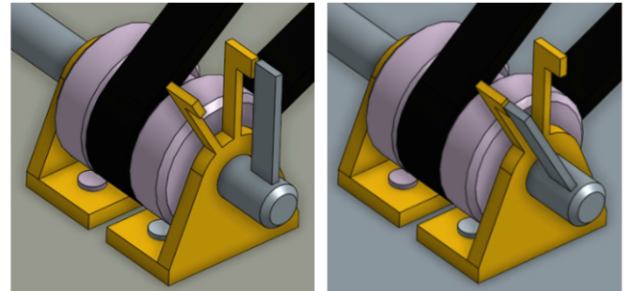
11. Add a gear mate to allow the pulleys to spin together. To do this, click on the Gear Relation icon  then select the two following mates from the Instances list in order: the Revolute mate for the axle going through the large yellow pulley, then the revolute mate for the axle going through the small pulley. The relation ratio for these mates is 0.5.



Assembling In-Context Parts

Assessment:

1. Notice that there are two flags attached to the small pulley bracket. There is also a flag attached to the axle.
2. How many revolutions of the large wind propeller does it take to move the axle flag from the vertical position to the angled position (to the nearest whole number)?



(Note: If the position of the axle flag needs to be reset, simply unsuppress the planar mate "Flag Reset" to snap it back into place. Then suppress the mate once again.)