**Mid-term – Part 2 Hands-on Section (Open Book) – 90 minutes time limit**

**Instructions:** Complete your answers in the space below (do not use back of paper).

**Student Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Final Score** out of 50: \_\_\_\_\_\_\_\_

Construct and demonstrate the following. When asked, use the specific parts. Each question is worth 5 points

1. Double-crank
2. Cam-follower
3. 1:1 gear train using 8-tooth Lego Gears
4. Pin wheel with 24T Crown and 8T Gears
5. 1:1 pin wheel using a pair of 4T knob gears
6. Worm gear with 24T gear
7. Rack-and-pinion drive
8. Friction drive where the input and output planes are at 90-degrees
9. Use a 16T and 24T gear and axles to create a 2:3 gear train
10. A 3:7 outside planetary gear train using 24T and 56T Lego Gears