

EnvSci 13.1

Plan: Trade and comparative advantage lab

Environmental science

Trade/Law of comparative advantage lab

Name _____ Group _____

Your goal in this activity is to accumulate beads of various colors. You will work either individually or in a group, and will receive beads each round. However each group will produce beads at different rates (see below), however trade between groups is possible.

Below are production rates for each group. Note that each group gets to choose what kind of bead to produce. There are three colors of beads and the goal is to accumulate as many beads as possible, equally in all three colors. After producing beads, you will have the opportunity to trade with other groups.

Group 1

Option 1 4 Blue	Option 2 3 Blue, 2 White	Option 3 2 Blue, 4 White	Option 4 1 Blue, 6 White	Option 5 8 White
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Group 2

Option 1 4 Red	Option 2 3 Red, 1 White	Option 3 2 Red, 2 White	Option 4 1 Red, 3 White	Option 5 4 White
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Group 3

Option 1 2 Red	Option 2 1 Red, 1 Blue/	Option 3 2Blue
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Group 4

Option 1 4 Red	Option 2 2 Red, 1 White	Option 3 2 White
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Group 5

Option 1 8 Blue	Option 2 4 Blue, 1 Red	Option 3 2 Red
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Group 6

Option 1 4 White	Option 2 3 White, 2 Red	Option 3 2 White, 4 Red	Option 4 1 White, 6 Red	Option 5 8 Red
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Group 7

Option 1	Option 2	Option 3
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2 White

1 White, 5 Red

10 Red

For each round, your group should choose what production level, then trade with others to obtain more of the colors you are lacking. Note that production is neither equal nor fair, but you're not in competition with the others, you're only trying to collect a balanced number of beads of each color.

Have one person in charge of keeping the beads, one to collect new beads at the beginning of a round and the others will handle trading with another group. You should come to decisions as a group however for which options you are choosing

After five rounds, write down how many of each type of bead you have obtained.

Red _____

White _____

Blue _____

Post-Lab reflection:

- 1) Did you have a strategy the first round of trading or did your group pick an option at random? Why?

- 2) How did your strategy change after the first two rounds? Describe how you were making your decisions.

- 3) If you didn't ever trade with anyone else, what would be the maximum number and types you would have been able to obtain in your group (limited to the options available to you)?

- 4) If you lived in a mountainous region with very poor soil and no large wild animals, describe how your population could grow and thrive even if farming was difficult to do.

- 5) Do you predict increased trade would lead to greater population growth or lesser population growth? Defend your prediction.

- 6) Imagine if a group was not playing fair and trying to cheat or steal. If there is no "teacher" that can send a particular country/group to the principal's office, how would you interact with this group in future trade?

Key questions: How does trade influence what is made?
How does trade affect what is consumed?
Is a question like “is trade good or bad” sensible?

Video: Containerization (10 min)

The state of the population growth and its projections (10 min)

Video: Overpopulation and the human explosion (10 min)

Wealth trends (5 min)

Video: Hans Rosling: Global population (15 min)

Measuring age distribution, measuring demographic parameters

Human and comparative life history (10 min)

13.3

Plan: Carbon Footprint calculation

Carbon Footprint Calculator:

Homework: Determine the following data points as it relates to your life and uses of technology. Ask your parents or guardians about some things (other data you can estimate or give your best guess).

- 1) What is the household income? (before taxes...can be an estimation. If you don't want to write it down here just have it available to enter)

- 2) What gas mileage do we get on our vehicle(s)?

- 3) How often do I use public transportation?

- 4) Average bill for electricity? Do we use natural gas or other heating methods?

In class:

Using the carbon calculator provided, follow the directions to calculate your impact. For some of these you may have to use a calculator and calculate some figures. Some resources that may be helpful:

- Google Maps
- Tape measure
- Google in general

- 1) Show the calculation you used to determine the number of miles traveled per year by each method of travel. If you estimated something and did not use an exact number, give your reasons why you chose this.

- 2) For food, you may make estimations but have at least one food group be greater than average. Record which food group is greater than average (Think about what you eat and which group do you think you eat the most of?)

- 3) After entering in all the data, record what your footprint is. How much better or worse than average are you?

- 4) Based on your results, which areas in your life do you think will be hardest to change your habits? Why?

- 5) Which category could you improve the most? How could you plan to do this? Experiment with the ways you can improve this score and see how your total footprint changes with a couple changes.

- 6) On a separate sheet, write a paragraph exploring this calculation. Why should families or individuals calculate this number? What could most Americans do to improve their score while not lowering their standard of life? How could we encourage people to make these changes?