Announcements

- **Quiz 2** starts tomorrow!

- **Upcoming deadlines:**
  - **Tuesday (9/19)**
    - PL HW6
  - **Thursday (9/21)**
    - ME HW7
  - **Friday (9/22)**
    - Writing Assignment 1 (FBD only)
Recap

- Moment of a force
- About a point
Recap

- Moment of a force
- About a point
- About an axis
The force $F = 10 \text{ N}$ is acting along $DC$. Determine the moment of $F$ about the bar $BA$. 
A **couple** is defined as two parallel forces that have the same magnitude, but opposite directions, and are separated by a perpendicular distance $d$.

Since the resultant force is zero, the only effect of a couple is to produce an actual rotation, or if no movement is possible, there is a tendency of rotation in a specified direction.

The moment produced by a couple is called **couple moment**.

Let’s determine the sum of the moments of both couple forces about **any** arbitrary point:
A torque or moment of 12 N·m is required to rotate the wheel. Would F be greater or less than 30 N?
A twist of 4 N·m is applied to the handle of the screwdriver. Resolve this couple moment into a pair of couple forces $F$ exerted on the handle and $P$ exerted on the blade.
Find the moment about the support at O? F = 125 N, P = 100 N.
Moving a force on its line of action

Moving a force from A to B, when both points are on the vector’s line of action, does not change the external effect.

Hence, a force vector is called a sliding vector.

However, the internal effect of the force on the body does depend on where the force is applied.
Moving a force off of its line of action

\[ M = Fd \]
Equipollent (or equivalent) force systems

A force **system** is a collection of **forces** and **couples** applied to a body.

Two force systems are said to be **equipollent** (or equivalent) if they have the **same resultant force** AND the **same resultant moment** with respect to any point $P$. 

![Diagram of force systems](image.png)
What is the equivalent system?