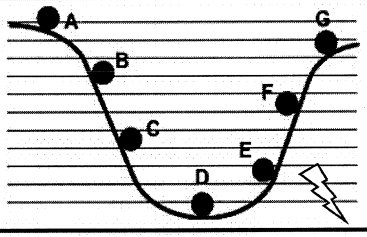
All sections marked with a ⚡ are considered essential concepts and must be completed to receive full credit on WS.

1. Energy B	A. The units for work and energy.
2. Joules A	B. Stored or gained work.
3. Work D	C. Energy changing from one form to another.
4. Power E	D. Energy transferred by forces. Product of force and distance.
5. Energy Transfer C	E. How fast work is done.

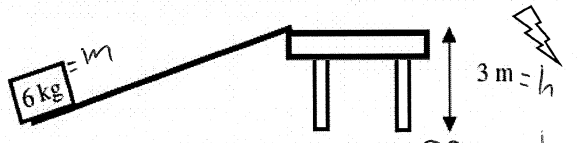
Potential Energy (E_p), Kinetic (E_k) Energy, or Work (W)

W An object is pushed for 3 m.
EK An object is going 6 m/s.
W Slowing down an object.
EP An object on top of a 3 meter table.
W Friction stopping an object from moving.

What kind of energy is lost from A to D?
PE
What kind of energy is lost from D to G?
KE



To help a bicyclist get to the top of a hill, they speed up. Using energy, explain why this helps. To store up more KE which turns into PE
If the bicyclist starts at rest, how do they get up the hill?
need to use Work



What kind of energy will it have at the top? PE = mgh
Calculate it. PE = 6kg · 10m/s² · 3m = 180J
Where does this energy come from? Work

Motor A does 240 J of work in 24 seconds. Calculate power.
P = W/t W = 240J t = 24sec = 10watts
Motor B does 240 J of work in 8 seconds. Calculate power.
W = 240J t = 8sec
P = 240J/8sec = 30watts
Which motor did more work? Same
Which motor was more powerful? motor B
True or false: "*A more powerful motor does more work*"?
powerful motor does work faster

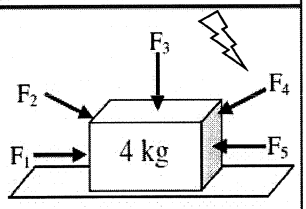
Is energy increased or decreased?

I An object speeds up.
D An object is lowered back to the ground.
D Friction slows down an object.
0 An object sits motionless on a table.
I An object is lifted up from the ground.

Figure out the Energy Transfers.
Thermal; Nuclear; Radiant; Mechanical; Chemical; Electrical

Eating food allows you to move.
chemical → Mechanical
A gas stove boiling water.
chemical → Thermal

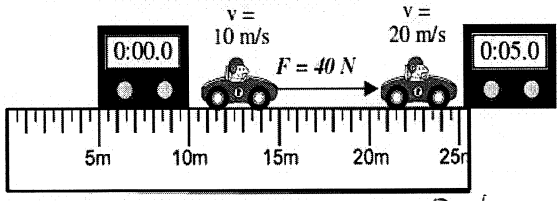
Which forces are doing work on the object?
all but F_3
Which forces are not doing work on the object?
F_3



A person holds onto a 25 N object for 2 minutes 3 m above the ground. How much work is done on the object?
0J did not move

A 30 N force pushes a 20 kg box 5 m across the floor.
How much work is done on the box? W = F·d
F = 30N d = 5m W = 30N · 5m W = 150J
What did the above work become? KE

A 25 N force pushes a box up a ramp to the back of a truck.
If the force does 200 J of work, how long is the ramp?
W = F·d F = 25N W = 200J d = W/F = 200J/25N = 8m
Where does the work go?
PE



Calculate the work done on the car. W = F·d
F = 40N d = 10m W = 40N · 10m W = 400J
Calculate the power of the force. P = W/t
400J / 5sec = 80watts
What did the work become? more KE