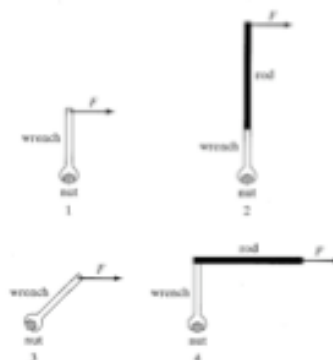


1. A 10^3 kg car traveling at 30 m/sec crashes into a brick wall. What is the average force exerted by the wall on the car during the crash?
 - a) 3×10^4 N
 - b) 4.5×10^5 N
 - c) 10^3 N
 - d) Impossible to tell from the given information

2. A pulley is spinning around its axis at an increasing speed. Suppose we compare two points on the pulley, A and B . Point A is twice as far from the rotation axis as is point B . Which of the following is true:
 - a) Both points have the same angular and translational velocities
 - b) Point A has twice the translational velocity as point B , but the two have the same angular velocity.
 - c) Point A has twice the angular velocity as point B , but the two have the same translational velocity.
 - d) Point A has twice the translational velocity and twice the angular velocity as point B .

3. A small ball of putty is thrown at a bowling ball that is initially at rest. The ball of putty sticks to the bowling ball, i.e. the collision is perfectly inelastic. After the collision, which is true?
 - a) The putty has more momentum but less kinetic energy than the bowling ball
 - b) The putty has more momentum and more kinetic energy than the bowling ball
 - c) The putty has less momentum and less kinetic energy than the bowling ball
 - d) The putty has less momentum but more kinetic energy than the bowling ball

4. You are using a wrench to loosen a nut. Which of the arrangements shown to the right is most effective in loosening the nut? List them in descending order of efficiency.



$$2 > 1 = 4 > 3$$