The Production Possibilities Curve

AP Microeconomics | Unit 1 | efficiency, opportunity cost, and shifts

Running example. An economy produces two goods, computers and wheat.

1. On, inside, outside

Production possibilities curve (PPC)

Every combination of two goods an economy can produce when all of its resources are used fully and efficiently.

On the curve	efficient: more of one good means less of the other
Inside the curve	attainable but inefficient: idle or misused resources (unemployment, recession)
Outside the curve	unattainable with today's resources and technology

2. Opportunity cost and the bowed shape

computers	wheat	cost of the last 10 computers
0	100	
10	90	10 wheat
20	70	20 wheat
30	40	30 wheat
40	0	40 wheat

Shape tells you the cost

Bowed out (concave): *increasing* opportunity cost. Resources are not equally suited to both goods, so each extra unit costs more than the last.
Straight line: *constant* opportunity cost. Resources are equally suited to both goods.

The opportunity cost of one good is always measured in units of the *other* good.

3. What shifts the curve

- **Outward shift (economic growth):** more or better resources (labor, capital, land, education) or better technology.
- **Pivot:** a technology improvement in only one good stretches the curve along that good's axis; the other intercept does not move.
- **Not a shift:** a recession or unemployment. The resources still exist, so the economy moves to a point *inside* the same curve.
- **Capital vs. consumer goods:** producing more capital goods today means less consumption now and a faster outward shift later.

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4. Two kinds of efficiency

Productive efficiency	lowest possible cost, nothing wasted	*any* point on the curve
Allocative efficiency	the mix society wants most	*one* point, where $MB = MC$

5. Workers, changing costs, and zero cost

Output from a workforce. 420 workers; a unit of corn takes 4 workers, a unit of cloth 7. Making 35 corn uses $35 \times 4 = 140$ workers, leaving $420 - 140 = 280$ for cloth: $280 \div 7 = 40$ units at most. On the curve every worker is employed; this curve is a straight line from 105 corn to 60 cloth (constant cost).

A pivot changes the costs. Better chips pivot the curve out along the computer axis: 10 wheat now buys 12 computers instead of 10, so computers become cheaper in wheat and wheat becomes more expensive in computers. A loss in one industry pivots the curve inward on that axis and makes that good more expensive.

Across years. Year 1: 20 phones cost 10 bikes (0.5 each); Year 2: 20 phones cost 20 bikes (1 each), so phones have a higher opportunity cost in Year 2. Always divide what is given up by what is gained.

Inside the curve idle resources can make more of one good without giving up the other: the opportunity cost is zero. To test a point, compare it with the curve: with intercepts 600 capital and 300 consumer goods, capital = 600 − 2×consumer, so at 100 consumer goods up to 400 capital goods are possible; producing only 50 is inside the curve.

Where students lose points

1. Shifting the curve in for a recession: it is a point inside.
2. Saying a point inside is “unattainable”: it is attainable but inefficient.
3. Bowed out = increasing cost; straight line = constant cost.
4. Giving opportunity cost in the wrong good’s units.
5. Calling every point on the curve allocatively efficient.

Now practise it

Theory sticks once you use it. On **sad-academy.com** you’ll find practice questions for this exact subtopic in the AP format, and an AI that grades your free-response answers against the scoring guidelines, the way an AP reader would.

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