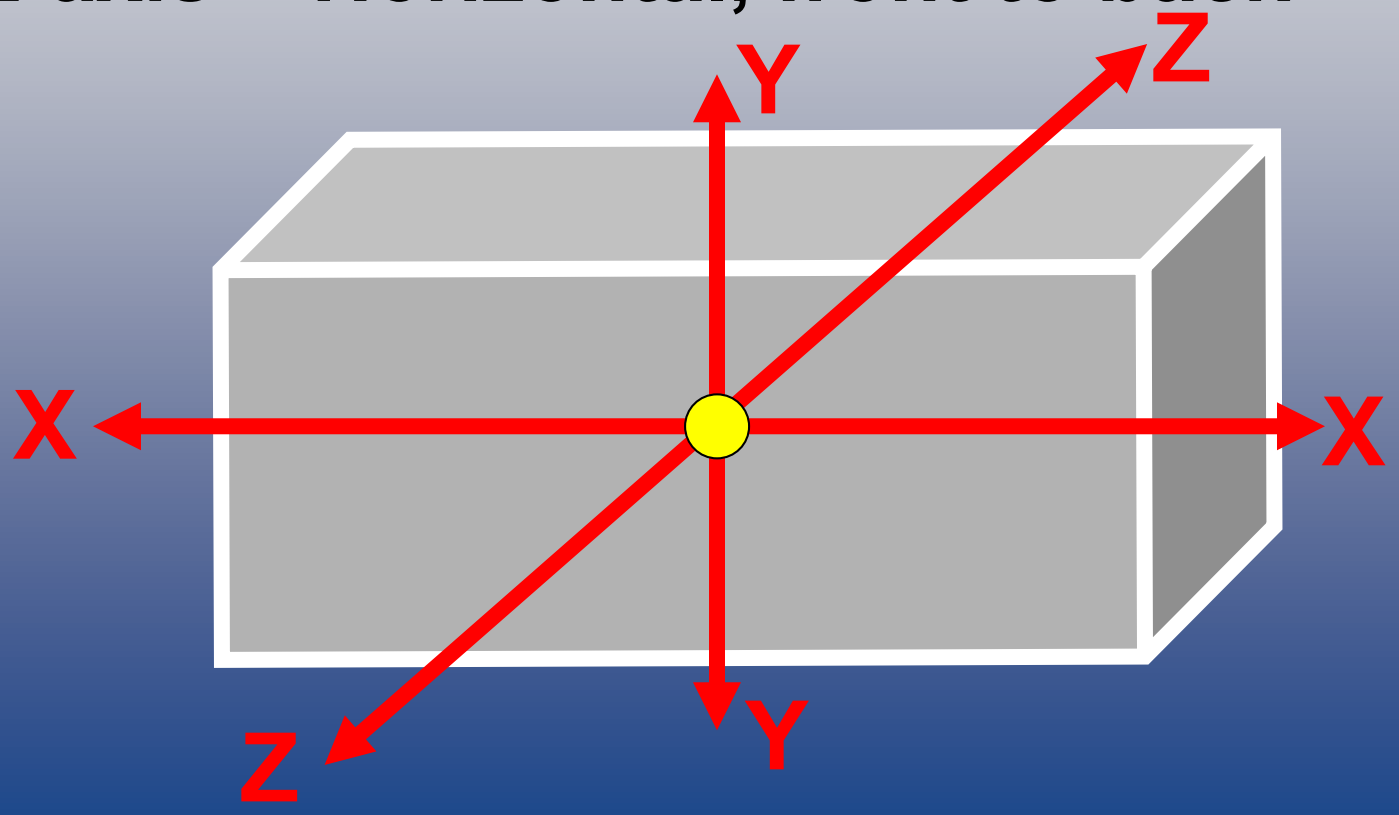
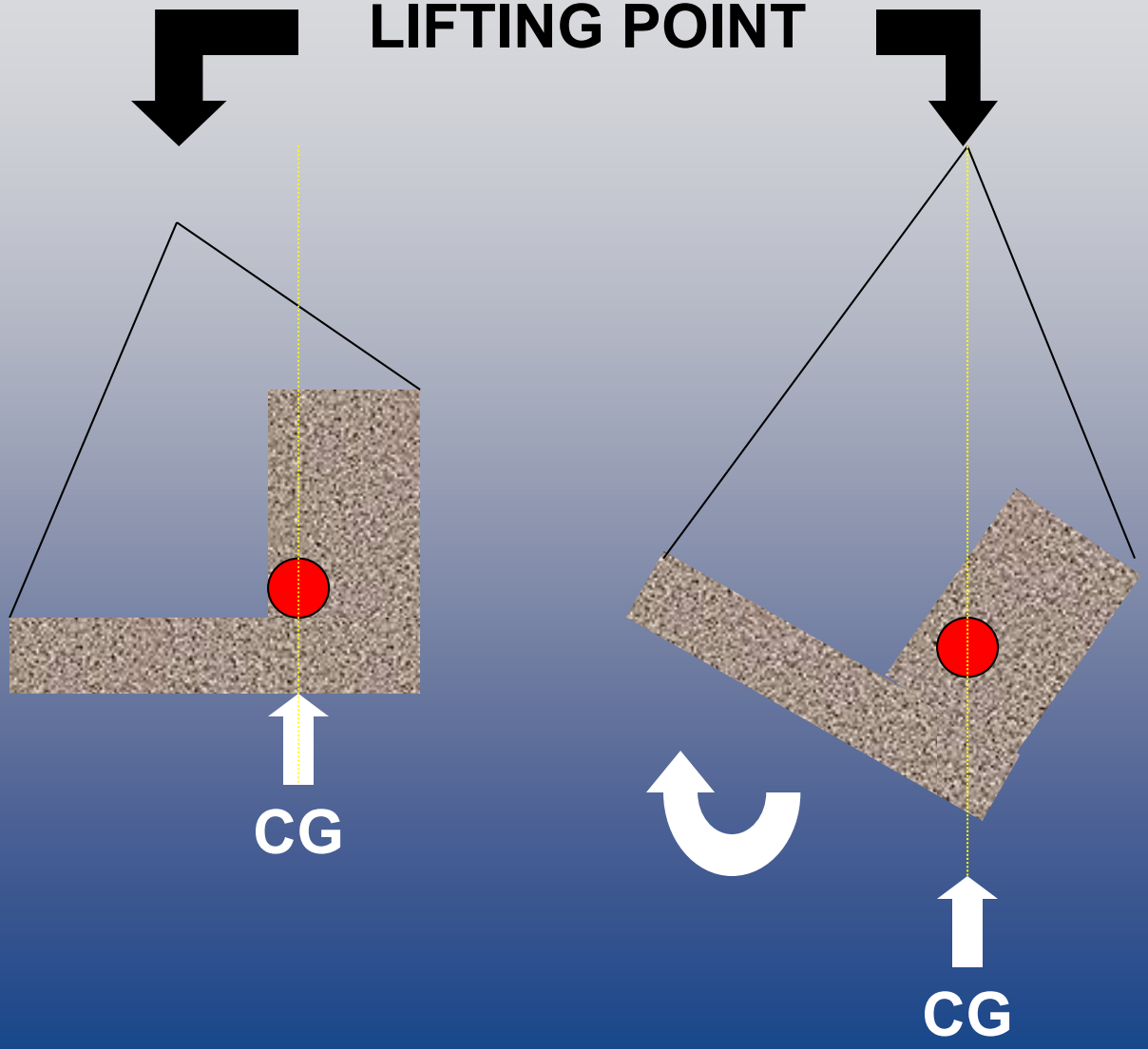
CENTER OF GRAVITY

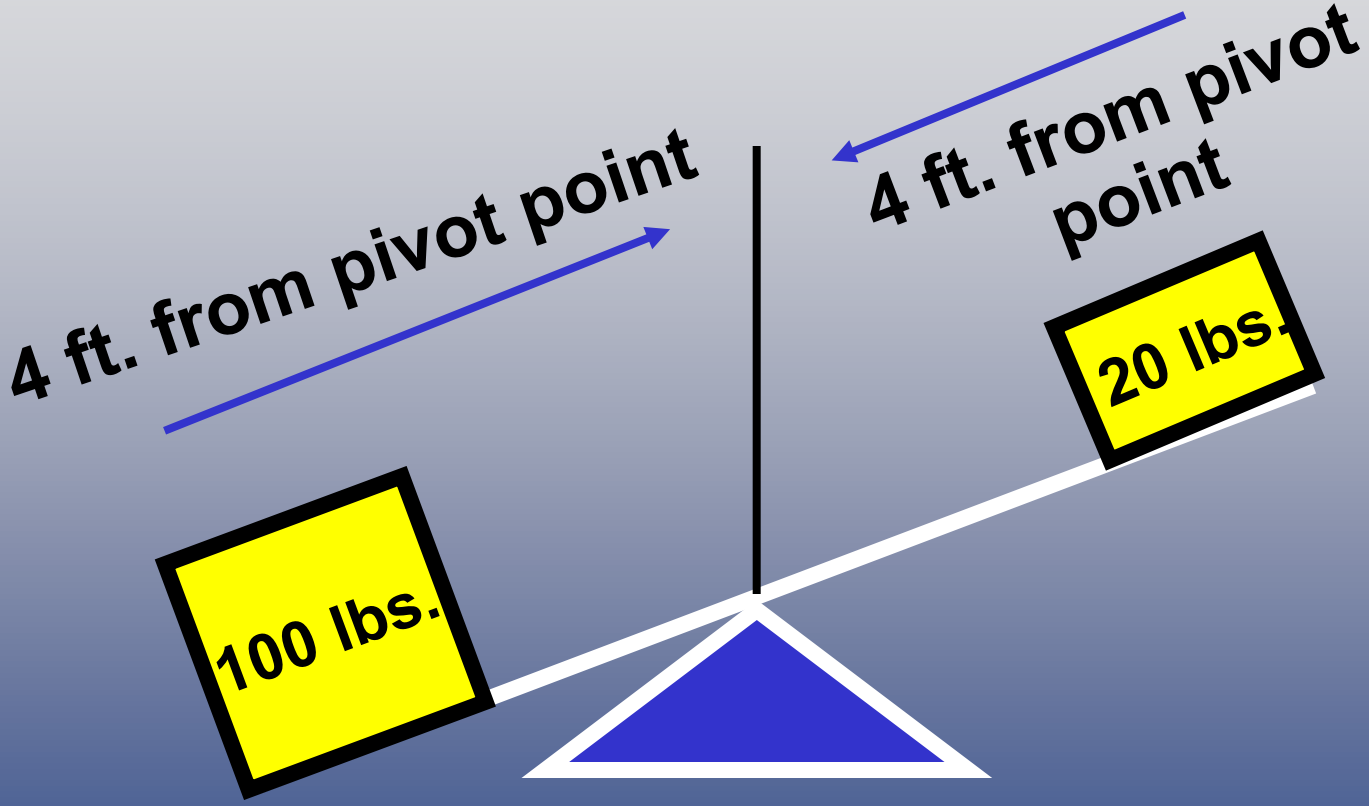
- Center is at the junction of three axes.
  X-axis = Horizontal, side to side
  Y-axis = Vertical
  Z-axis = Horizontal, front to back



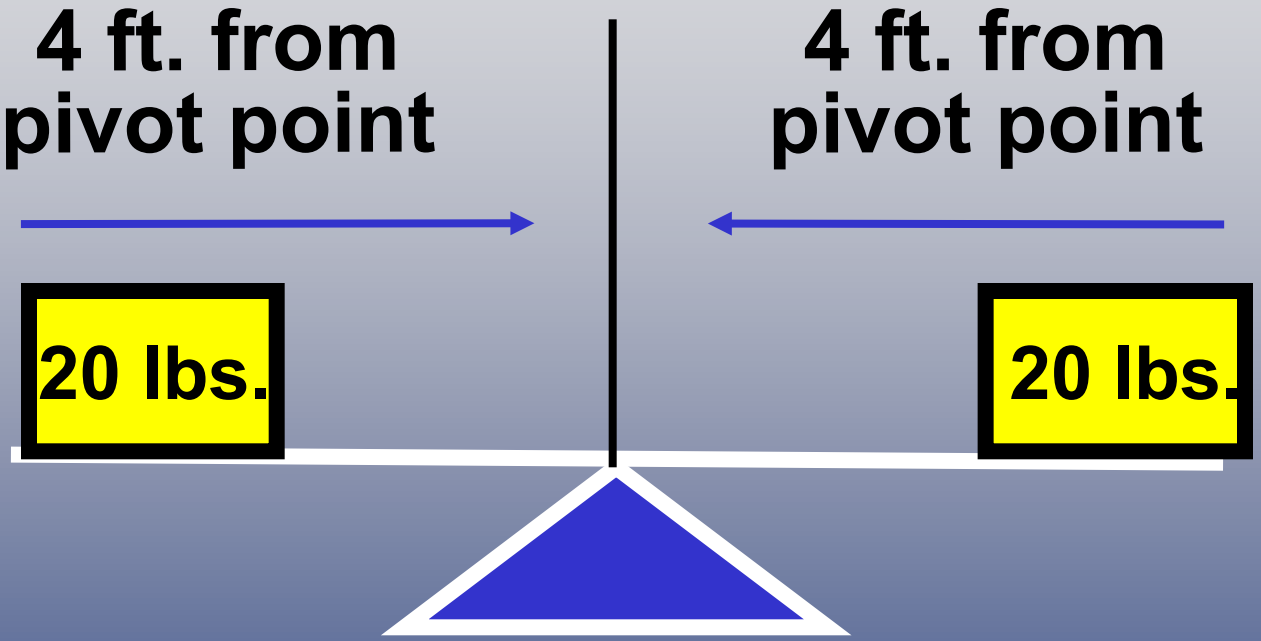
CENTER OF GRAVITY



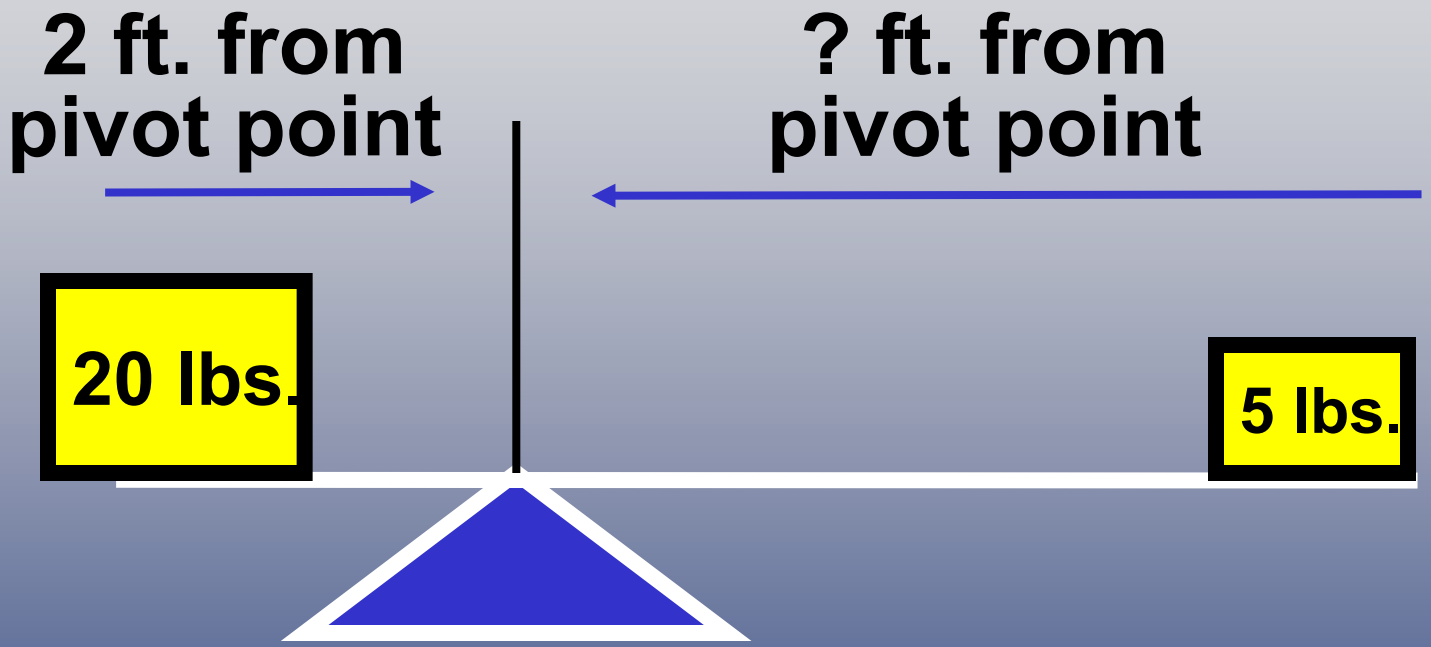
MOMENT-OF-FORCE CONSIDERATIONS



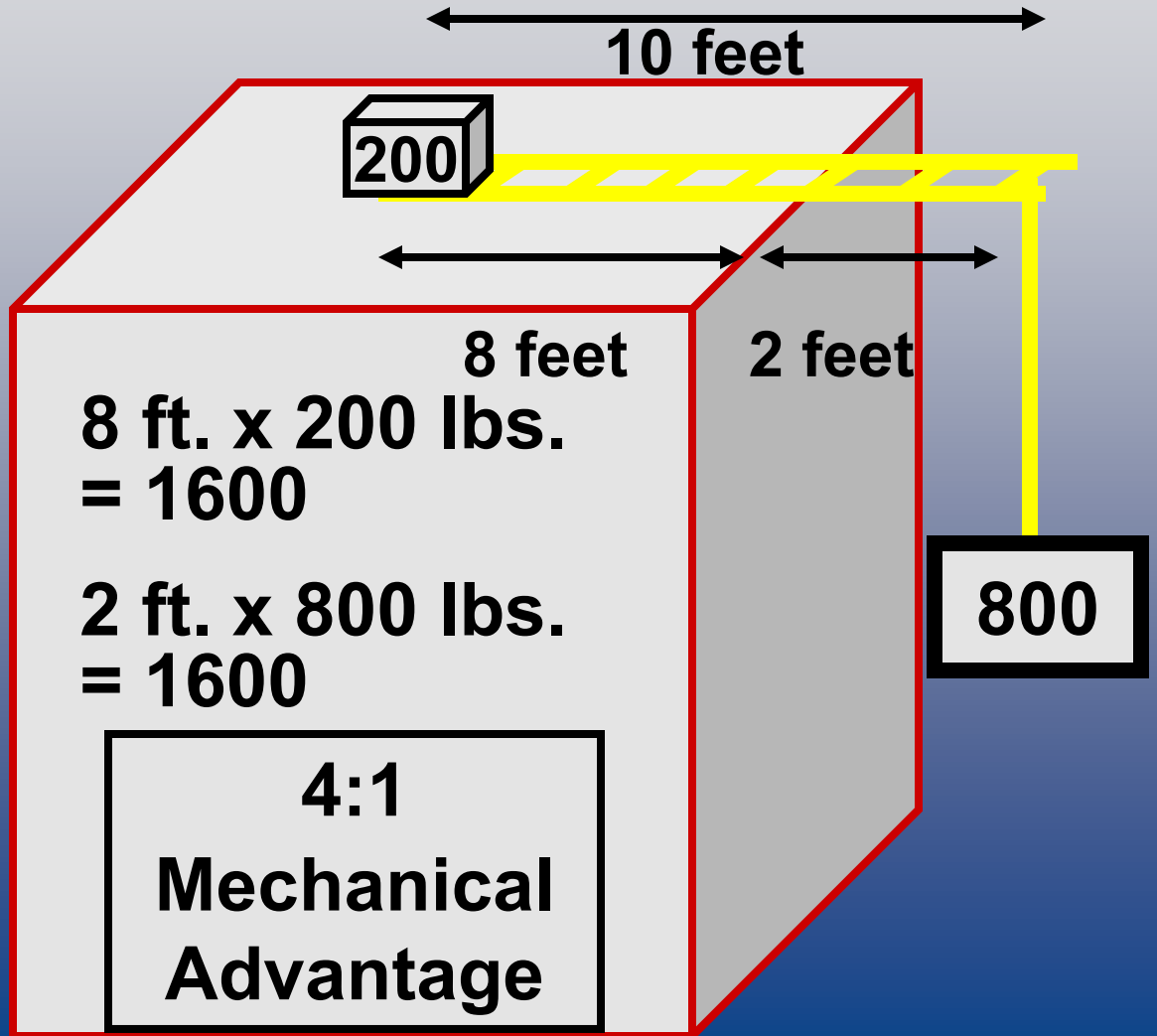
MOMENT-OF-FORCE CONSIDERATIONS



MOMENT-OF-FORCE CONSIDERATIONS



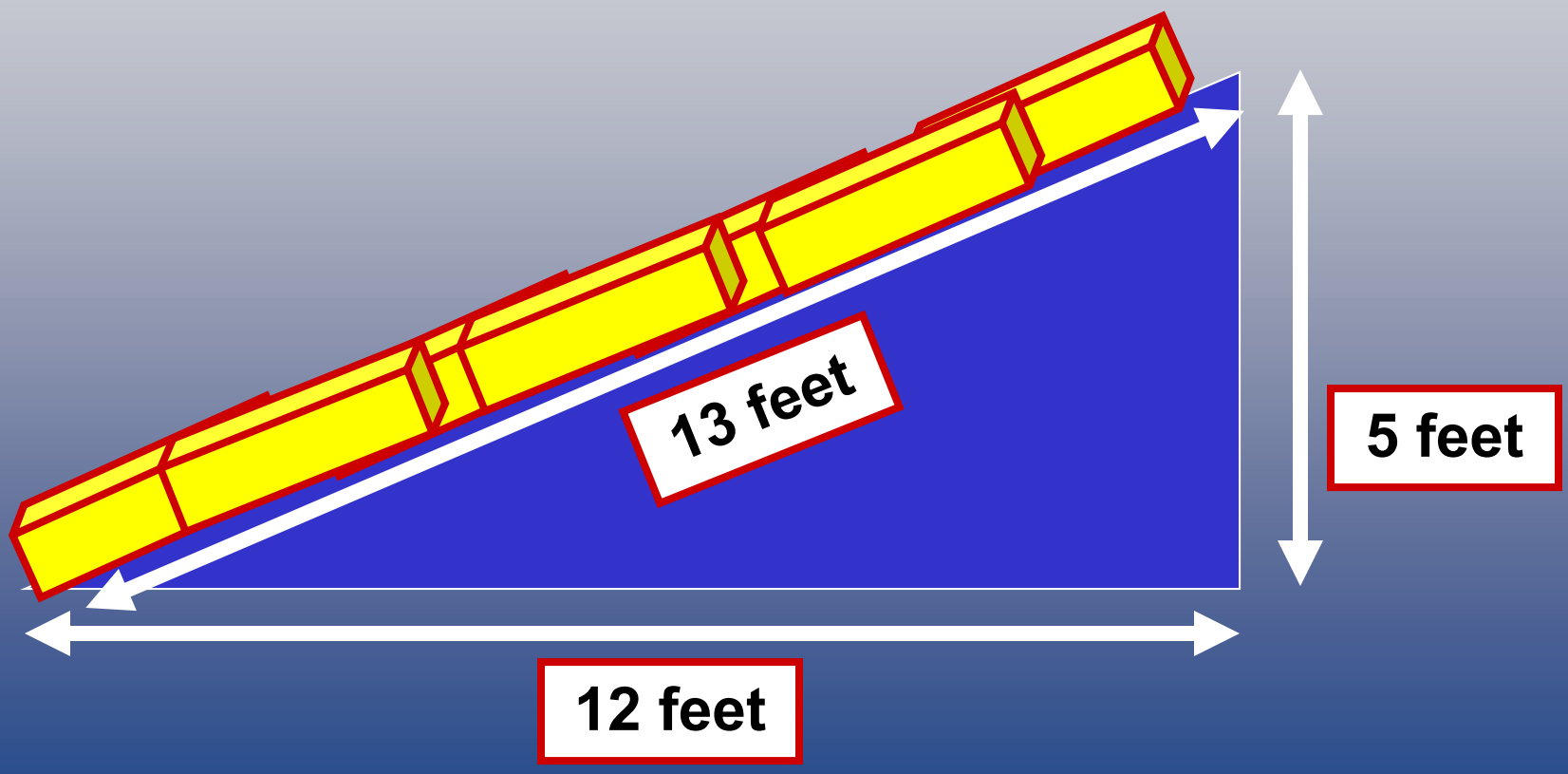
MECHANICAL ADVANTAGE EFFICIENCY



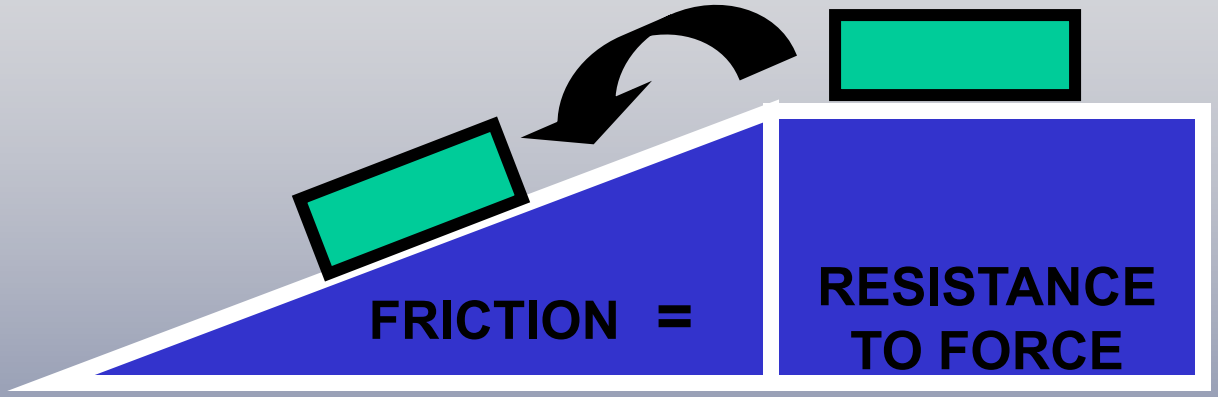
INCLINED PLANES

Travel length divided by height = MA

13/5 = 2.6 = 2.6:1 MA



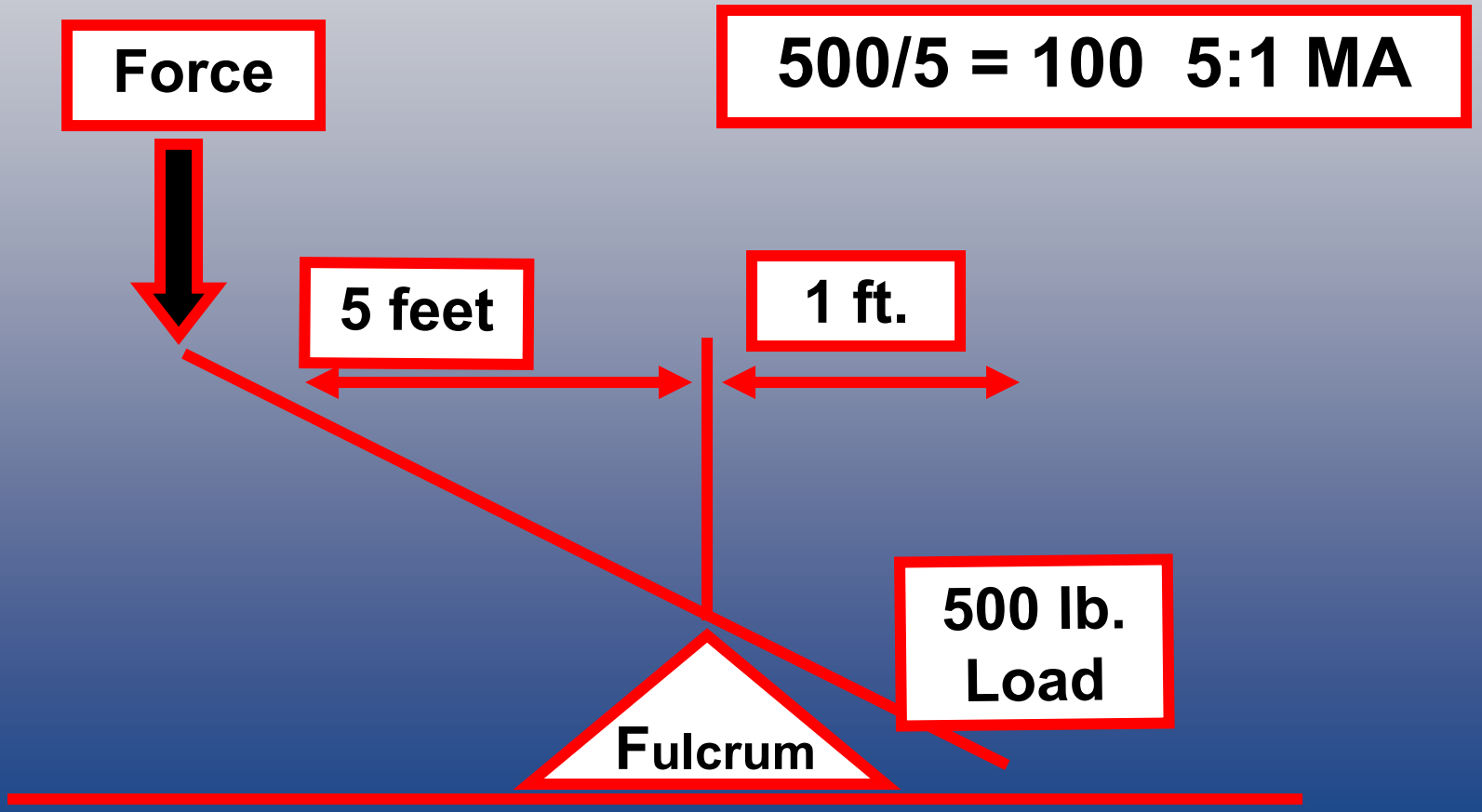
PERCENTAGE OF LOAD
Based on slope and grade



- 45 degrees 100%
- 35 degrees 60%
- 25 degrees 40%
- 15 degrees 25%

THE APPLICATION OF LEVERS

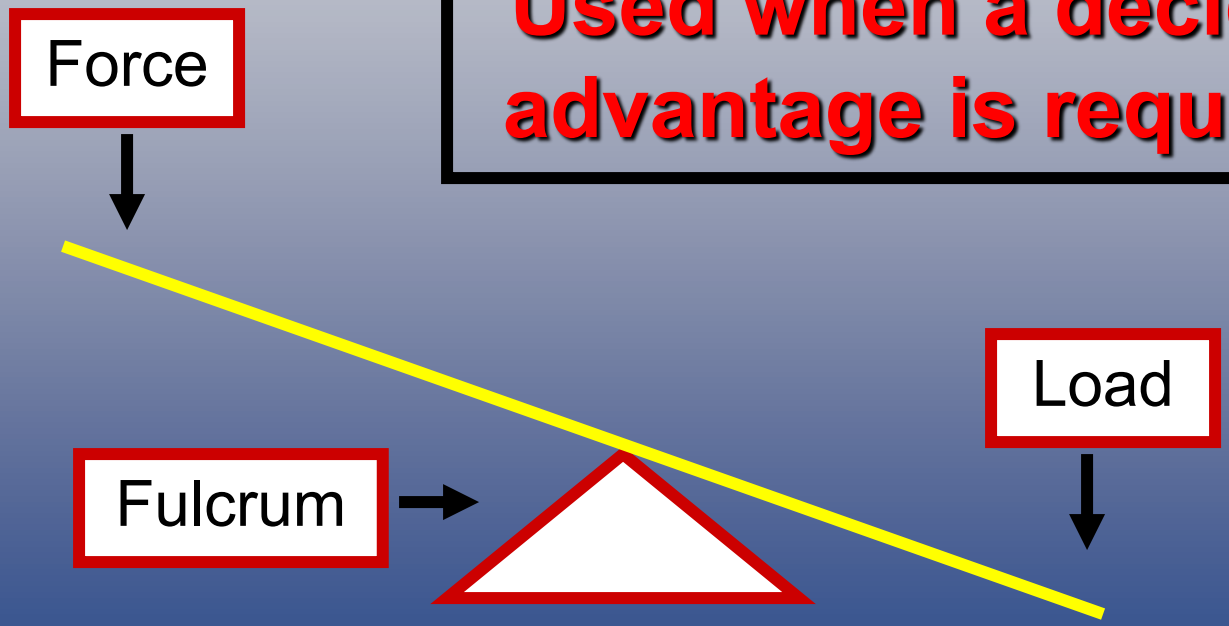
- Move, haul, or pull a load that would be outside of the human's power window.



CLASS I LEVER

Fulcrum is placed between the force applied and the load.

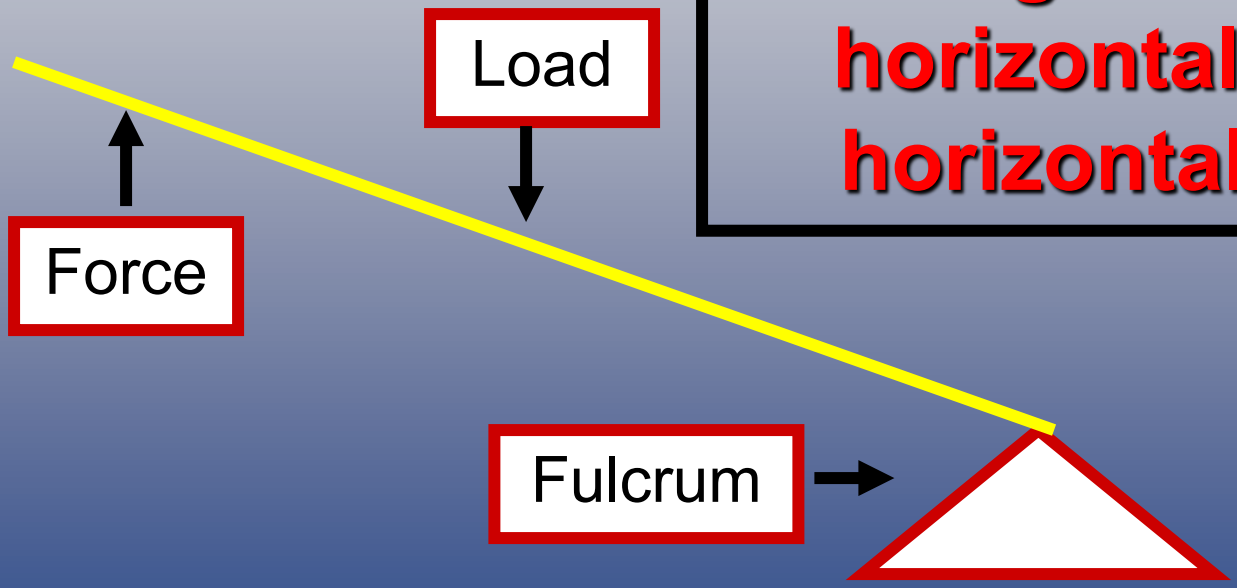
Used when a decided advantage is required



CLASS II LEVER

Load is placed between the force and the fulcrum.

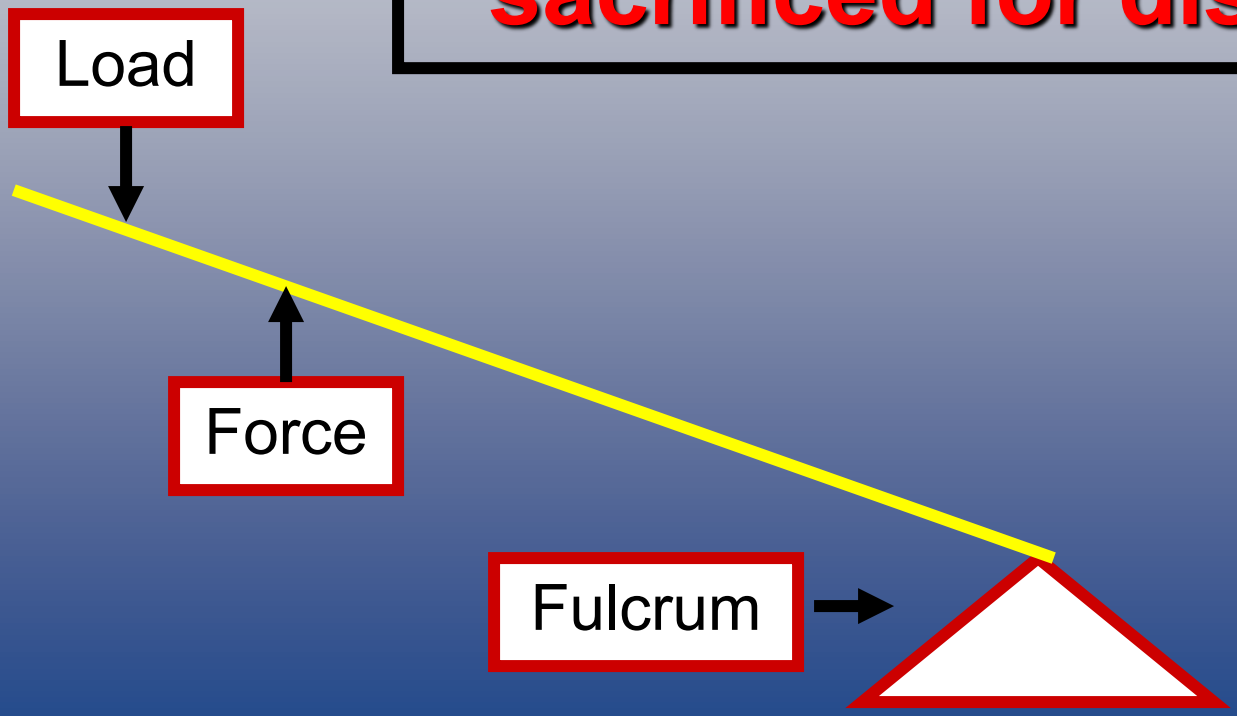
Used for advantage in moving materials on a horizontal or near-horizontal surface



CLASS III LEVER

Force is placed between the fulcrum and the load.

Used when force may be sacrificed for distance



CALCULATING THE WEIGHTS OF COMMON MATERIALS

LENGTH x WIDTH x HEIGHT x WEIGHT

20’ X 4’ X 2’ = 160 cf x 150 pcf = 24,000 lbs.