

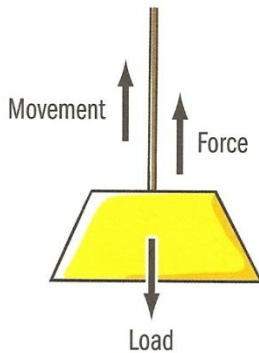
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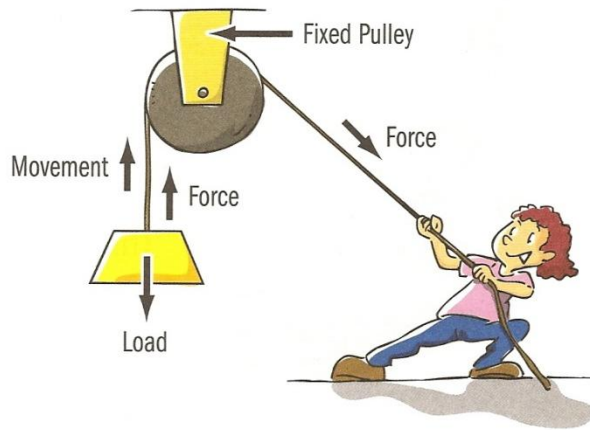
Pulleys

Use the pictures to help you complete the paragraphs by filling in the blanks with the words provided.

Lifting Alone



Lifting with a Fixed Pulley



effort
fixed
force
one
down
direction
muscles
weight

If we want to move something, we need to apply a _____. We can use a _____ pulley system to do this. In a system like this, the pulley stays in _____ place. This system changes the _____ of the force needed to move something, not the amount of force.

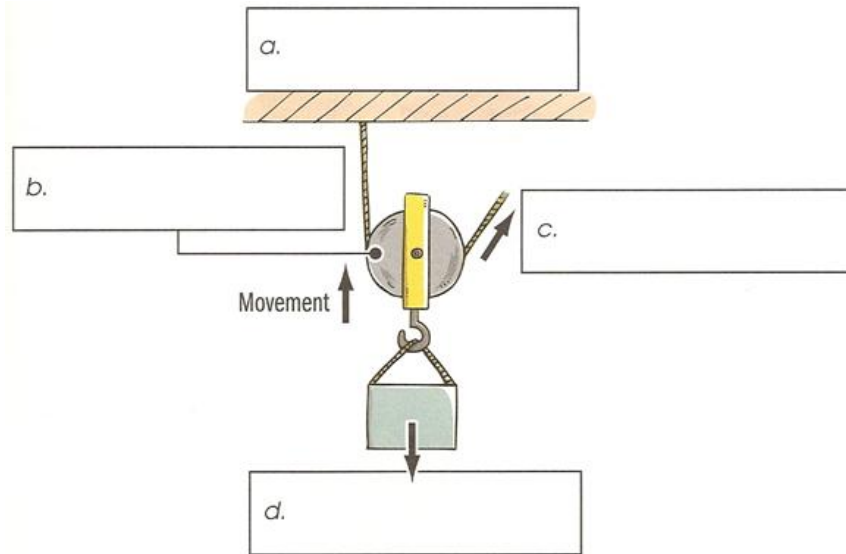
When we pull upwards to move something, we are pulling with our _____ alone. It is usually easier to pull something _____ rather than pull it up because we can use our _____ as an additional force. Our muscles lift the load with less _____.

After reading the paragraphs to follow label the picture by using the bolded words.

If the pulley is allowed to move, then lifting a load becomes easier. The force needed to move the load is called the **load force**.

A **movable pulley** supports and moves with the load. The pulley is attached to the load, and the rope is attached to the **structure**. This makes lifting the load easier because the rope attached to the structure takes half the weight of the load. You only have to use half the **effort force** that you would use with a fixed

pulley system. For example, to lift a 100 kg load, you would only have to use an effort force of 50 kg.



1. What is a load force?

2. What is an effort force?

3. How much effort force would you use to lift a 300 kg weight with a fixed pulley system?

4. How much effort force would you use to lift a 300 kg weight with a movable pulley system?

5. In a movable pulley system, where does the other effort come from?
