1. Ben and Jerry make two types of ice cream: Chubby Hubby and Chunky Monkey. For each hour that Ben and Jerry work, they can make either 6 quarts of Chubby Hubby or 3 quarts of Chunky Monkey. Ben and Jerry work 8 hours each day.

a. Graph Ben and Jerry’s production possibilities frontier for a day where they work 8 hours.

b. Suppose Ben and Jerry are currently producing 24 quarts of Chubby Hubby and 12 quarts of Chunky Monkey. What is the opportunity cost of producing another quart of Chunky Monkey? Explain. The opportunity cost of producing one more quart of Chunky Monkey is how much Chubby Hubby Ben and Jerry must give up to make the Chunky Monkey. It is given by the slope of the production possibilities frontier. The slope here is -2, so they must give up 2 Chubby Hubby for each Chunky Monkey. If they were at 24 quarts of Chubby Hubby and 12 quarts of Chunky Monkey, the only way they can move up to 13 quarts of Chunky Monkey is to drop down to only 22 quarts of Chubby Hubby.

c. Suppose Ben and Jerry are currently producing efficiently (somewhere on the production possibilities frontier). Does Ben and Jerry’s opportunity cost of producing another quart of Chunky Monkey depend on their current location on the production possibilities frontier? Do they have increasing opportunity costs? Explain. The opportunity cost does not depend on where they are on the ppf. Since the ppf is a straight line, the slope is the same everywhere. No matter how many Chunky Monkey they are making, the opportunity cost of one more is 2 Chubby Hubby.
2. The following graph shows the production possibilities frontier for a painter who paints houses but also paints portraits.

![Painter's Production Possibilities Frontier](image)

a. What is the opportunity cost of 1 more house if the painter is currently painting 4 houses?

If the painter is currently painting 4 houses, she is also painting 45 portraits (Point i). If she wants to paint 5 houses instead, one more house, she can only paint 40 portraits (Point ii). She has to give up 5 portraits in order to paint the extra house, so her opportunity cost is 5.

b. Does the painter have increasing opportunity costs? How do you know?

The painter does have increasing opportunity costs since the ppf curves outward. When the ppf is a curve (instead of a straight line), the opportunity cost is increasing—the more houses she paints, the more portraits she must give up for an additional house. The reason for increasing opportunity costs is some inputs must be specialized, meaning they are better suited for painting portraits than for painting houses.

c. Draw three points on the graph where point A is unattainable, point B is efficient, and point C is attainable but inefficient. See the graph.

d. What two things could shift the painter’s production possibilities frontier? Provide an example of each of these that is specific to the painter. The two things that shift a PPF are a change in resources and a change in technology. A change in resources could be that the painter hires an assistant. A change in technology could be a new paint comes out that spreads more quickly.
3. The following two graphs show the production possibility frontiers for the United States and Mexico in the production of automobile parts and computer software.

![Graphs showing production possibility frontiers for the United States and Mexico.](image)

a. What is the opportunity cost for one more auto part for the United States? For Mexico? The opportunity cost is the slope of the pff. For the United States, this is –5; for Mexico, this is –2. For every auto part made, the United States must give up 5 software while Mexico gives up 2.

b. What country has an absolute advantage in making auto parts? What country has an absolute advantage in making software? What does absolute advantage mean? A country has an absolute advantage when it can produce more of a good than the other country with the same quantity of resources. The United States has the absolute advantage in making auto parts since they can make as many as 90 while Mexico can only make as many as 18. The United States also have the absolute advantage in auto parts as they can make twice as many as Mexico (18 compared to 9).

c. What country has a comparative advantage in making auto parts? What country has a comparative advantage in making software? What does comparative advantage mean? Comparative advantage means a country can produce a good at a lower opportunity cost. We found above that the opportunity cost of one auto parts is 5 software for the U.S. and 2 for Mexico. Mexico has a lower opportunity cost, so they have a comparative advantage in making auto parts. Since Mexico has a comparative advantage for auto parts, we know the U.S. has one for software.

d. If the U.S. and Mexico were to trade, which country should make auto parts? Give an example of a possible trade that would make both countries better off. Mexico since it has a comparative advantage. Any trade where between 2 and 5 software are being traded for each auto
part would make both better off. One possible trade is 15 software for 5 auto parts.
4. The following table shows the demand and supply for video rentals at Video 101.

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a. Draw a graph of the demand curve and supply curve. (Make sure you label your axis.)

See graph.

b. What is the equilibrium price and quantity?

The equilibrium is where supply and demand cross – a price of $2.50 and a quantity of 250.

c. If the price of videos were $3.50, would there be a shortage or surplus? How big would it be?

There would be a surplus of videos. Suppliers would be willing to sell 350 but consumers only willing to buy 150. This leaves a surplus of 350 – 150 = 200.

5. What would be the effect of the following on the demand curve, the supply curve, equilibrium price, and equilibrium quantity of baseball hats that say “KSU Football”? (Note: you don’t need any numbers – just draw a simple graph showing how the curves would shift and write what would happen to price and quantity.)

a. The football team goes undefeated for the season and wins the national championship.

Change in taste shifts demand out. We move along the supply curve (it does not shift) to the new equilibrium. Price increases and so does quantity.

b. The taxpayers in Ohio decide college should be free and give all KSU students a refund of their tuition.

This is like an increase in income for students. If hats are a normal good, demand would shift out and price and quantity would rise. If hats are an inferior good, demand would shift in and price and quantity would fall. (Supply curve does not shift – we move along the supply curve to find the new equilibrium.)

c. A major hurricane hits the south and wipes out the cotton plants.

This is an increase in input prices, which shifts the supply curve in. The price goes up and the quantity goes down. (The demand curve does not shift – we move along demand to find the new equilibrium.)

d. The price of “Ohio State Football” baseball hats goes up.

OSU baseball hats are a substitute for KSU hats. If the price of OSU hats goes up, people will buy less OSU hats and instead buy KSU hats so the demand curve for KSU hats would shift out. Price and quantity would both rise. (Supply curve does not shift – we move along the supply curve to find the new equilibrium.)