

3. Gains from trade

Consider two neighboring island countries called Arcadia and Euphoria. They each have 4 million labor hours available that they can use to produce jeans, corn, or a combination of both. The following table shows the quantity of jeans or corn that can be produced using one hour of labor.

	Jeans (Pairs per hour of labor)	Corn (Bushels per hour of labor)
Arcadia	8	16
Euphoria	5	20

Initially, suppose Arcadia uses 1 million hours of labor to produce jeans and 3 million hours to produce corn, while Euphoria uses 3 million hours of labor to produce jeans and 1 million hours to produce corn. Consequently, Arcadia produces 8 million pairs of jeans and 48 million bushels of corn, and Euphoria produces 15 million pairs of jeans and 20 million bushels of corn. Assume there are no other countries willing to trade goods, so in the absence of trade between these two countries, each country consumes the quantity of jeans and corn it produces.

Arcadia's opportunity cost of producing one pair of jeans is 2 bushels ✓ of corn, and Euphoria's opportunity cost of producing one pair of jeans is 4 bushels ✓ of corn. Therefore, Arcadia ✓ has a comparative advantage in the production of jeans and Euphoria ✓ has a comparative advantage in the production of corn.

Explanation:

Close ^

Using an hour of labor, Arcadia can produce 8 pairs of jeans or 16 bushels of corn. Therefore, the opportunity cost of a pair of jeans is 2 bushels per pair (16 bushels / 8 pairs). Using an hour of labor, Euphoria can produce 5 pairs of jeans or 20 bushels of corn. Therefore, the opportunity cost of a pair of jeans is 4 bushels per pair (20 bushels / 5 pairs). Since Arcadia has a lower opportunity cost of producing a pair of jeans, it has a comparative advantage in the production of jeans.

You can compute Arcadia's opportunity cost of a bushel of corn by taking the reciprocal of the opportunity cost of a pair of jeans. That is, the opportunity cost of a bushel of corn, in this case, is 1/2 of a pair per bushel. Similarly, Euphoria's opportunity cost of a bushel of corn is equal to 1/4 of a pair per bushel. Since Euphoria has a lower opportunity cost of producing a bushel of corn, it has a comparative advantage in the production of corn.

Suppose that each country completely specializes in the production of the good in which it has a comparative advantage, producing **only** that good. In this case, the country that produces jeans will produce 32 million ✓ pairs, and the country that produces corn will produce 80 million ✓ bushels. In the table at the end of this problem, enter each country's production decision on the second row (marked "Production").

Explanation:

Close ^

Arcadia has a comparative advantage in the production of jeans, whereas Euphoria has a comparative advantage in the production of corn. If Arcadia completely specializes in the production of jeans, it produces 32 million pairs of jeans (4 million hours x 8 pairs of jeans per hour). Similarly, if Euphoria completely specializes in the production of corn, it produces 80 million bushels of corn (4 million hours x 20 bushels of corn per hour).

Suppose the country that produces jeans trades 18 million pairs of jeans to the other country in exchange for 54 million bushels of corn. In the table at the end of this problem, select the quantity of each good that each country exports and imports in the

boxes across the row marked "Trade," and enter each country's final consumption of each good on the line marked "Consumption."

Explanation:

Close ^

When they specialize, Arcadia produces 32 million pairs of jeans and Euphoria produces 80 million bushels of corn. If Arcadia trades 18 million pairs of jeans for 54 million bushels of corn from Euphoria, Arcadia will consume 14 million pairs of jeans and 54 million bushels of corn, and Euphoria will consume 18 million pairs of jeans and 26 million bushels of corn.

When the two countries did not specialize, the total production of jeans was 23 million pairs and the total production of corn was 68 million bushels. Because of specialization, the total production of jeans has increased by 9 million ✓ pairs per week, and the total production of corn has increased by 12 million ✓ bushels per week. Because the two countries produce more jeans and more corn under specialization, each country is able to gain from trade. Calculate the gains from trade—that is, the amount by which each country has increased its consumption of each good relative to the first row of the table. In the table, enter this difference in the boxes across the last row (marked "Increase in consumption").

Explanation:

Close ^

Initially, before the two countries specialized, Arcadia produced (and consumed) 8 million pairs of jeans and 48 million bushels of corn per week, and Euphoria produced (and consumed) 15 million pairs of jeans and 20 million bushels of corn per week.

With specialization, Arcadia produces 32 million pairs of jeans and Euphoria produces 80 million bushels of corn. This is an increase of 9 million pairs of jeans and 12 million bushels of corn. If Arcadia trades 18 million pairs of jeans for 54 million bushels of corn from Euphoria, both countries will end up consuming more of both goods. In particular, there will be an increase of 6 million pairs of jeans and 6 million bushels of corn for Arcadia, and an increase of 3 million pairs of jeans and 6 million bushels of corn for Euphoria.

	Arcadia		Euphoria	
	Jeans (Millions of pairs)	Corn (Millions of bushels)	Jeans (Millions of pairs)	Corn (Millions of bushels)
Without Trade				
Prod. and consumption	8	48	15	20
With Trade				
Production	32 ✓	0 ✓	0 ✓	80 ✓
Trade	Gives 18 ✓	Gets 54 ✓	Gets 18 ✓	Gives 54 ✓
Consumption	14 ✓	54 ✓	18 ✓	26 ✓
Gains from Trade				
Increase in consumption	6 ✓	6 ✓	3 ✓	6 ✓

Explanation:

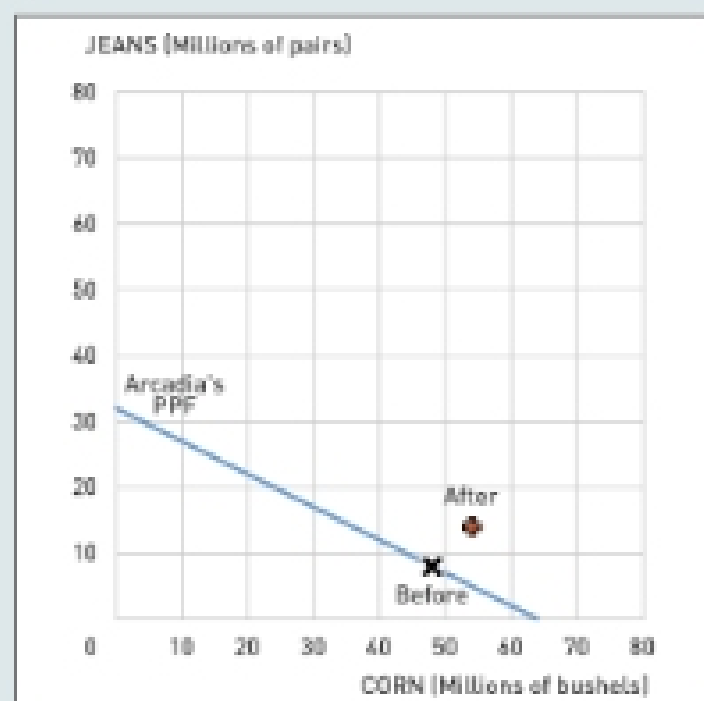
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Inserting the relevant information from the preceding questions and answers produces the following table:

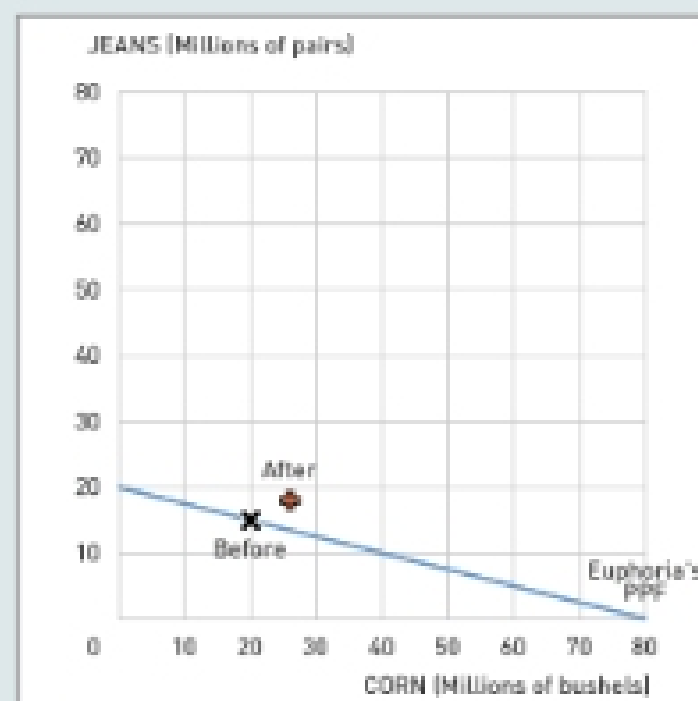
	Arcadia		Euphoria	
	Jeans (Millions of pairs)	Corn (Millions of bushels)	Jeans (Millions of pairs)	Corn (Millions of bushels)
Without Trade				
Prod. and consumption	8	48	15	20
With Trade				
Production	32	0	0	80
Trade	Gives 18	Gets 54	Gets 18	Gives 54
Consumption	14	54	18	26
Gains from Trade				
Increase in consumption	6	6	3	6

You can also see how each country gains from trade using a PPF diagram. The blue lines on the following diagrams show the PPFs of Arcadia (on the left) and Euphoria (on the right). The black points (X symbols) show their initial consumption of jeans and corn. The red points (cross symbols) show the quantity of jeans and corn each country consumes after specialization and trade.

Arcadia



Euphoria



Note that the total gains from trade are 9 million pairs of jeans and 12 million bushels of corn, which is the total increase in production you calculated earlier.