

Materials

Ring	500 g Weight	Correct Spring Scales
Ring Stand	String	Rulers
Paper	Pulleys	

1. Lift the weight by hand to a height of 20 cm.

How much force did this take? (Remember to convert to meters) _____

What was the work you did lifting the weight? _____

2. Build a **single fixed pulley system**. Draw your pulley.

Lift your weight to a height of 20 cm.

How much force did it take to lift the weight with your pulley? _____

How far did you have to pull the string to lift your weight to a height of 20 cm? _____

Calculate the work input you supplied.

Calculate the work output the machine supplied.

What is the efficiency of your pulley system?

Of the three ways machines make work easier, how did your single fixed pulley system make your work easier?

3. Build a **single moveable pulley system**. Draw your pulley.

Lift your weight to a height of 20 cm.

How much force did it take to lift the weight with your pulley? _____

How far did you have to pull the string to lift your weight to a height of 20 cm? _____

Calculate the work input you supplied.

Calculate the work output the machine supplied.

What is the efficiency of your pulley system?

Of the three ways machines make work easier, how did your single moveable pulley system make your work easier?

4. Use at least 1 **multiple pulley** in a system to lift the weight to a height of 20 cm. Draw your pulley.

Lift your weight to a height of 20 cm.

How much force did it take to lift the weight with your pulley? _____

How far did you have to pull the string to lift your weight to a height of 20 cm? _____

Calculate the work input you supplied.

Calculate the work output the machine supplied.

What is the efficiency of your pulley system?

Of the three ways machines make work easier, how did your multiple pulley system make your work easier?

Questions

1. Which pulley system required less input force? WHY?
2. Which pulley system required you pull the string the longest distance? WHY?
3. Which pulley system was more efficient? WHY?