Question: which of the following quantities has the same dimensions as work?

1. Momentum
2. Impulse
3. Moment of a force
4. G = 9.81 $m/s2$
5. Pressure

Solution: first of all we have to find the dimensions of work. The SI unit of work is the newton-meter or joule. Thus,

$$[Work] = N \cdot m$$

Moment of a force is the measure of the capacity of the force to produce twisting about an axis. Moment of a force is equal to the product of the force to the moment arm.

$$M = F \cdot d$$

Hence the dimension of moment of a force is

$$[M] = [F] \cdot [d] = N \cdot m$$

So the dimension of work is equal to the dimension of moment of a force.

Answer:

3. Moment of a force