

Past-paper walk-through

The Production Possibilities Curve ■ 1.3

eXercise

Questions in this set

- 2023 Set 1 Q2
- 2018 Q3

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

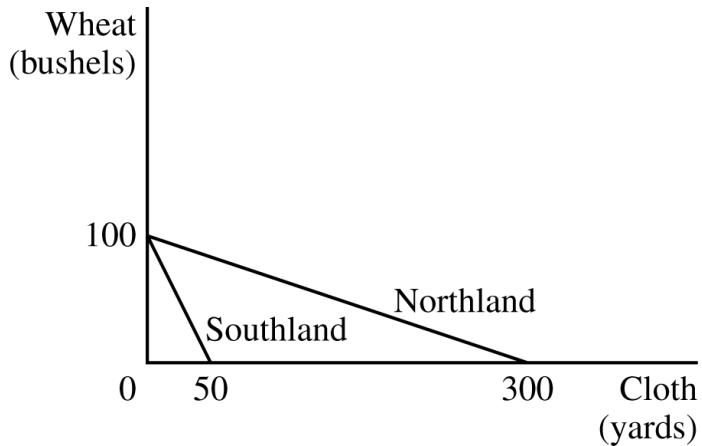
Question 2

2023 Set 1 ■ Q2

The graph shows the production possibilities curves for Northland and Southland. [Graph titled with y-axis “Wheat (bushels)” and x-axis “Cloth (yards)”. Two straight-line production possibility curves both starting from the point (0, 100) on the Wheat axis: “Southland” is the steeper line running from (0, 100) down to (50, 0); “Northland” is the flatter line running from (0, 100) down to (300, 0). Axis labels shown: 100 on the Wheat axis; 0, 50, and 300 on the Cloth axis.]

(a) Which country has a comparative advantage in producing wheat? Explain using numbers.

Question 2



Question 2

2023 Set 1 ■ Q2

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(b) Identify a specific number of yards of cloth that could be traded for 10 bushels of wheat and would be mutually beneficial to Northland and Southland.

Question 2

2023 Set 1 ■ Q2

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(c) Southland’s maximum possible output of wheat falls from 100 bushels to 75 bushels. Assuming no other changes, will Southland have a comparative advantage in producing cloth? Explain using numbers.

Question 2

2023 Set 1 ■ Q2

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[Graph titled with y-axis “Wheat (bushels)” and x-axis “Cloth (yards)”. Two straight-line production possibility curves both starting from the point (0, 100) on the Wheat axis:

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(d)(i) Turnips are produced in a perfectly competitive market in Alderia, a third country, which does not engage in international trade. Runoff from turnip fields pollutes Alderia’s rivers, hurting its residents.

Does the turnip market equilibrium result in an efficient allocation of resources? Explain using marginal analysis.

Question 2

(d)(ii) In an effort to reduce pollution, Alderia's government imposes a lump-sum tax on turnip production. What will be the impact on the turnip market equilibrium price and quantity in the short run?

Solution 2

(a)

Mark scheme

- Southland has a comparative advantage in producing wheat. Explanation using numbers: Southland's opportunity cost of producing one bushel of wheat is $1/2$ yard of cloth, which is less than Northland's opportunity cost of producing one bushel of wheat, 3 yards of cloth ($1/2 < 3$), so Southland is the lower-opportunity-cost (comparative-advantage) producer of wheat.

Solution 2

(b)

Mark scheme

- Any specific number of yards of cloth strictly between 5 and 30 (e.g., 20 yards of cloth for 10 bushels of wheat) is an acceptable, mutually beneficial trade ratio — it must lie between Southland's opportunity cost of producing 10 bushels of wheat (5 yards of cloth) and Northland's opportunity cost of producing 10 bushels of wheat (30 yards of cloth) for both countries to gain from trade.

Solution 2

(c)

Mark scheme

- No, Southland will not have a comparative advantage in producing cloth.
Explanation using numbers: with wheat capacity now 75 bushels, Southland's opportunity cost of producing one yard of cloth is 1.5 bushels of wheat, which is greater than Northland's opportunity cost of producing one yard of cloth, $1/3$ bushel of wheat ($1.5 > 1/3$), so Northland remains the lower-opportunity-cost (comparative-advantage) producer of cloth.

Solution 2

(d)(i)

Mark scheme

- No, the turnip market equilibrium does not result in an efficient allocation of resources. Explanation using marginal analysis: because production generates a negative externality (pollution) not borne by producers, at the market equilibrium quantity the marginal social cost exceeds the marginal social benefit ($MSC > MSB$) — equivalently, the negative externality in production causes marginal social cost to exceed marginal private cost ($MSC > MPC$) at that equilibrium — so the market overproduces turnips relative to the socially efficient quantity.

Solution 2

(d)(ii)

Mark scheme

- A lump-sum tax will not change the market equilibrium price and quantity in the short run, because a lump-sum tax raises fixed cost only and does not affect marginal cost, so the (marginal-cost-based) supply curve does not shift.

Question 3

2018 ■ Q3

Nirali is a student at the University of Ainsley. She has 5 hours to study for two exams today. The tables below show Nirali's expected scores given the amount of time she studies for each exam.

Number of Hours Spent Studying Microeconomics	Expected Score on Microeconomics Exam (100-point scale)
5	100
4	96
3	90
2	82
1	60
0	0

Question 3

Number of Hours Spent Studying History	Expected Score on History Exam (100-point scale)
0	0
1	40
2	60
3	72
4	77
5	80

Question 3

- (a)** Nirali spends 3 hours studying microeconomics and 2 hours studying history. Calculate her gain from the second hour spent studying history.
- (b)** Calculate Nirali's opportunity cost of the second hour spent studying history.
- (c)** Assume Nirali increases the time she allocates to studying history. What happens to the opportunity cost of studying history? Explain.
- (d)** Assume that Nirali has a goal of maximizing the sum of her test scores (the score on microeconomics plus the score on history). How many hours should she study for each exam?

Question 3

(e) Nirali learns that her tennis practice has been canceled, freeing up an additional hour for studying. Given your answer to part (d), will Nirali allocate the additional hour to studying microeconomics or to studying history to maximize the sum of her test scores? Explain using marginal analysis.

Question 3

Number of Hours Spent Studying Microeconomics	Expected Score on Microeconomics Exam (100-point scale)
5	100
4	96
3	90
2	82
1	60
0	0

Number of Hours Spent Studying History	Expected Score on History Exam (100-point scale)
0	0
1	40
2	60
3	72
4	77
5	80

Solution 3

(a)

Mark scheme

- Nirali's gain (increase in her expected history score) from the second hour spent studying history is 20 points.

Solution 3

(b)

Mark scheme

- Nirali's opportunity cost of the second hour spent studying history is 6 points (or $6/20$) — the expected microeconomics score she gives up by spending that hour on history instead of microeconomics.

Solution 3

(c)

Mark scheme

- The opportunity cost of studying history increases as Nirali allocates more time to it. Explanation (either): the expected score on microeconomics decreases at an increasing rate with each additional hour spent studying history; equivalently, the marginal cost (in forgone microeconomics score) is rising with each additional hour devoted to history.

Solution 3

(d)

Mark scheme

- To maximize the sum of her expected test scores, Nirali should study 2 hours for microeconomics and 3 hours for history — the allocation where the marginal (expected-score) benefit of an additional hour is equalized across the two subjects.

Solution 3

(e)

Mark scheme

- Nirali will allocate the additional freed-up hour to studying microeconomics. Explanation (marginal analysis): starting from the allocation in part (d), spending the extra hour on microeconomics increases her expected total score by 8 points, compared to only 5 points if the hour were spent on history instead — since the marginal benefit of microeconomics (8) exceeds the marginal benefit of history (5), she should study microeconomics.