ECO 120: Macroeconomics **Your Name:** _____

In-class Exercise: Peanut Butter

Directions: Work in groups of up to four people and answer the following questions. *When using graphs, you must clearly and correctly label all axis and curves to receive non-zero credit for an answer.* All papers will be collected, but only one member's paper will be randomly selected and graded and all members of the group will receive the same grade.

By signing below, you agree that the following work represents the efforts of everyone in the group, and you are willing to accept as your own grade for the group project the grade earned from this representation of your group's work. Every member must agree to these terms to earn a non-zero grade for this assignment.

_____	_____	_____
Signature Group Member 1	Print Name	Date
_____	_____	_____
Signature Group Member 2	Print Name	Date
_____	_____	_____
Signature Group Member 3	Print Name	Date
_____	_____	_____
Signature Group Member 4	Print Name	Date

1. The great hypothetical sovereign nation Farmland can grow corn to be used for food or to be used for ethanol. The following table presents hypothetical production possibilities when all resources are used efficiently.

Eatin' Corn	50	45	35	20	0
Ethanol	0	5	10	15	20

(a) Draw the production possibilities frontier (PPF) for eatin' corn and ethanol. Label the parts of the graph that are attainable but not efficient, most efficient, and not attainable.

(b) Compute the marginal opportunity cost of ethanol at every production point. What happens to the opportunity cost of ethanol as the production of ethanol increases?

(c) Compute the marginal opportunity cost of corn at every production point. What happens to the opportunity cost of corn as the production of corn increases?

(d) Describe and illustrate would happen to the PPF if there was a drought. To illustrate your answer, redraw the original PPF and the new PPF.

2. Suppose there is an improvement in technology for refining ethanol.

   (a) Describe and illustrate what would happen to the PPF.

   (b) Describe the impact on the opportunity cost of producing ethanol. Explain your answer graphically and with economic intuition.

   (c) Describe the impact on the opportunity cost of producing eatin' corn. Explain your answer graphically and with economic intuition.

3. If the economy is producing efficiently, is it possible to produce more ethanol without giving up production of eatin' corn. Describe and illustrate.

4. If the economy is *not* producing efficiently, is it possible to produce more ethanol without giving up production of eatin' corn. Describe and illustrate.

5. Answer the following questions regarding the production possibilities for Mali.

   (a) Graph a production possibilities frontier with two categories of goods. Let one good be peanut butter and all other products that are made by grinding nuts, beans, seeds, etc. Let the other category be "All other goods". Graph the PPF so that it follows the law of increasing opportunity costs.

   (b) What aspect of your graph's shape implies increasing opportunity costs?

   (c) The graph shows numerous possibilities for what Mali villages can produce. Choose and label a *point* on the PPF above where you think they are likely producing before the invention is introduced. Hint: Think about what they have a lot of, and what they don't have a lot of.

6. Redraw the PPF from Question 1 and on this same graph, show how the PPF may change immediately following the introduction of the invention that allows women to grind peanuts.

7. After the introduction of the invention, villages in Mali were able to enjoy more goods than just more peanut butter. Name at least 5 of these goods.

8. As a result of the peanut grinding invention, do you think there was a greater increase in production of peanut butter or production of all other goods? Show this effect on your PPF graphs in Question 2, by suggesting and labeling a point on the old PPF where the villages were producing before the invention, and suggest and label a point on the new PPF where you believe the villages were producing after the invention.

9. As time progressed after the introduction of the invention, many villages decided to reallocate scarce resources towards technology, capital (electricity, lights in hospitals, etc) and literacy. What distinguishes these scarce resources compared to some of the other goods you may have listed in question 3? Redraw the production possibilities frontier from Question 2 and show what has happens to the PPF as a result of these additional investments.

10. Answer the following questions regarding the general education learning outcome to develop your abilities to think critically and creatively.

    (a) What economic model did you use?

    (b) What phenomena are you able to describe with the model? Explain.