

Mrs. Davis

Calculate the Mechanical Advantage of a Lever

Second-Class Lever

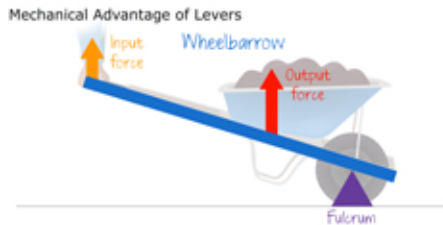
Input force  
Output force  
Fulcrum

72 inches  
24 inches

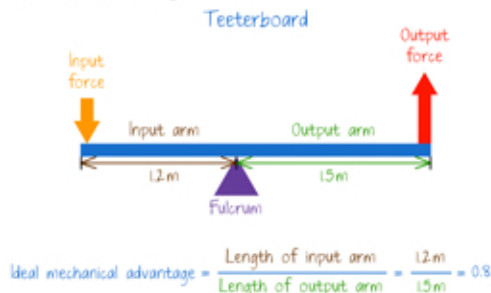
Ideal mechanical advantage =  $\frac{\text{length of input arm}}{\text{length of output arm}} = \frac{72}{24}$

IMA =  $\frac{L_i}{L_o}$

Screenshot from original animated tutor



Mechanical Advantage of Levers



Screenshots from new tutor, from script at right

Mech_advantage_levers_25	The output force is the lifting force on the tub, which holds whatever you are carrying. Draw or show a red arrow extending upwards under the middle of the tub (where the rocks are carried) when the VO says "output force", following with writing "Output force" under or near the arrow. Keep the arrows, fulcrum, and labels onscreen.
FEEDBACK	
Mech_advantage_levers_26	Let's say the input arm, from the handle ends to the fulcrum, is seventy-two inches... Completely fade out the rest of the wheelbarrow image and the person. Draw in a brown double-ended arrow, with perpendicular end marks (→) running under the blue bar/lever from the handles to the wheel axle, when the VO says "input arm", while also extending a brown bar over the top of the blue at the same time. Write "72 in." under this double arrow when the VO says these numbers.
Mech_advantage_levers_27	...and the output arm, from under the tub to the wheel axle, is twenty-four inches. Draw in a green double-ended arrow, with perpendicular end marks (→) running under the blue bar/lever from the center of the tub to the fulcrum (axel), while also extending a green bar over the top of the blue at the same time. when the VO says "output arm". Write "24 inches" under this double arrow when the VO says these numbers.
Mech_advantage_levers_28	So the ideal mechanical advantage for the wheelbarrow.... Write out the equation underneath, "Ideal Mechanical Advantage = length of input arm/length of output arm". You can maybe use some of the writing animation used in Scene 12.
Mech_advantage_levers_29	...is the input arm distance..... seventy-two inches.... Write after the fraction, = "72 in." (as a numerator), in sync with the VO.
Mech_advantage_levers_30	..divided by the output arm distance.....twenty four inches. Draw fraction line with "divided by", and follow with "24 inches" (as a denominator), in sync with the VO.
Mech_advantage_levers_31	Seventy-two over twenty-four is three-point-zero for the ideal mechanical advantage. Highlight the "72" and the "24" briefly when these numbers are said. Write " = 3.0" after the fraction.