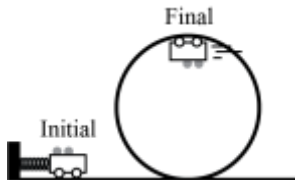


Worksheet 6-3 LOL Diagrams

For each situation shown below:

1. Show your choice of system in the energy flow diagram, unless it is specified for you. ***Always include the earth in your system.*
2. Decide if your system is frictionless or not, and state this.
3. Sketch an energy bar graph for the initial situation.
4. Complete the analysis by showing energy transfers and the final energy bar graph.

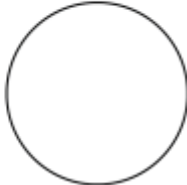
1. A car on a roller coaster track, launched by a huge spring, makes it to the top of the loop.



Initial

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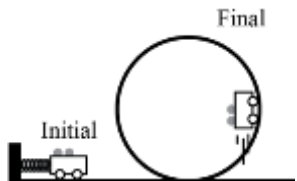
Energy Flow



Final

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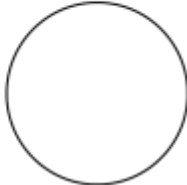
2. The same car is launched by the spring, but it is only half way up the loop.



Initial

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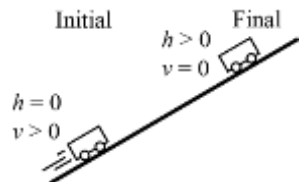
Energy Flow



Final

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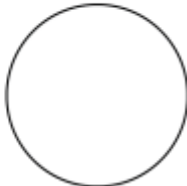
3. A moving car, moving up a hill, coasts to a stop up.



Initial

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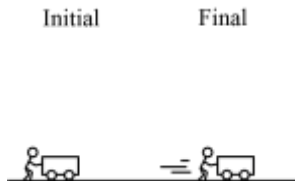
Energy Flow



Final

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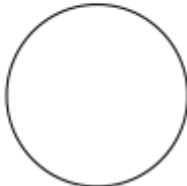
4. A person pushes a stalled car to get it to the service station.



Initial

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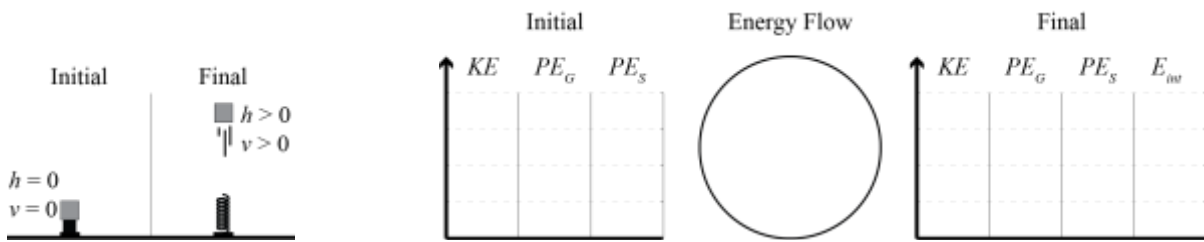
Energy Flow



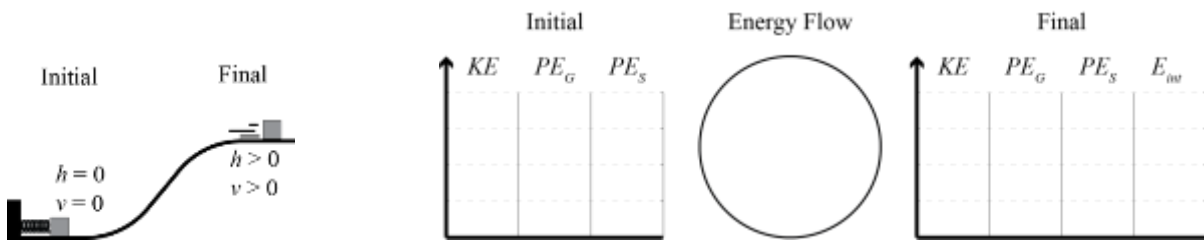
Final

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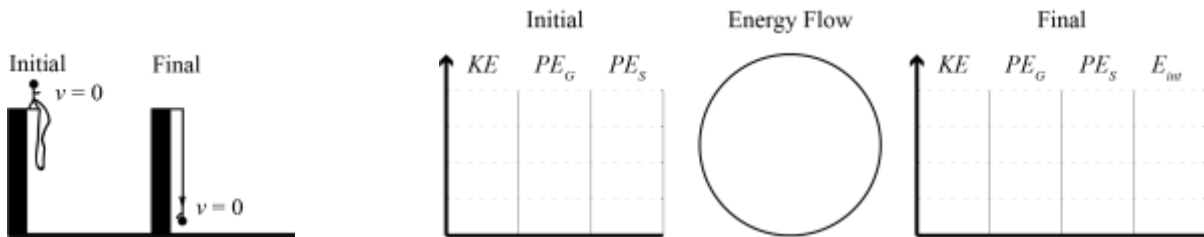
5. A load of bricks, resting on a compressed spring, is launched into the air.



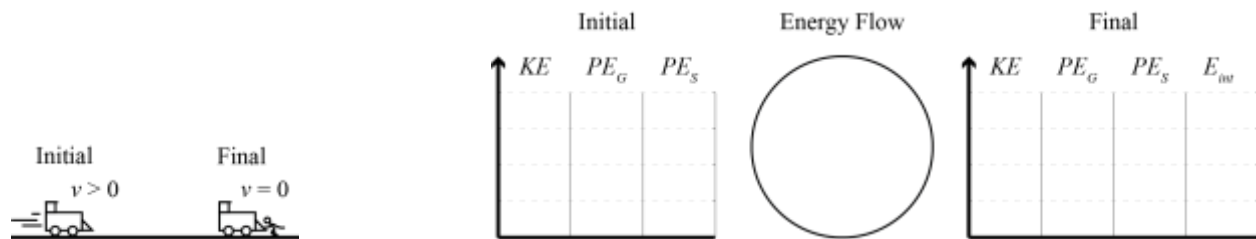
6. A crate, starting at rest, is propelled up a hill by a tightly coiled spring.



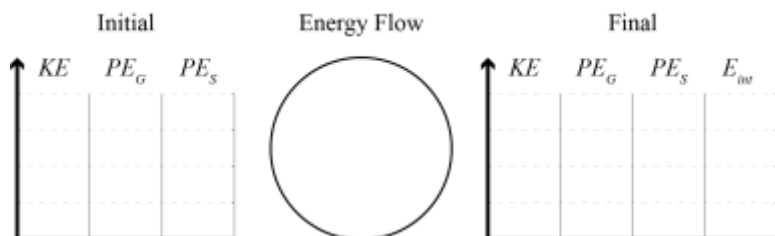
7. A bungee jumper falls off the platform and reaches the limit of stretch of the cord.



8. Superman, stopping a speeding locomotive, is pushed backwards a few meters in the process.

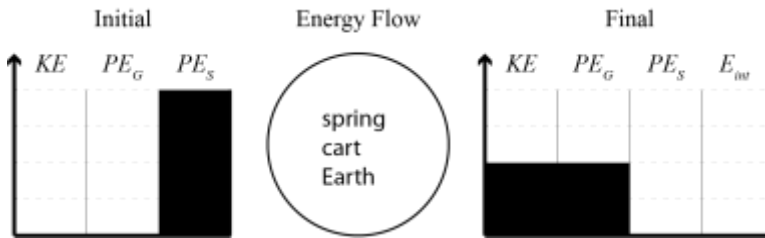


9. Create your own situation and construct corresponding energy bar graphs and system schema.

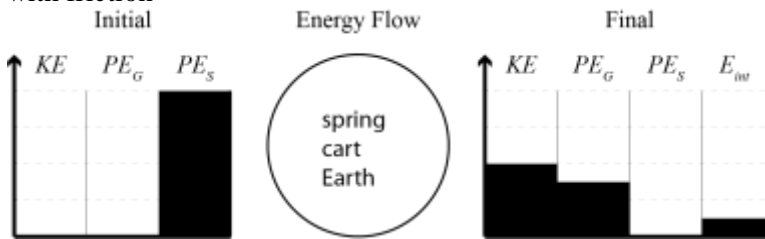


The solutions shown below are only one possible solution. The energies on the Final side need to add up to the energy on the Initial side but the ratio of the energies can be anything. Adding friction will result in some energy becoming internal energy in all except for #5 and #7.

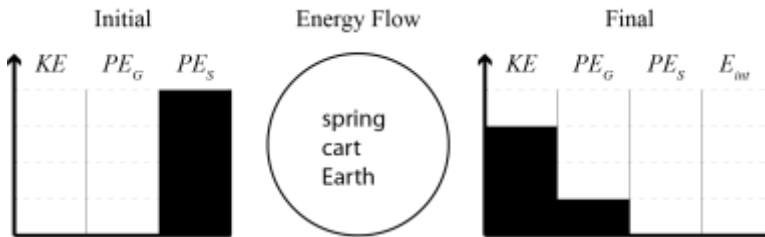
1. without friction



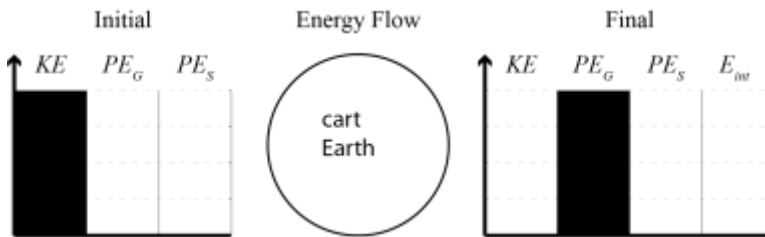
with friction



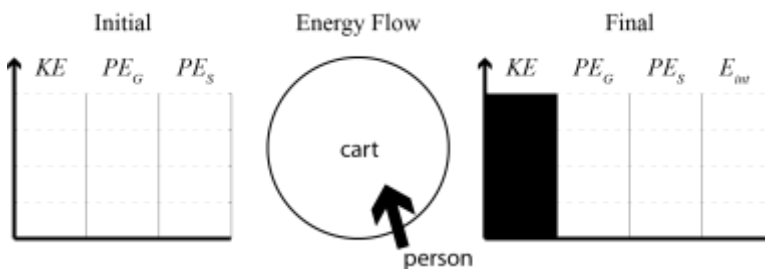
2.



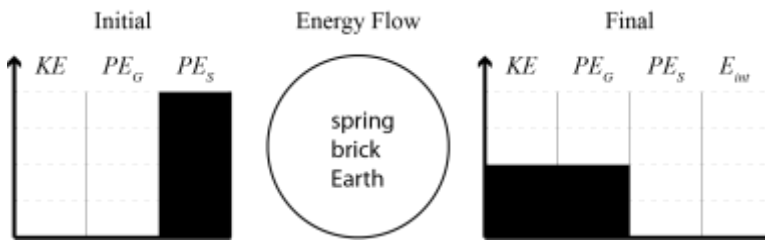
3.



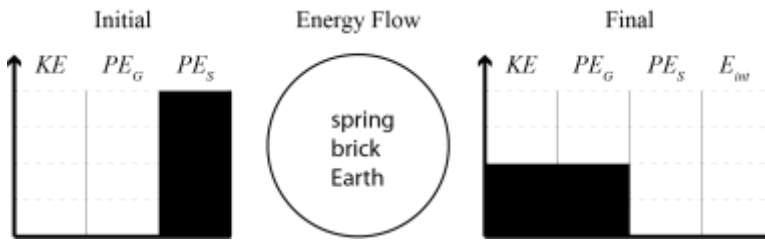
4.



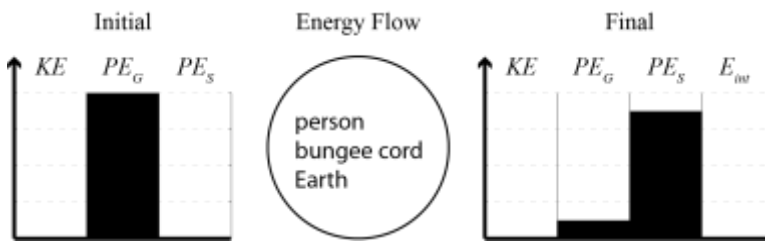
5.



6.



7.



8.

