Put a check ✓ in the o next to the correct answer.

1. You attach a 10 inch arm to your robot using a motor to raise and lower the arm. The motor can produce 7 ft·lb of torque. You hook and attempt to lift an 8 lb box. Can you lift it?
   - Yes, 6.67 ft·lb of torque is required
   - Yes, 0.86 ft·lb of torque is required
   - No, 14 ft·lb of torque is required
   - No, 80 ft·lb of torque is required
   - No, 5.83 ft·lb of torque is required

2. Find the value of \( l \), the length of the right side of the lever, for which the 7 lb will hold the 50 lb steadily. Select the best answer for \( l \).

   \[
   \begin{align*}
   \text{50 lb} & \\
   \text{1.5 ft} & \\
   \text{7 lb} & \\
   \hline
   \end{align*}
   \]
   - 10.7 ft
   - 22 ft
   - 75 ft
   - 3.5 ft
   - 7.1 ft
3. Force $F$ will cause what kind of moment about point $P$?

- Positive moment
- Negative moment
- Centrifical moment
- Forced moment

4. A torque only tightens, it never loosens.
   - True
   - False

5. When an object is in static equilibrium, then we know the sum of all the moments due to external forces on the object, summed at a point $P$ is ...
   - Equal to zero
   - Equal to the sum of moments due to internal forces
   - Doesn’t exist
   - Equal to the objects mass moment of inertia
   - Equal to the sum of the external forces
6. Force F is 10 pounds. What is the magnitude of the moment due to F about point P?

- 72.5 in\(\times\)lb
- 72.5 ft\(\times\)lb
- 27.5 in\(\times\)lb
- 27.5 ft\(\times\)lb
- 77.5 in\(\times\)lb

7. The perpendicular distance, \(d\), in the torque equation must always be measured in feet in the U.S. customary system, or meters in the metric system.

- True
- False
8. The wheelbarrow is loaded. Forces exist for weight \( W \), lift \( F \), and normal reactions at points \( A \) and \( B \), \( A \) and \( B \). Which forces contribute to the moment about the axel of the wheel?

- \( F,W,A \)
- \( F,W,A,B \)
- \( F,W \)
- \( F,W,B \)
- None

9. Which of the following represents a unit of torque?

- Slugs
- Foot\(\cdot\)pounds (ft\(\cdot\)lb)
- Feet / second\(\cdot\)(ft/s)
- Newtons
- Fathoms

10. The wheelbarrow in 8., above, has been lifted. Force \( F \) is 50 pounds, and weight \( W \) is 70 pounds. What is the net moment about the axel of the wheel due to those two forces?

- 2320 in\(\cdot\)lb clockwise
- 2320 ft\(\cdot\)lb counter-clockwise
- 3300 in\(\cdot\)lb clockwise
- 4280 in\(\cdot\)lb counter-clockwise
- 4280 in\(\cdot\)lb clockwise