

**Training Header Sheet with Change Log Form****Kentucky Academic Standards**

Science

Operational 2018

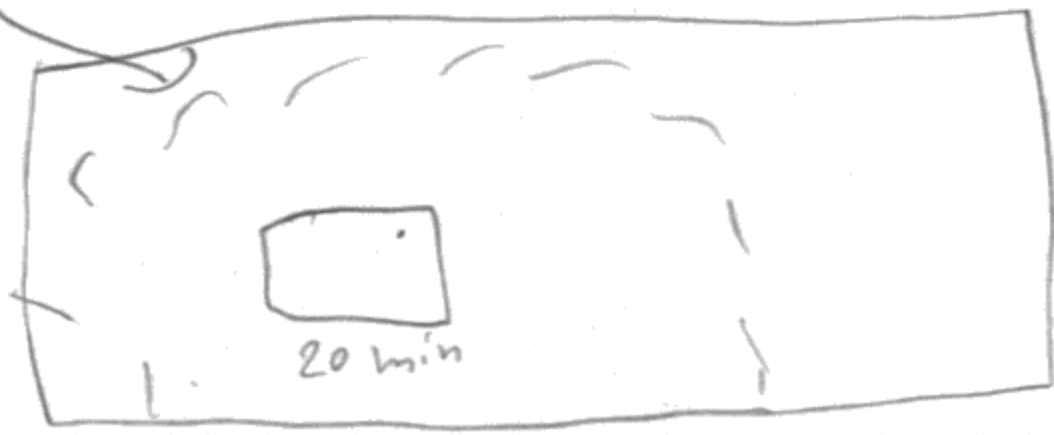
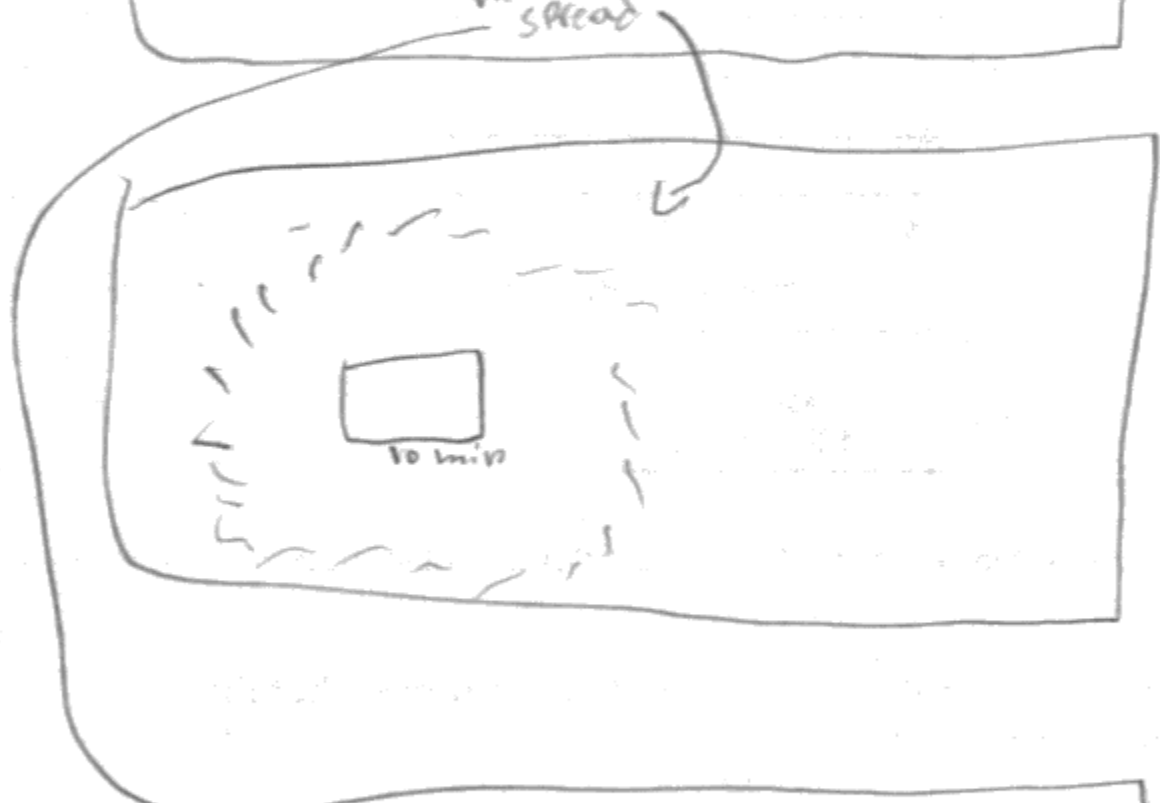
SC071602\_05

Particle Motion

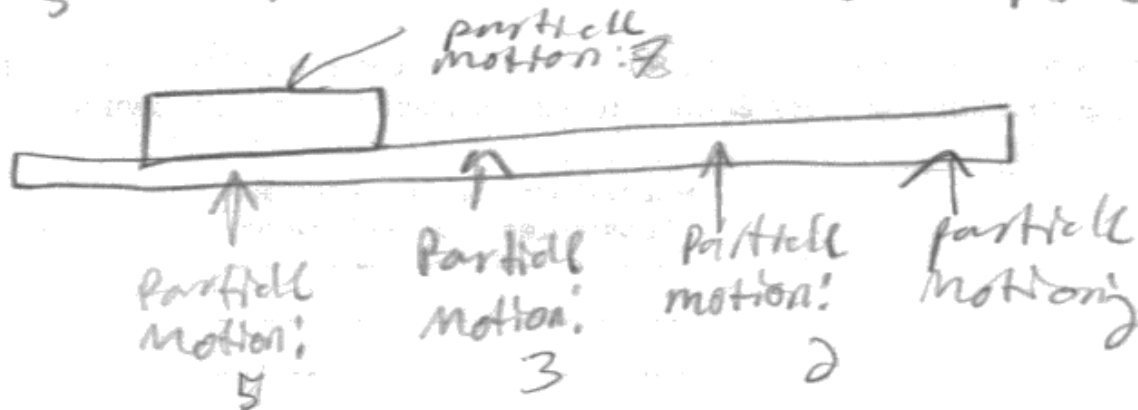
Qualification Sets

| Date   | Comments                         | Version |
|--------|----------------------------------|---------|
| 3/2018 | Initial Operational Training Set | Set A   |
|        |                                  |         |
|        |                                  |         |
|        |                                  |         |
|        |                                  |         |

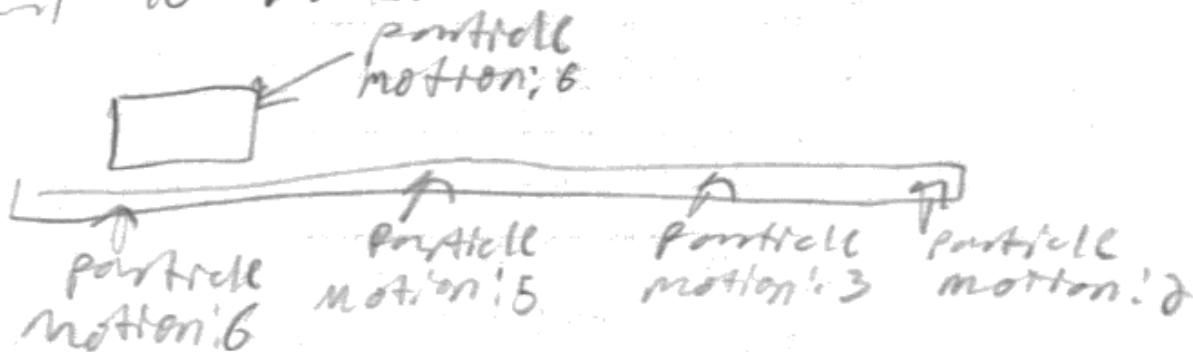
Top of tablet



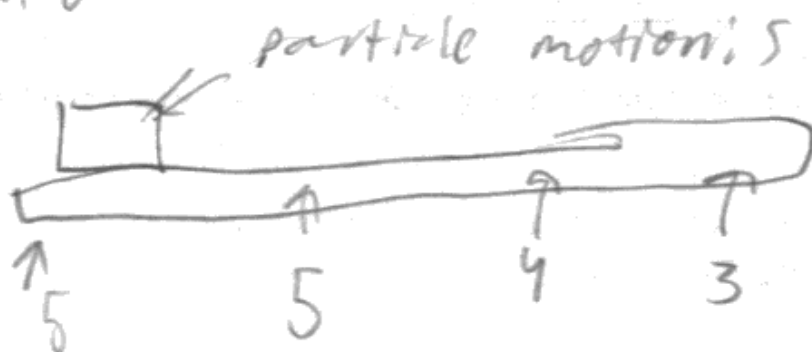
1.1 5 minutes after block placed

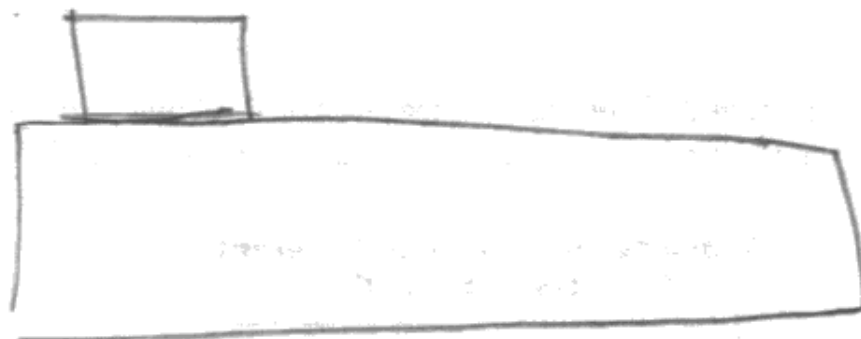


2.1 10 minutes after block placed

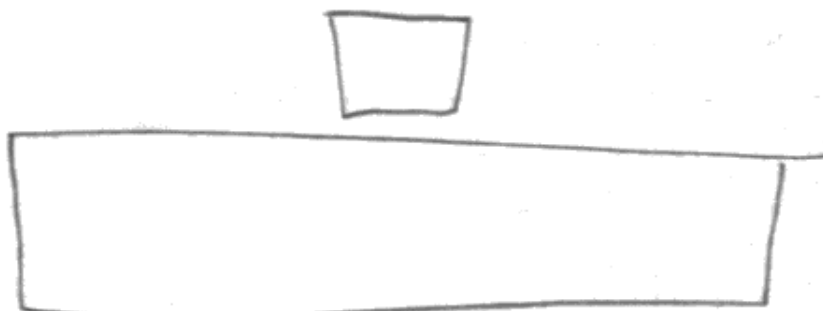


3.1 20 minutes after block placed

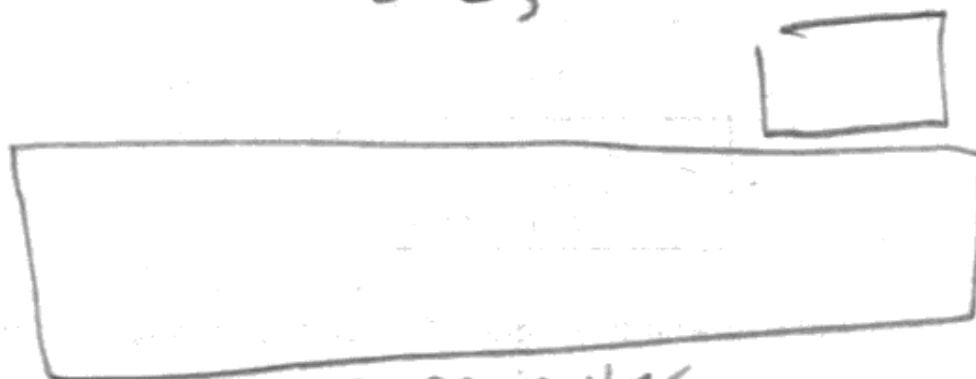




5 minutes

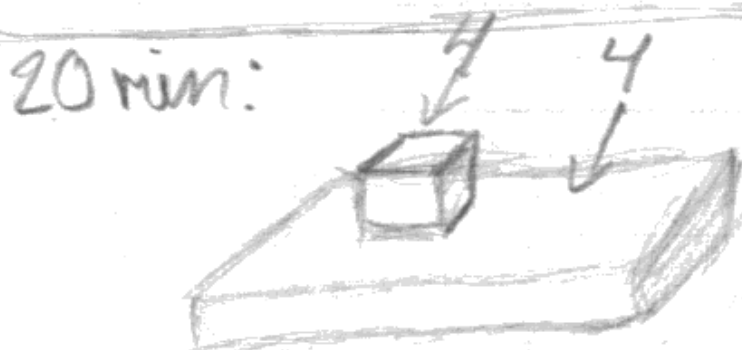
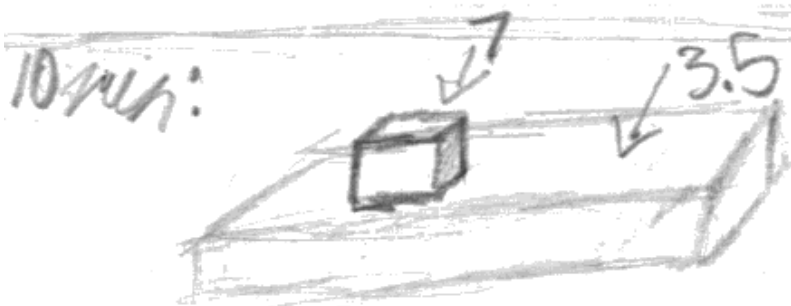
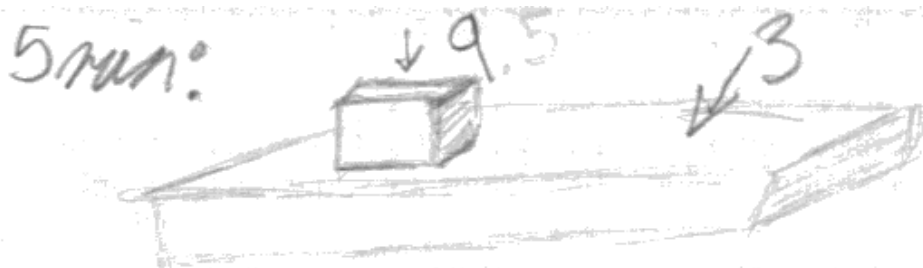


10 minutes



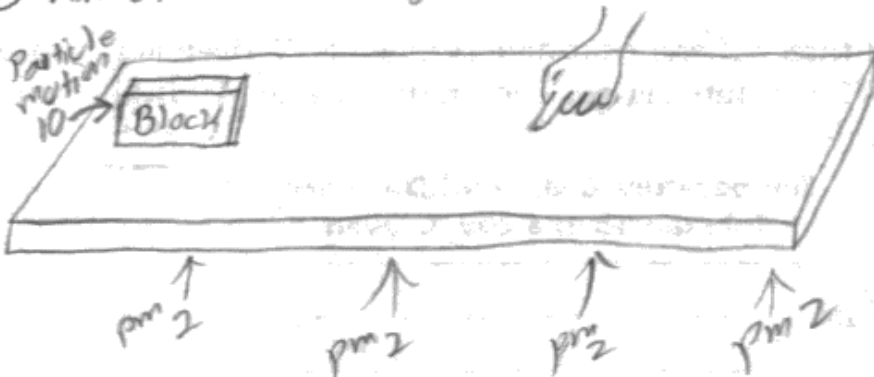
20 minutes

each time the Heated metal block was farther on the right because of the time difference.



Explanation: The block transferred its heat to the table. The kinetic energy and particle motion spread to an equal temperature.

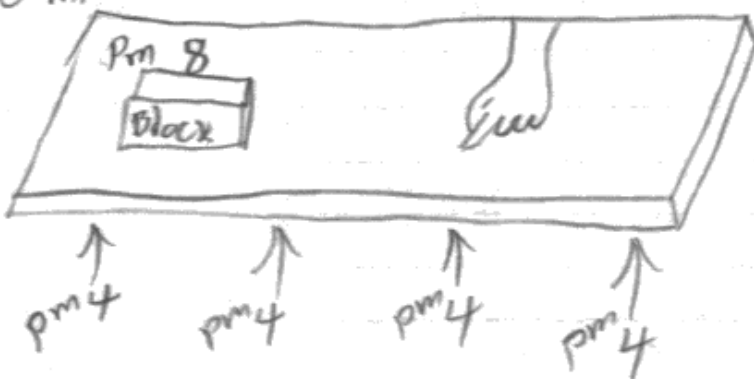
5 min after block is placed on table



pm = particle motion

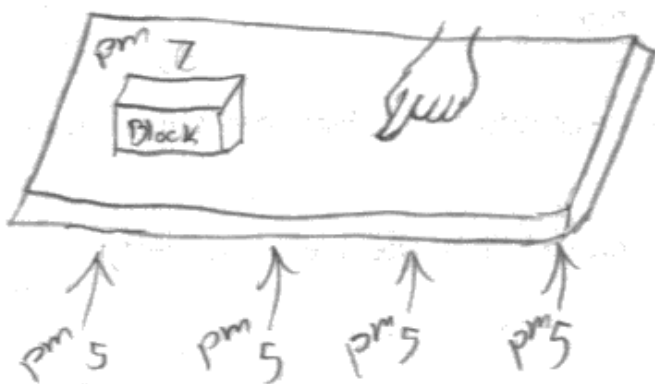
The energy from the heated block is transferred to the table.

10 min



The particle motion in the heated block, is considerably faster than that of the cooled table, so, when placed on the table, the heat, or moving kinetic energy, is transferred to the table. Heat transfer

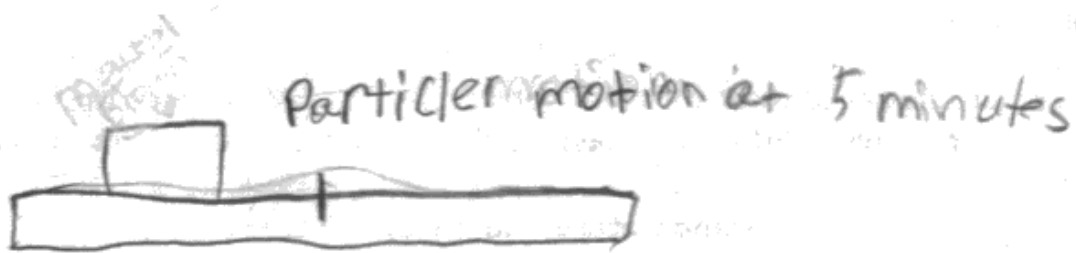
15 min



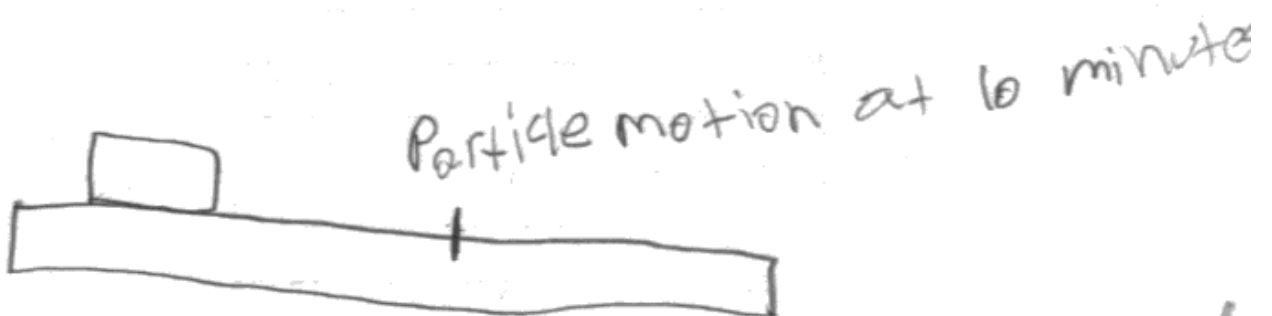
is from hot, to cold, so the heat from the block transfers to the cool table. Eventually, after 20 minutes the block and table will become the same temperature.

These drawings support the claim, "kinetic energy transfer through the particles is responsible for transmitting the energy from the heated block to Suzanne's hand", because the kinetic energy from the block transfers to the table, which then transfers to Suzanne's hand. This happens because heat transfers from not to cold.

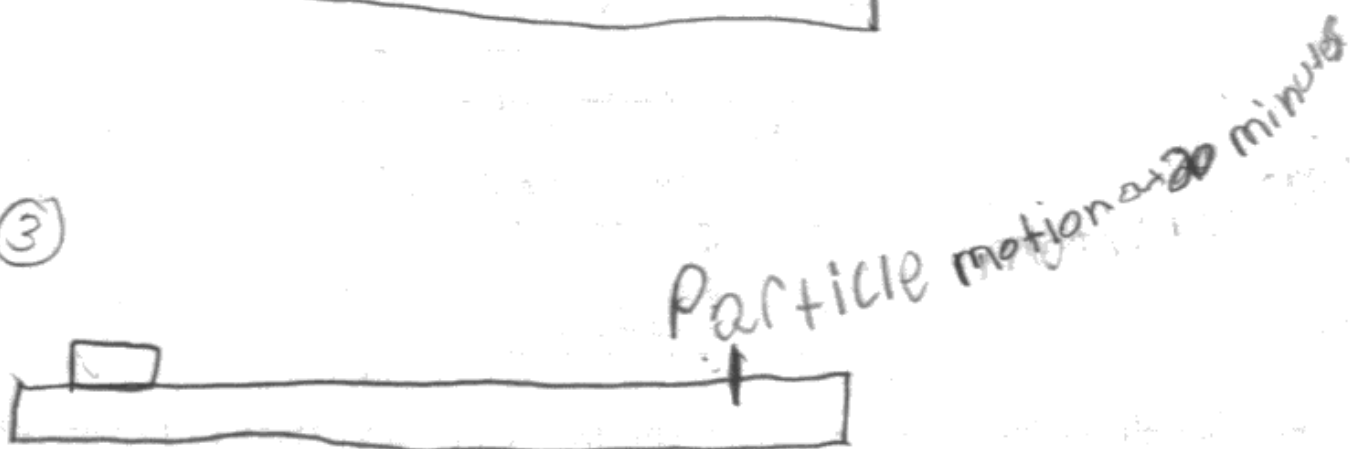
①



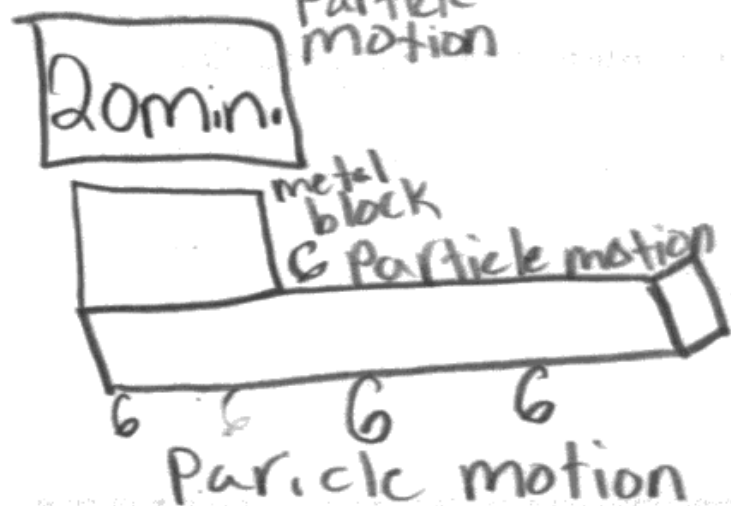
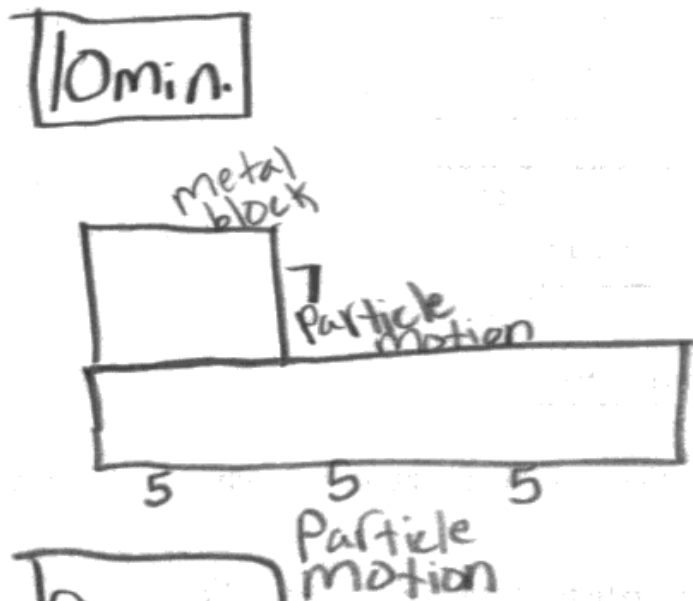
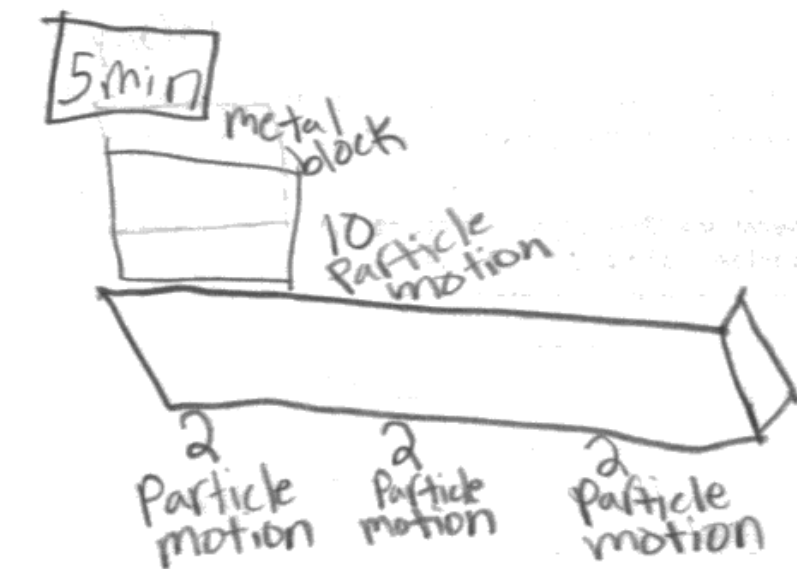
②



③



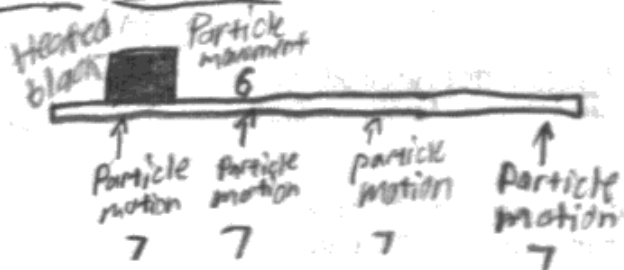
As time passes, the block's energy is transferred to the table. As more energy leaves the block, more energy enters the table, and the particle motion moves further down the table toward the edge.



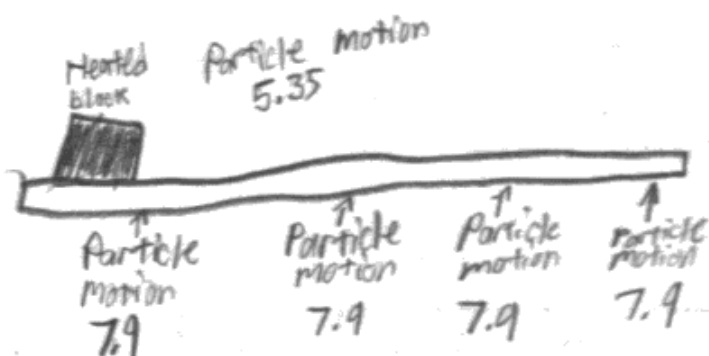
The three models support the teacher's claim because they are transferring energy. The metal block gets lower in particle motion and the table gets higher.



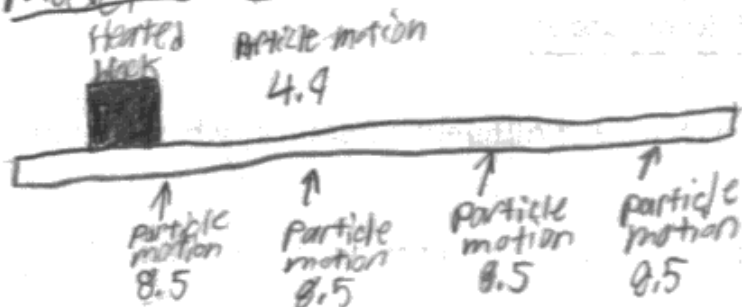
Model 1: 5 minutes

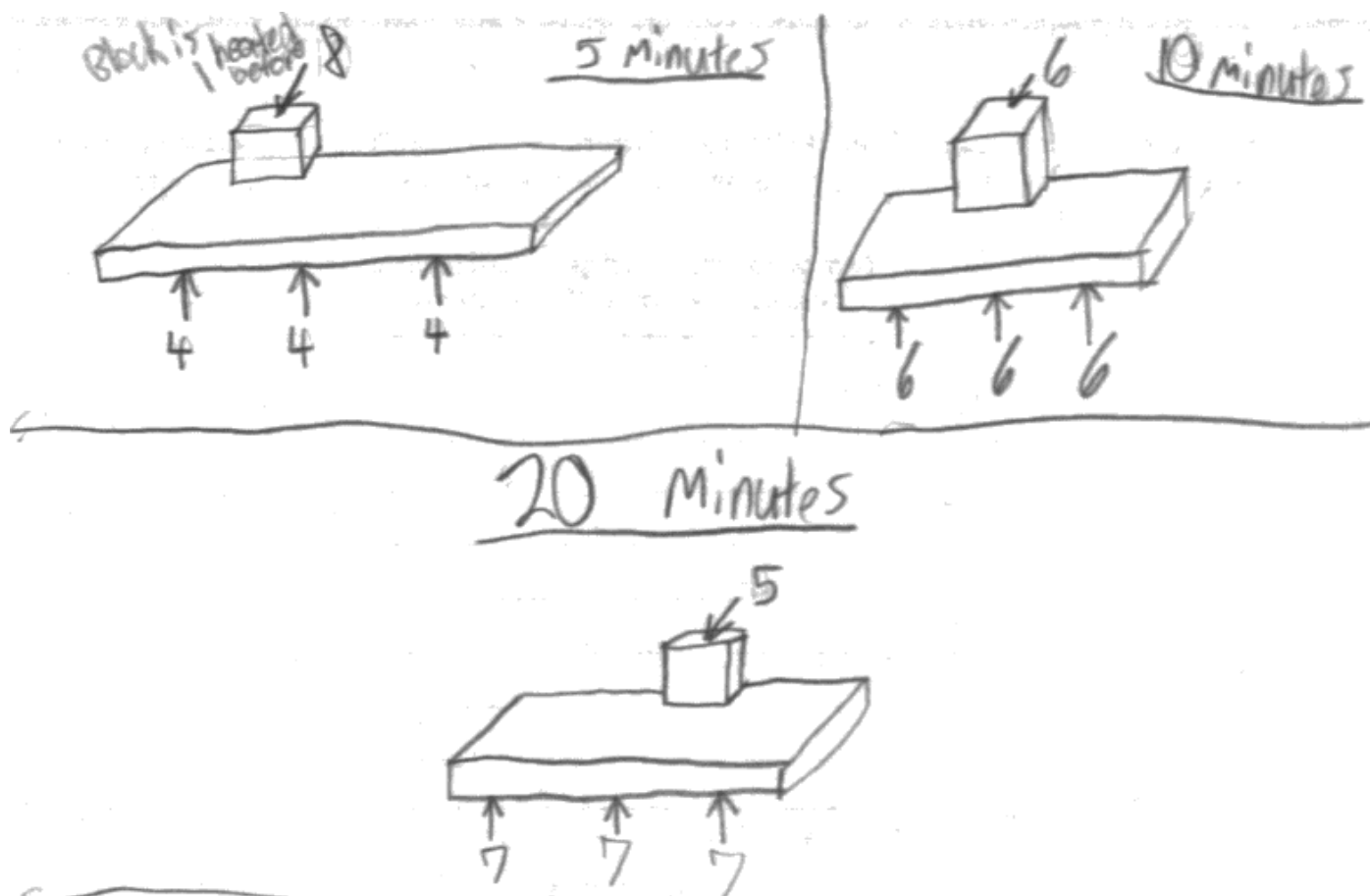


model 2: 10 minutes

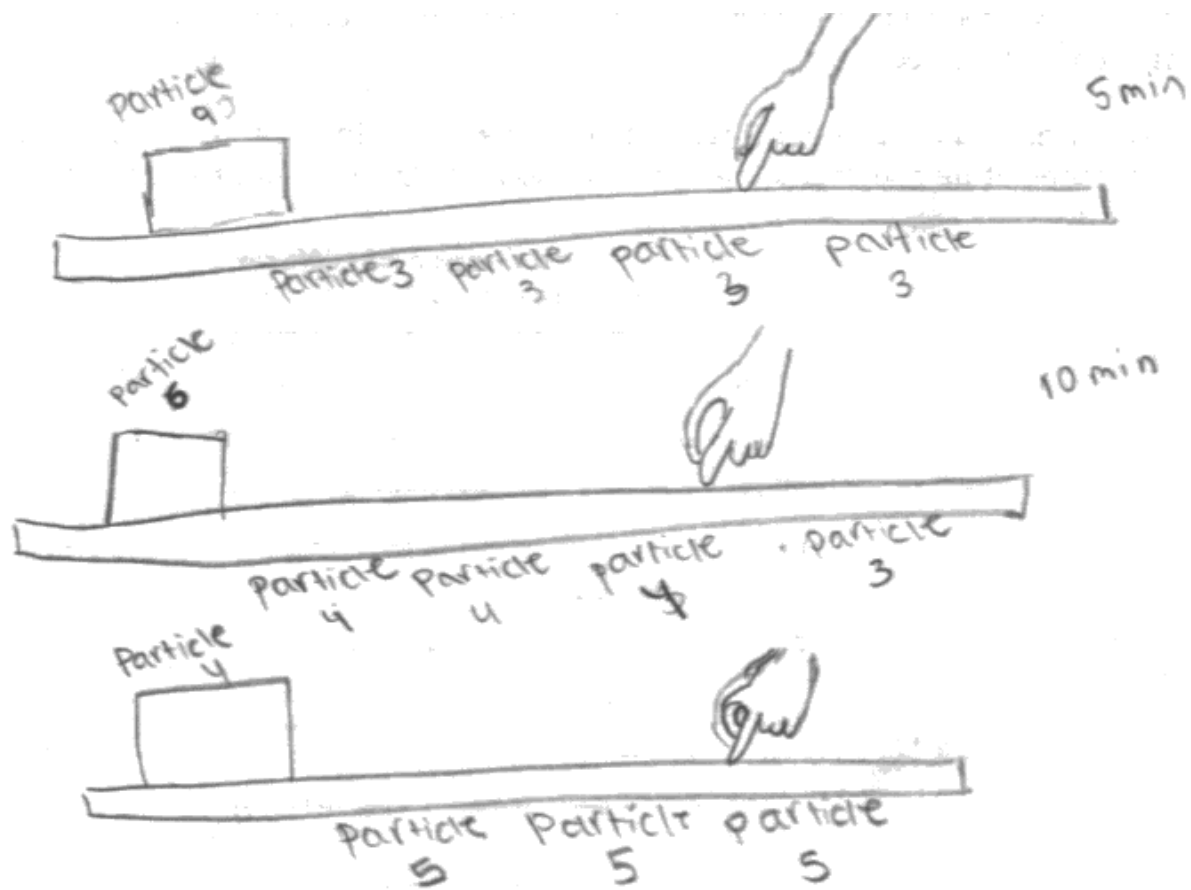


model 3: 15 minutes



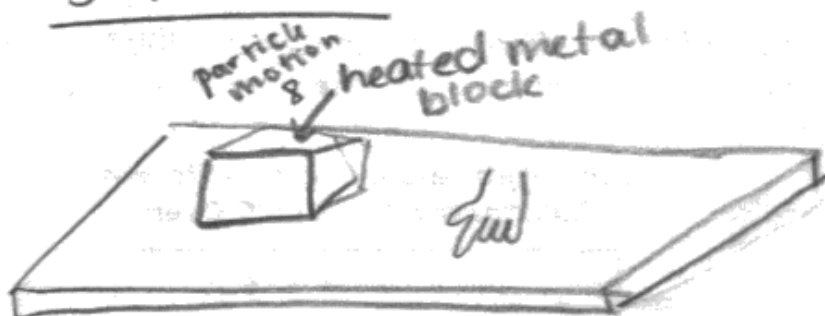


Each model supports the claim that the longer the heated block is placed on the table, the more energy is transmitted from the block onto the table. The energy transmitted results in the particles in the block to slow down as the particles on the table speed up due to the energy transfer. The object with the most energy gives some to the other to speed up the particles. This causes the hotter object to cool down and the cooler one to heat up.



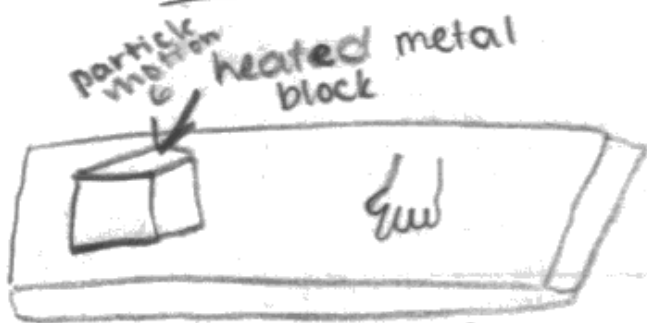
The longer the hot metal stayed on the table more heat and kinetic energy was transferred to the table.

5 minutes



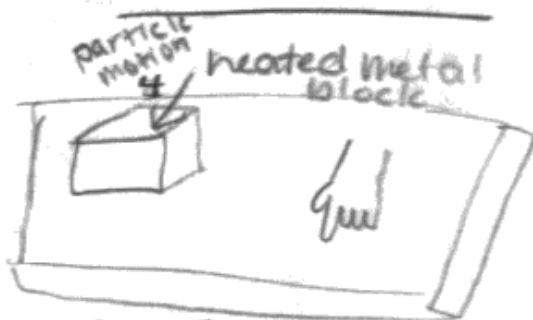
↑ particle motion 4  
 ↑ particle motion 2  
 ↑ particle motion 2  
 ↑ particle motion 2

10 minutes



↑ particle motion 4  
 ↑ particle motion 3  
 ↑ particle motion 3  
 ↑ particle motion 2

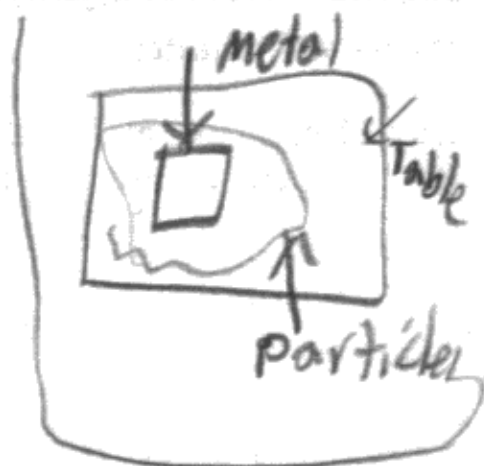
20 minutes



↑ particle motion 4  
 ↑ particle motion 3  
 ↑ particle motion 3  
 ↑ particle motion 3

These models support the teacher's claim about particle motion and energy transfer because kinetic energy transfers the particles causing temperature to even out.

5 min

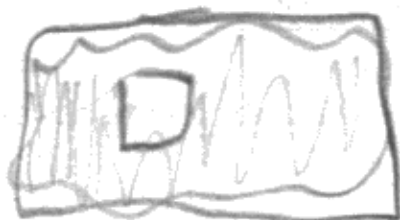


key

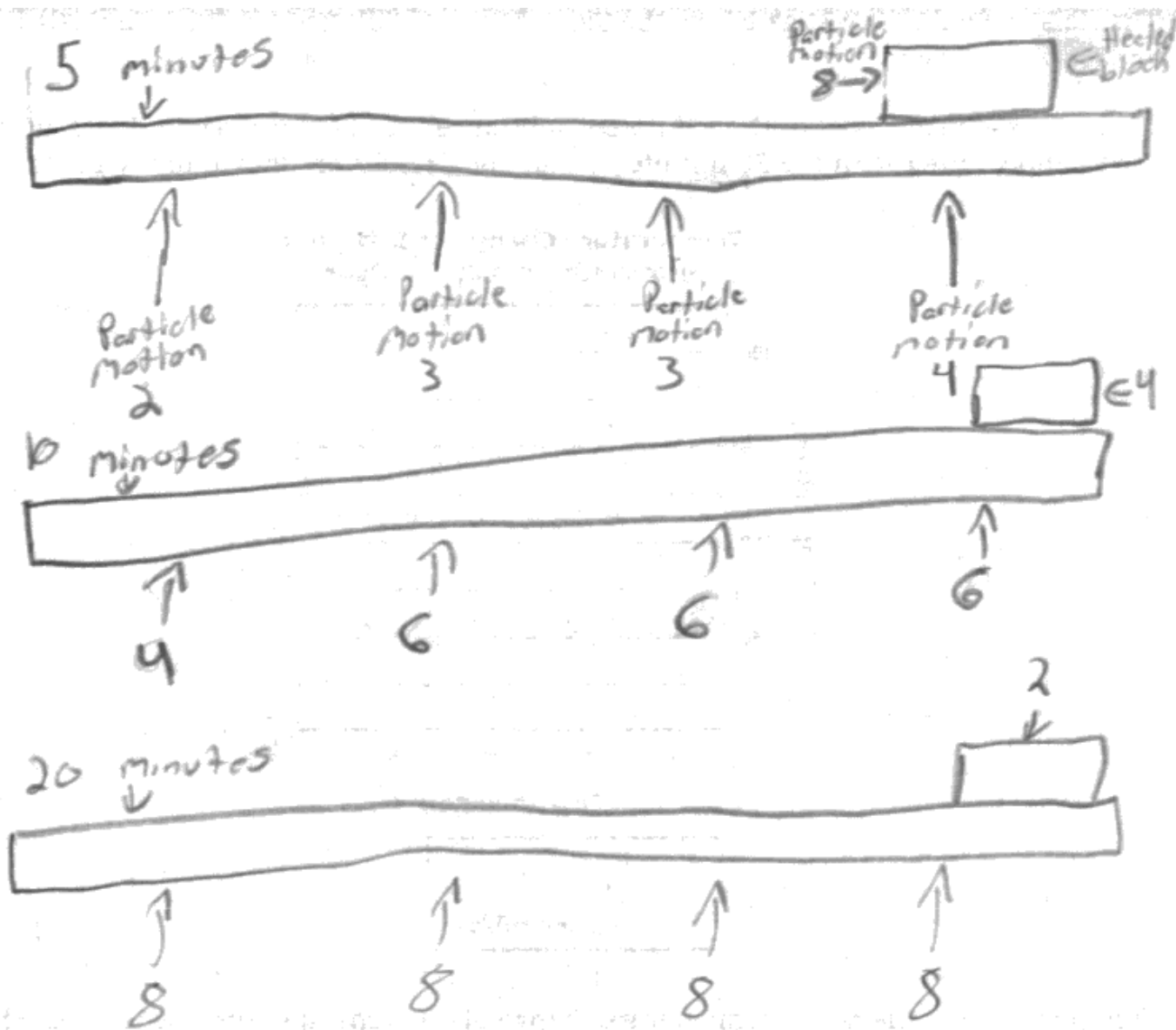
10 min



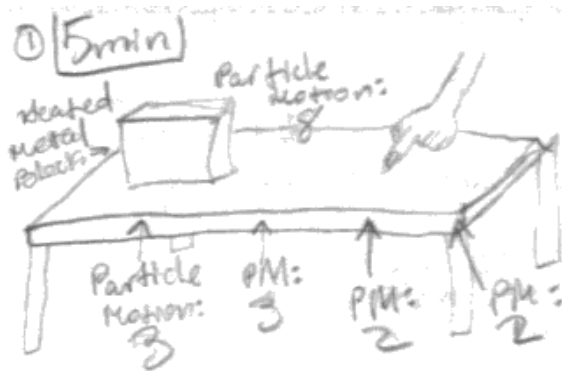
20 min



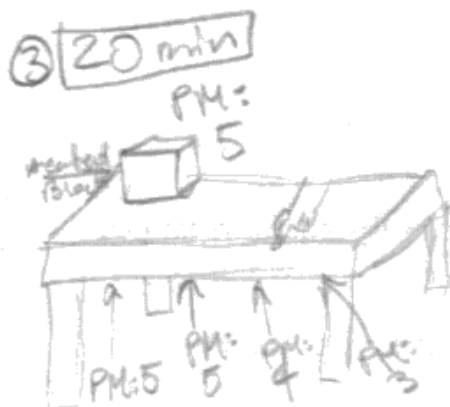
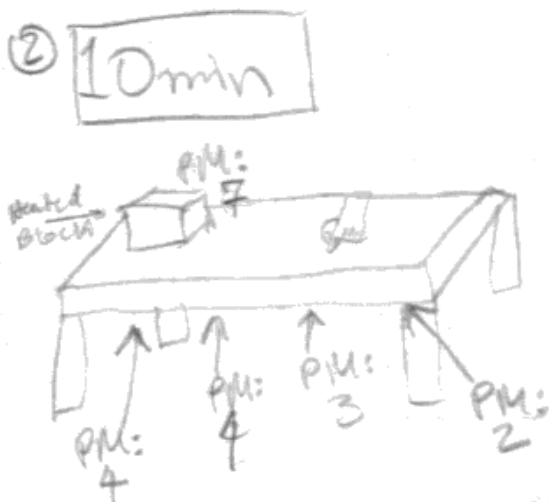
This shows the particle movement increasing as time passes



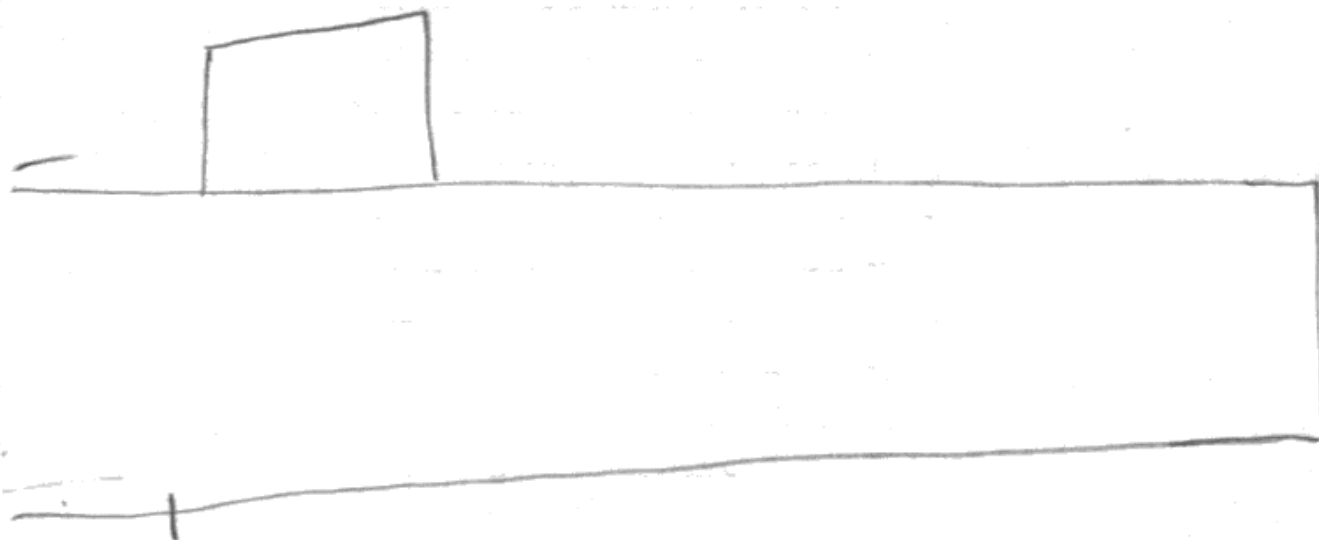
The energy from the block was transferred to the table causing the table's particle motion to go up and the block's to decrease.



PM = Particle Motion

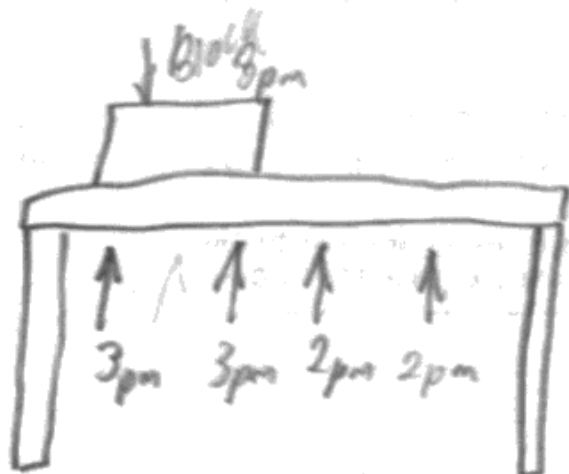


These 3 models support the teacher's claim kinetic energy transfer through the particles is responsible for transmitting the energy from the heated block to Saranne's hand because as the minutes pass, the PM of the block gets lower and the PM of the table gets higher because the moving particles transfer energy to the table, making the particles move faster.



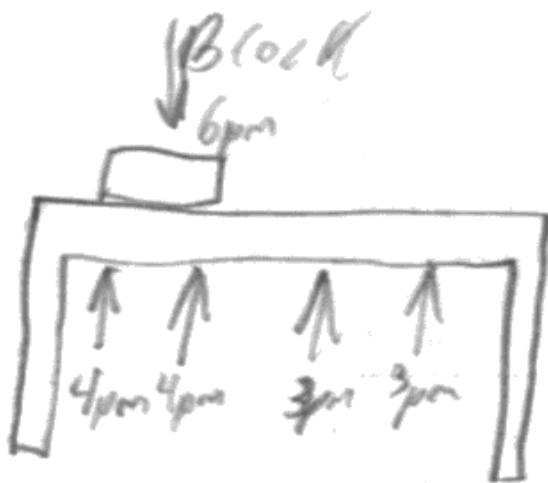
The particle motion changed at  
5 minutes and 10 minutes.





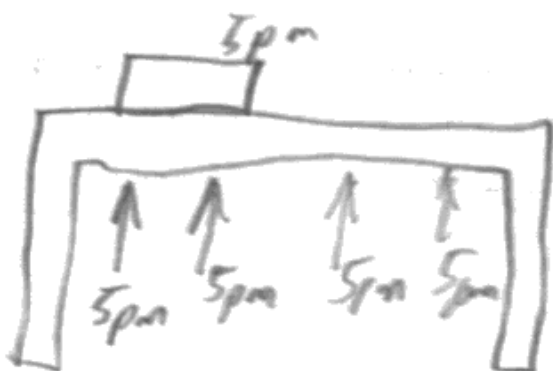
P.M. = Particle Motion

5 minutes

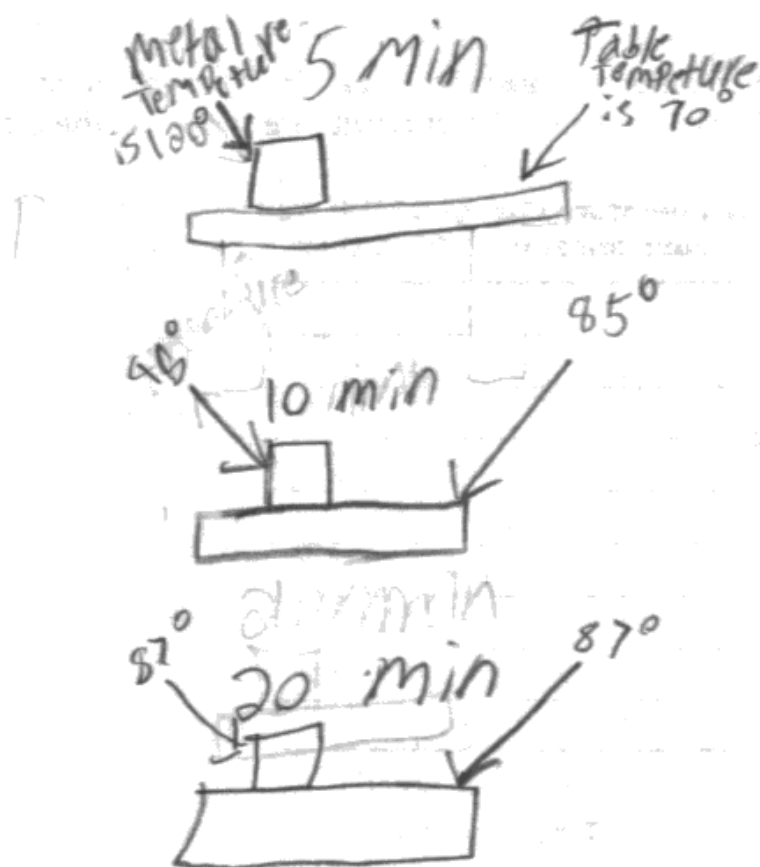


10 minutes

10 minutes

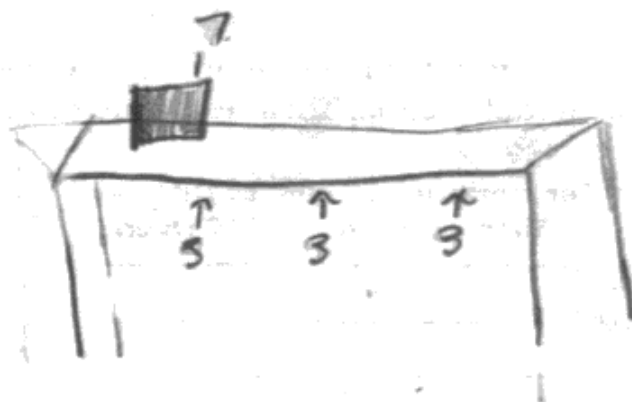


20 minutes

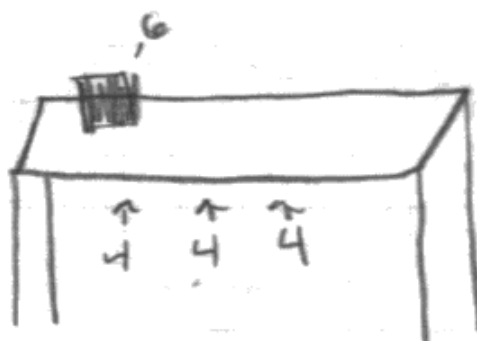


The teachers claim is right because the heated metal block makes the table warmer faster.

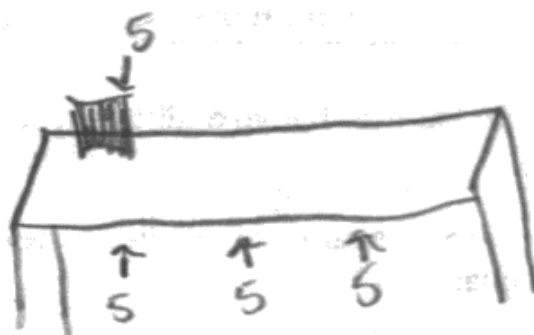
5 min



10 min



20 min



The energy from the block transfers to the table. So as the blocks particle motion goes down, the tables particle motion goes up.

I support the teachers claim  
because energy can transport to  
surrounding because of the type of  
particle the object/metal has.



