

Economics 101
Summer 2010
Answers to Quiz #1
6/2/10

Name _____

Discussion Section Day and Time _____

John and Ben are both stranded on an island and looking for food. There are Boar and Mangos on the island. In a single day John can find 16 mangos or kill 6 boar. Likewise, in a single day Ben can find 3 mangos or kill 4 boar.

1. Who has the absolute advantage in killing boar? _____

John does. He can kill 6 boar in a day while Ben can only kill 4.

2. Who has the absolute advantage in finding mangos? _____

John also does. He can find 16 mango in a day while Ben can find only 3.

3. What is the opportunity cost for John to find a mango? _____

In order to find one mango John must give up $\frac{3}{8}$ of a Boar.

4. What is the opportunity cost for Ben to kill **TWO** boar? _____

In order to kill one boar, Ben must give up $\frac{3}{4}$ ths of a mango. So to kill two boar, Ben must give up 1.5 mangos.

5. Who has the comparative advantage in killing boar? _____

To figure this out we should compare their opportunity costs for killing a Boar. For John he gives up $\frac{8}{3}$ rds of a Mango for each Boar he kills. For Ben, he gives up $\frac{3}{4}$ ths of a Mango for each Boar he kills. Ben gives up fewer Mangos per boar, so he can produce boar on the island at a lower "price" (in terms of foregone Mangos). Thus Ben has the comparative advantage in killing Boar.

6. Who has the comparative advantage in finding mangos? _____

Similarly to 5, we need to find the opportunity cost for finding one mango between the two. For John he gives up $\frac{3}{8}$ ths of a Boar for each Mango he finds. For Ben he gives up $\frac{4}{3}$ rds of a Boar for each Mango he finds. Since John gives up fewer Boar to produce a mango, he has the comparative advantage.

Suppose now that John and Ben decide to trade Boar for Mangos between each other.

7. Which of the individuals (John or Ben) should specialize in hunting boar and trading it for mango? _____

Ben should. He has the comparative advantage in hunting boar. Producing mangos with his time is more costly for him than just trading boar to John in exchange for mangos from John.

8. Is 1 Mango for 2 Boar a trade that both will agree to? _____

9. Is 1 Mango for 1 Boar a trade that both will agree to? _____

For questions 8 and 9 the best way to approach the problem is to try to figure out the interval for the amount of Boar that the two would agree to trade in a trade for a single Mango. We know that Ben would like to hunt Boar and trade it for Mango, while John is out picking Mango to trade for Boar.

So in a trade where 1 Mango is given up by John, he will want at least as much Boar back from Ben as he could have produced on his own. If you look at the opportunity cost of a Mango for John, he is giving up $\frac{3}{8}$ ths of a Boar. This means that John will want at LEAST $\frac{3}{8}$ ths of a Boar back in the deal from Ben. (Think about it, if Ben offered him less Boar, he could simply go find his own and be better off!)

Likewise, if Ben wanted to find his own Mango, he would be giving up $\frac{4}{3}$ ths of a Boar (based on his opportunity cost). So, when trading Boar for the mango he would give NO MORE than $\frac{4}{3}$ ths of a boar for a single mango.

So since John wants at least $\frac{3}{8}$ ths of a Boar, and Ben will give up no more than $\frac{4}{3}$ ths of a Boar, any trade between the interval ($\frac{3}{8}$ to $\frac{4}{3}$) boar for a single mango is a trade both will agree to. So 1 mango for 2 boar is not a trade they would agree to since it is more than Ben is willing to pay. However, 1 mango for 1 boar is a trade that both will agree to and will make both better off.

Now suppose they combine resources and eat together.

10. Is hunting 7 boar and collecting 7 mangos an efficient use of their resources? (Hint: drawing a combined PPF with both individuals working together should help).

The combined PPF for the two individuals is shown below. On it is the point of specialization (where both individuals focus solely on their comparative advantages). You can see that the combined PPF includes both the original PPF for John and the original PPF for Ben. The intercepts show points where both are spending all of their time either hunting boar or finding mangos. Notice that the PPF is already starting to show the "bowed out" shape. This represents the increasing opportunity costs. As you move from 10 boar to 4, John is giving up boar production to gain mangos (this makes sense since he faces the lower opportunity cost for producing mangos). As you move from 4 boar to zero and increase mango production, John can no longer produce more mangos and Ben picks up the rest of the production (though less efficiently than John).

The point (7,7) is below the combined PPF for the two individuals, so while feasible it is inefficient. The point (7,8) is actually the midpoint for the part of the curve representing John's PPF, and is a more efficient use of resources while still feasible.

