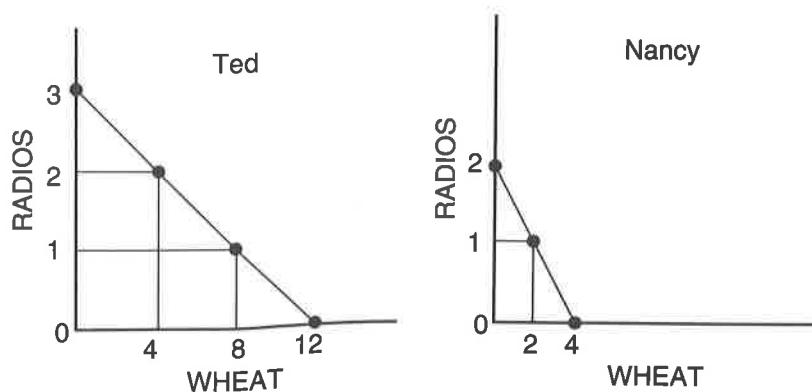Figure 1-3.1

Production Possibilities Curves for Ted and Nancy

Part B: Comparative Advantage Exercises

For each of the following scenarios, answer the questions following the chart. The first problem is answered for you.

1. Anna and Barry can grow the following amounts of potatoes and cabbage with a week of labor.

	Potatoes per week	Cabbage per week
Anna	100 units	200 units
Barry	120 units	150 units

(A) Is this an example of an *input* problem or an *output* problem?

This is an output problem because it shows how much output each producer can create with a given amount of resources (one week of labor).

(B) What is the opportunity cost for each producer in making these products?

(1) Anna's opportunity cost of producing a unit of potatoes is __*2*__ units of cabbage.

$$100 \ P = 1 \text{ week} = 200 \ C, \qquad \frac{100}{100} P = \frac{200}{100} C, \qquad 1 \ P = 2 \ C.$$

(2) Barry's opportunity cost of producing a unit of potatoes is __*1.25*__ units of cabbage.

$$120 \ P = 1 \text{ week} = 150 \ C, \qquad \frac{120}{120} P = \frac{150}{120} C, \qquad 1 \ P = 1\frac{1}{4} \ C = 1.25 \ C.$$

(3) Anna's opportunity cost of producing a unit of cabbage is __0.5__ units of potatoes.

$$200 \text{ C} = 1 \text{ week} = 100 \text{ P}, \qquad \frac{200}{200}\text{C} = \frac{100}{200}\text{P}, \qquad 1\text{ C} = \tfrac{1}{2}\text{ P} = 0.5\text{ P}.$$

(4) Barry's opportunity cost of producing a unit of cabbage is __0.8__ units of potatoes.

$$150 \text{ C} = 1 \text{ week} = 120 \text{ P}, \qquad \frac{150}{150}\text{C} = \frac{120}{150}\text{ P}, \qquad 1\text{ C} = \tfrac{4}{5}\text{ P} = 0.8\text{ P}.$$

(C) Who has the comparative advantage in producing potatoes? _·Barry_
Barry has the comparative advantage in potatoes because his opportunity cost is lower than Anna's.

(D) Who has the comparative advantage in producing cabbage? __Anna__
Anna has the comparative advantage in cabbage because her opportunity cost is lower than Barry's.

Note: In this example, each producer has the absolute advantage in producing one item: Barry in potatoes and Anna in cabbage. That might not be the case in the other examples.

2. Henry and John are fishermen who catch bass and catfish. This chart shows how many of each type of fish they can catch in one day.

	Bass	Catfish
Henry	4 bass	6 catfish
John	24 bass	12 catfish

(A) Is this an example of an *input* problem or an *output* problem?
It is an output problem because it shows the daily output of each fisherman.

(B) What is the opportunity cost for each person in catching these fish?

(1) Henry's opportunity cost of catching 1 bass is __1.5__ catfish.
4 bass = 6 catfish; 1 bass = 1.5 catfish

(2) John's opportunity cost of catching 1 bass is __0.5__ catfish.
24 bass = 12 catfish; 1 bass = 0.5 catfish

(3) Henry's opportunity cost of catching 1 catfish is __0.67__ bass.
6 catfish = 4 bass; 1 catfish = 0.67 bass

(4) John's opportunity cost of catching 1 catfish is __2__ bass.
12 catfish = 24 bass; 1 catfish = 2 bass

(C) Who has the comparative advantage in catching bass? __John__

(D) Who has the comparative advantage in catching catfish? __Henry__

3. This chart shows how many days it takes the ABC Corporation and the XYZ Corporation to produce one unit of cars and one unit of planes.

	Cars	Planes
ABC Corp.	8 days	10 days
XYZ Corp.	16 days	12 days

(A) Is this an example of an *input* problem or an *output* problem?
   This is an ~~output~~ input problem because you are told what resources (number of days) are needed to produce one unit of a good.

(B) What is the opportunity cost for each corporation in producing these goods?

   (1) ABC's opportunity cost of producing a unit of cars is ___0.8___ units of planes.
       1 car = 8 days = 0.8 planes

   (2) XYZ's opportunity cost of producing a unit of cars is ___1.33___ units of planes.
       1 car = 16 days = 1.33 planes

   (3) ABC's opportunity cost of producing a units of planes is ___1.25___ units of cars.
       1 plane = 10 days = 1.25 cars

   (4) XYZ's opportunity cost of producing a unit of planes is ___0.75___ units of cars.
       1 plane = 12 days = 0.75 cars

(C) Who has the comparative advantage in producing cars? ___ABC Corp.___

(D) Who has the comparative advantage in producing planes? ___XYZ Corp.___

4. Here are the numbers of acres needed in India and China to produce 100 bushels of corn or 100 bushels of rice each month.

	India	China
Corn	9 acres	8 acres
Rice	3 acres	2 acres

(A) Is this an example of an *input* problem or an *output* problem?
   This is an input problem because you are told what resources (number of acres) are needed to produce a given amount of a good.

(B) What is the opportunity cost for each country in producing these goods?

(1) India's opportunity cost of growing 100 bushels of corn is __3__ bushels of rice.
   Corn = 9 acres = 3 rice

(2) China's opportunity cost of growing 100 bushels of corn is __4__ bushels of rice.
   Corn = 8 acres = 4 rice

(3) India's opportunity cost of growing 100 bushels of rice is __0.33__ bushels of corn.
   Rice = 3 acres = 0.33 corn

(4) China's opportunity cost of growing 100 bushels of rice is __0.25__ bushels of corn.
   Rice = 2 acres = 0.25 corn

(C) Who has the comparative advantage in growing corn? __India__

(D) Who has the comparative advantage in growing rice? __China__

5. This chart shows how many cans of olives and bottles of olive oil can be produced in Zaire and Colombia from one ton of olives.

	Zaire	Colombia
Olives	60 cans	24 cans
Olive oil	10 bottles	8 bottles

(A) Is this an example of an *input* problem or an *output* problem?
   This is an output problem.

(B) What is the opportunity cost for each country in producing these goods?

(1) Zaire's opportunity cost of producing 1 can of olives is __1/6__ bottles of olive oil.
   60 cans = 10 bottles; 1 can = 1/6 bottle

(2) Colombia's opportunity cost of producing 1 can of olives is __1/3__ bottles of olive oil.
   24 cans = 8 bottles; 1 can = 1/3 bottles

(3) Zaire's opportunity cost of producing 1 bottle of olive oil is __6__ cans of olives.
   10 bottles = 60 cans; 1 bottle = 6 cans

(4) Colombia's opportunity cost of producing 1 bottle of olive oil is __3__ cans of olives.
   8 bottles = 24 cans; 1 bottle = 3 cans

(C) Who has the comparative advantage in producing olives? __Zaire__

(D) Who has the comparative advantage in producing olive oil? __Colombia__

6. Here are the numbers of hours needed in Redland and Blueland to produce a unit of televisions and a unit of computers.

	Televisions	Computers
Redland	18 hours	6 hours
Blueland	16 hours	4 hours

(A) Is this an example of an *input* problem or an *output* problem?
   This is an input problem because it states the amount of resources (hours of labor) needed to produce a unit of a good.

(B) What is the opportunity cost for each country in producing these goods?

   (1) Redland's opportunity cost of producing 1 unit of televisions is __*3*__ units of computers.
      1 television = 18 hours = 3 computers

   (2) Blueland's opportunity cost of producing 1 unit of televisions is __*4*__ units of computers.
      1 television = 16 hours = 4 computers

   (3) Redland's opportunity cost of producing 1 unit of computers is __*1/3*__ units of televisions.
      1 computer = 6 hours = 1/3 television

   (4) Blueland's opportunity cost of producing 1 unit of computers is __*1/4*__ units of televisions.
      1 computer = 4 hours = 1/4 television

(C) Who has the comparative advantage in producing televisions? __*Redland*__

(D) Who has the comparative advantage in producing computers? __*Blueland*__