

Name: _____ Date: _____ Hour: _____

Poppin' Popcorn

Problem: Which popcorn popping model best represents the three types of heat transfer?

Predictions: Record your predictions (conduction, convection, or radiation) in the boxes below.
HINT** Use what you learned in centers to help you.

	Air Popper	Microwave	Pan
Type of heat transfer <i>(Conduction, Convection, Radiation)</i>			

Materials:

- Popcorn Kernels
- Stopwatch or Phone Timer
- Pan/Lid
- Oil or Butter
- Hot Plate
- Microwave
- Air Popcorn Popper
- Microwave Popcorn
- Paper Towel or Bowl
- Tablespoon

Safety Concerns:

This lab involves hot objects – be careful to ensure you do not touch them and get burned, and be watchful of those around you!

Procedure:

1. Students will move to the front of the room to participate in the demonstration.
2. Participants will be chosen at random using the class DOJO app.
3. Follow these instructions for using each popping method.
 - a. Air Popper:
 - i. Pour one of the piles of the popcorn kernels into the Air Popper.
 - ii. Turn on the Air Popper.
 - iii. Begin timing and collect data.
 - iv. Have a bowl at the bottom of the Air Popper to collect popcorn.
 - b. Microwave:
 - i. Put a bag of microwave popcorn into the microwave.
 - ii. Turn on microwave timer for three minutes (you may not need the full time).
 - iii. Begin timing and collect data. Turn the microwave off as soon as you can count to three without hearing a kernel pop to avoid burning.
 - c. Pan:
 - i. Turn the hot plate on to 8.
 - ii. Put 1/3 of your popcorn kernels into the pan.
 - iii. Put 1 Tablespoon of the oil into the pan.
 - iv. Place the lid on your pan.
 - v. Place the pan on the hot plate.
 - vi. Shake your pan being careful to make sure it remains in contact with the hot plate.
 - vii. Begin timing and collect data.

Data:

Model used	Time until first kernel popped	Time until last kernel popped	Total time for popcorn to pop
Air Popper			
Microwave			
Pan			

Model used	Provide at least 2 written (6 th grade level!) observations about what happened at each popcorn station. One of your observations must deal with heat transfer.
Air Popper	1. 2.
Microwave	1. 2.
Pan	1. 2.

Data interpretation: use your data to identify the type of heat transfer modeled by each popping method.

	Air Popper	Microwave	Pan
Type of heat transfer			
Evidence of heat transfer			
Diagram how heat moved			

Conclusion: Think back to the original question, “Which popcorn popping model best represents the three types of heat transfer? Use the data that you collected and to explain how heat is transferred for all three popcorn cooking methods.

Analysis Questions: (do not use examples from your notebook ... come up with different ones)

1. What is an everyday example of Conduction? Explain how your example demonstrates conduction.

2. What is an everyday example of Convection? Explain how your example demonstrates convection.

3. What is an everyday example of Radiation? Explain how your example demonstrates radiation.