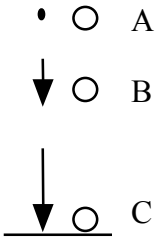
U7 – WS1 – Where is Energy Stored?

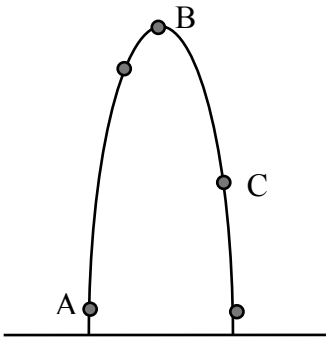
Draw Energy Flow Diagrams (LOL diagram) for each of the following situations. Each diagram must *identify the system* and have the following:

- A bar graph showing the amount of energy stored and where it is stored (E_{grav}, E_k, …) in EACH STATE (points A, B, and C or initial & final).
- A picture of the system at EACH STATE – *include relevant information* (like heights or velocities).
- Show how energy is transferred into or out of the system (W or E_{dis}) during each transition between states.
- Do not forget that the total amount of energy must be conserved.
- If you wish to ignore air resistance, friction or anything else then *you must say so*.

1. A ball is held above the ground, and then is dropped so it falls straight down. (Limit your analysis to the ball moving in the air, BEFORE it hits the ground.)

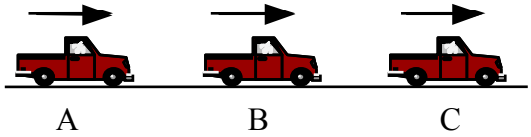


2. A baseball is thrown up in the air and then it falls back down.

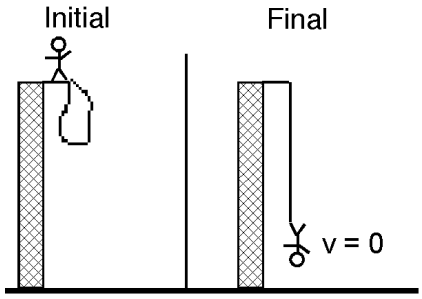


3. A ball rolls to a stop on the floor.

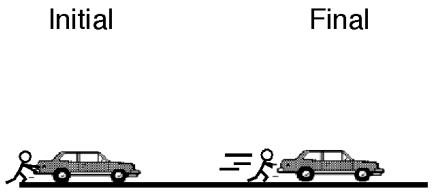
4. A truck is driven at constant speed down the street.



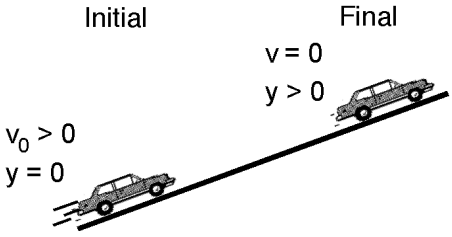
5. A bungee jumper falls off the platform and reaches the limit of stretch of the cord



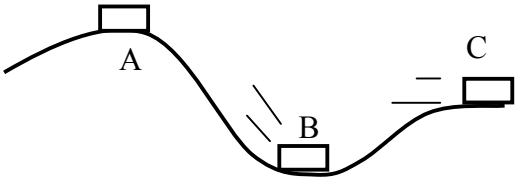
6. A person pushes a stalled car to get it to the service station.



7. A moving car, moving up a hill, coasts to a stop.



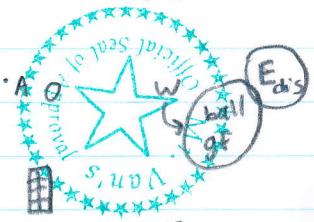
8. A roller coaster rolls down a big hill.



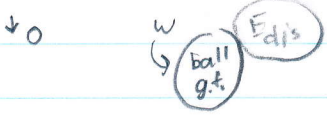
9. Create your own 3-state, 2-transition event.
10. Create another 3-state, 2-transition event.

4

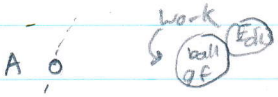
Unit 7 Worksheet 1

1. 

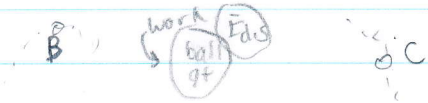
$U_g + E_{dis} = K_{tran} + U_g$



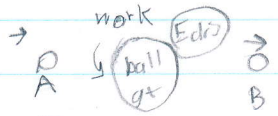
$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

2. 

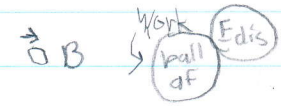
$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$



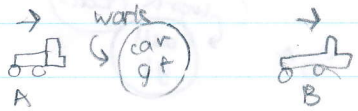
$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

3. 

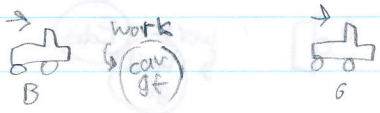
$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$



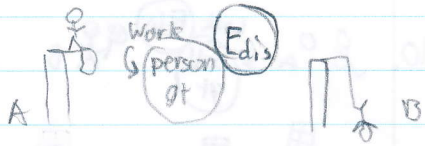
$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

4. 

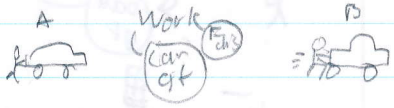
$K_{tran} + U_g + W + E_{dis} = K_{tran} + U_g$



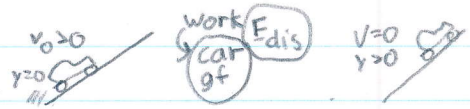
$K_{tran} + U_g + W + E_{dis} = K_{tran} + U_g$

5. 

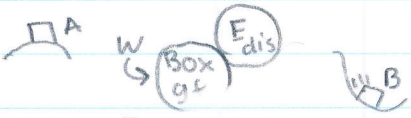
U_g

6. 

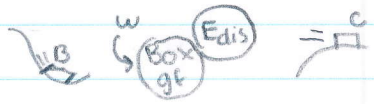
$K_{tran} + U_g + W = K_{tran}$

7. 

$K_{tran} + U_g + E_{dis} = U_g$

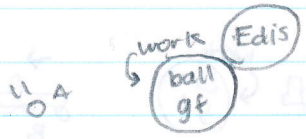
8. 

$K_{tran} + U_g = K_{tran} + U_g$

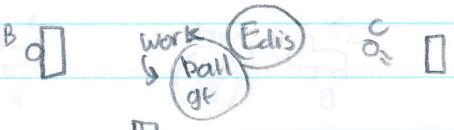


$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

9.

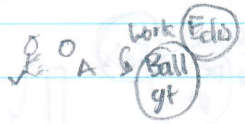


$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

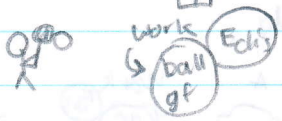


$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$

10.



$K_{tran} + U_g + E_{dis} = K_{tran} + U_g$



$= 0$

$K_{tran} + U_g + E_{dis} = K_{tran}$