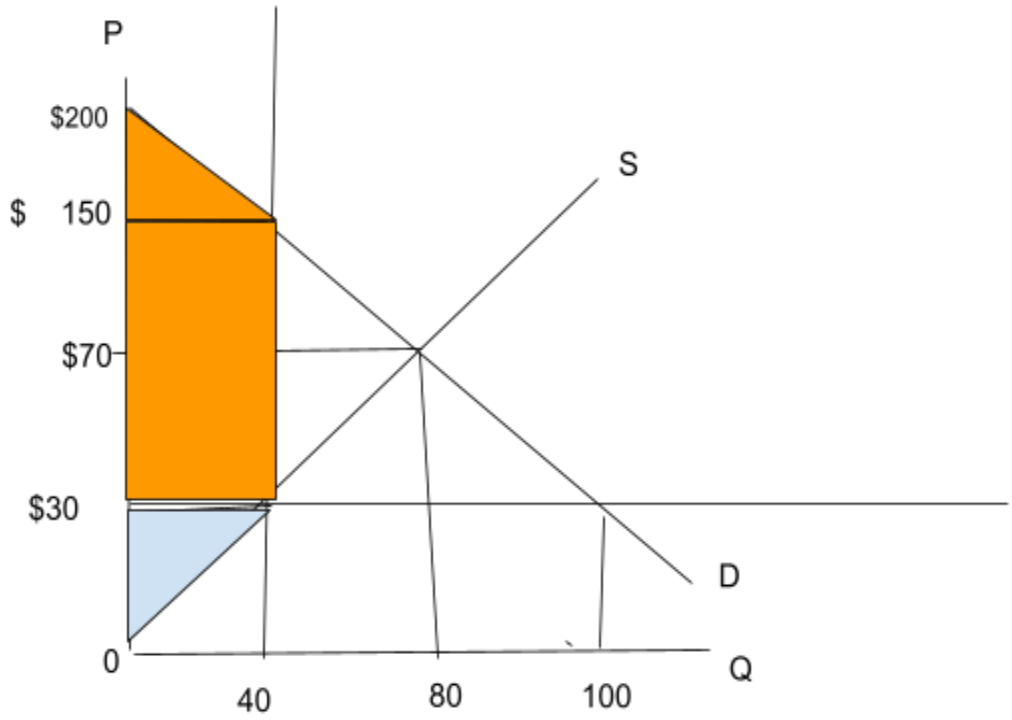
Market Efficiency

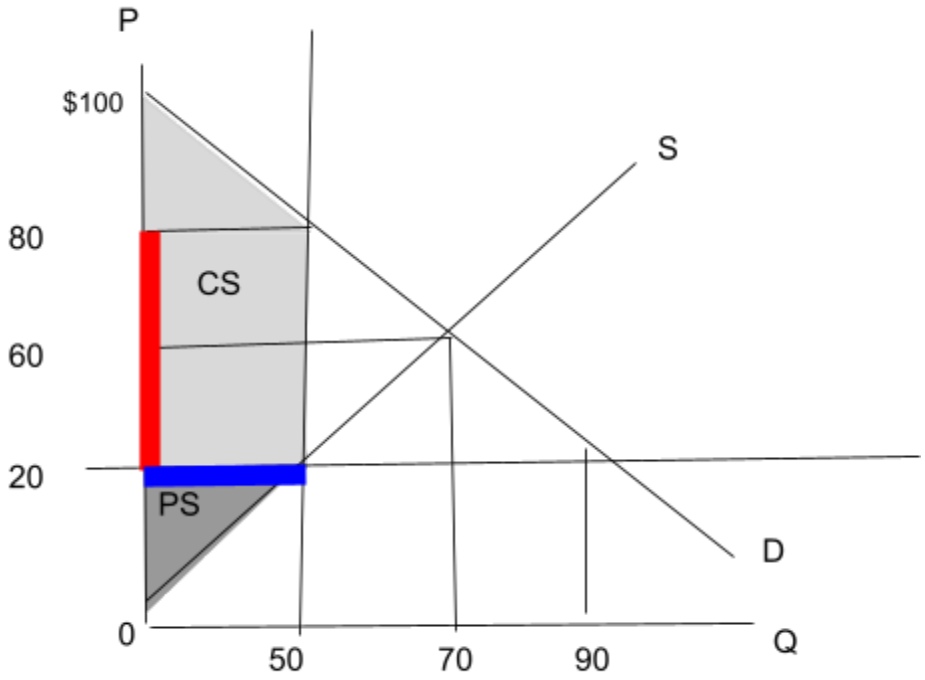
The market for coffee beans is perfectly competitive. I have graphed the market demand and supply curves for coffee beans in the figure to the right. The mathematical functions that represent these curves are:
Demand: Qd = 120 - P
Supply: Qs = 2P



PC = 30
PC = C (rectangle goes with CS)
CS = 200 -150 = 50*40 = 2000* ½ = 1000
150 - 30 = 120 * 40 = 4800
4800 + 1000 = 5800

PS 30 * 40 = 1200 *½ = 600

Social 5800 + 600 = 6400

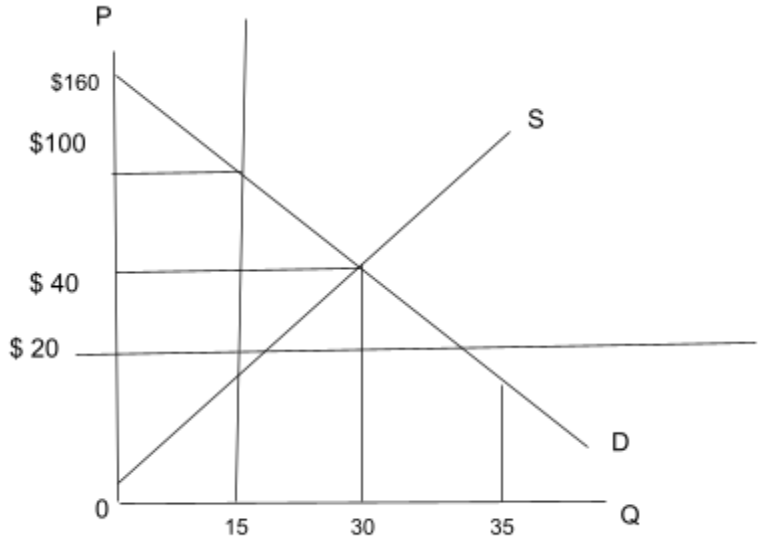


DWL: 80 - 20 = 60
70 - 50 = 20
50 = 150 - P
P = 200
60 * 20 = 1200 * ½ = 600

CS: 100 - 80 = 20 * 50 = 1000* ½ = 500
80 - 20 = 60 *50 = 3000
3000 - 500 = 2500
PS: 20 * 50 = 1000 * ½ = 500
SS: 3000

The market for toilet paper is perfectly competitive. I have graphed the market demand and supply curves for bulk packs of toilet paper in the figure to the right. The mathematical functions that represent these curves are

Demand Qd = 40 – ¼ P
Supply Qs = ¾ P

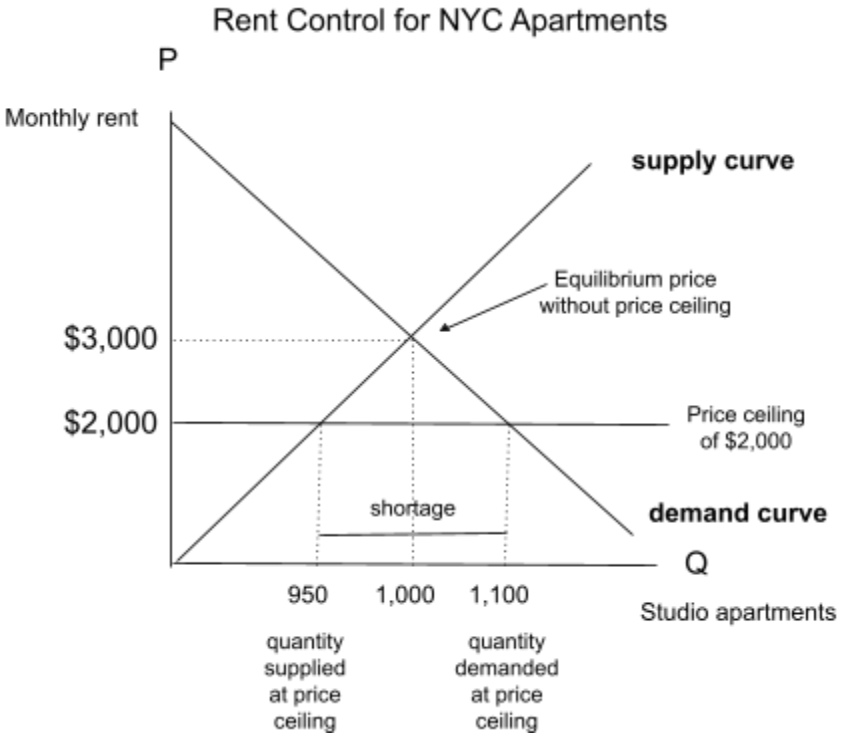


1. Solve for the market equilibrium P* and Q* and label it on the figure.
40 - ¼ p = ¾ p
40 = P

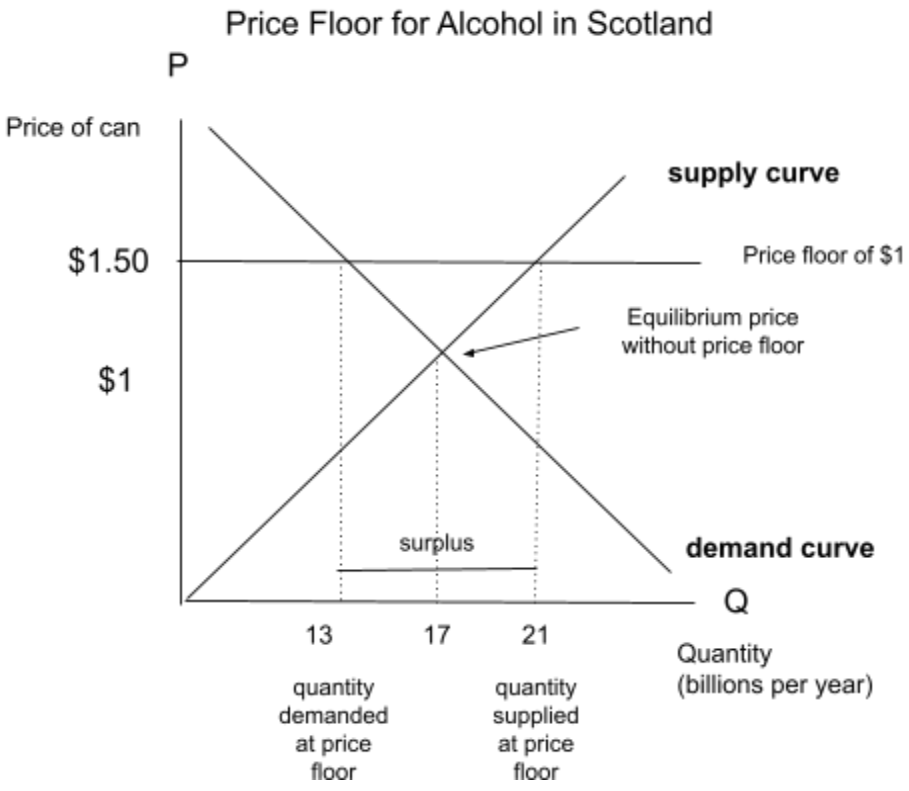
2. The government announces a price ceiling on bulk toilet paper at $20.
a. Determine the Qd and Qs at the price ceiling. Label both on the figure.
¾ (20) = 15
40 - ¼ (20) = 35
b. How many packs of toilet paper will be sold when the price ceiling is in place? 15
c. Lightly shade the area the represents consumer surplus.
Calculate consumer surplus: 160 - 100 = 60*15 * ½ = 450
100 - 20 = 80 * 15 = 1200 * ½ = 600
600 + 450 = 1050
d. Boldly outline the area that represents producer surplus.
Calculate producer surplus: 20 * 15 = 300 * ½ = 150
Calculate Social Surplus: 1050 + 150 = 1200
e. Calculate the size of the DWL that reflects the inefficiency in the market due to the government imposing a price regulation.

15 =40 - ¼P
25 / ¼ = 100
100 - 20 = 80

Price Ceilings



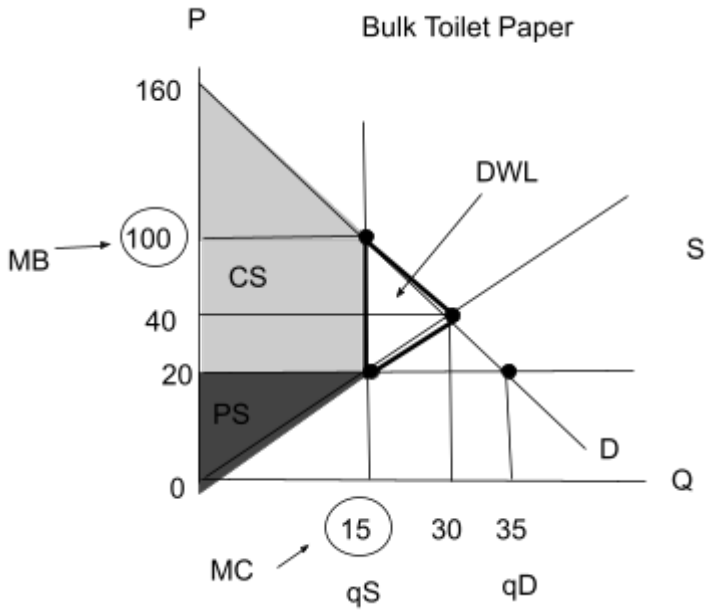
Price Floors



The market for toilet paper is perfectly competitive. I have graphed the market demand and supply curves for bulk packs of toilet paper in the figure below. The mathematical functions that represent these curves are

Demand Qd = 40 – ¼ P **Qd at $20 Price Ceiling:** 40 - ¼ (20) = 35

Supply Qs = ¾ P **Qs at $20 price Ceiling:** ¾ (20) = 15



Use MC (qS) to find MB (qD) 15 = 40 - ¼P -25 = -¼P P = 100

1. Solve for the market equilibrium P* and Q* and label it on the figure.

40 - ¼ P = ¾P

40 = P **¾ (40) = 30**

2. The government announces a price ceiling on bulk toilet paper at $20.

a. Determine the Qd and Qs at the price ceiling. Label both on the figure.

(see above)

b. How many packs of toilet paper will be sold when the price ceiling is in place?

15 packs (lowest quantity)

c. Lightly shade the area the represents consumer surplus.

d. Boldly outline the area that represents producer surplus.

e. Calculate the size of the DWL that reflects the inefficiency in the market due to the government imposing a price regulation.

Use MC (qS) to find MB (qD) 15 = 40 - ¼P -25 = -¼P P = 100

100 - 20 = 80 (Base)

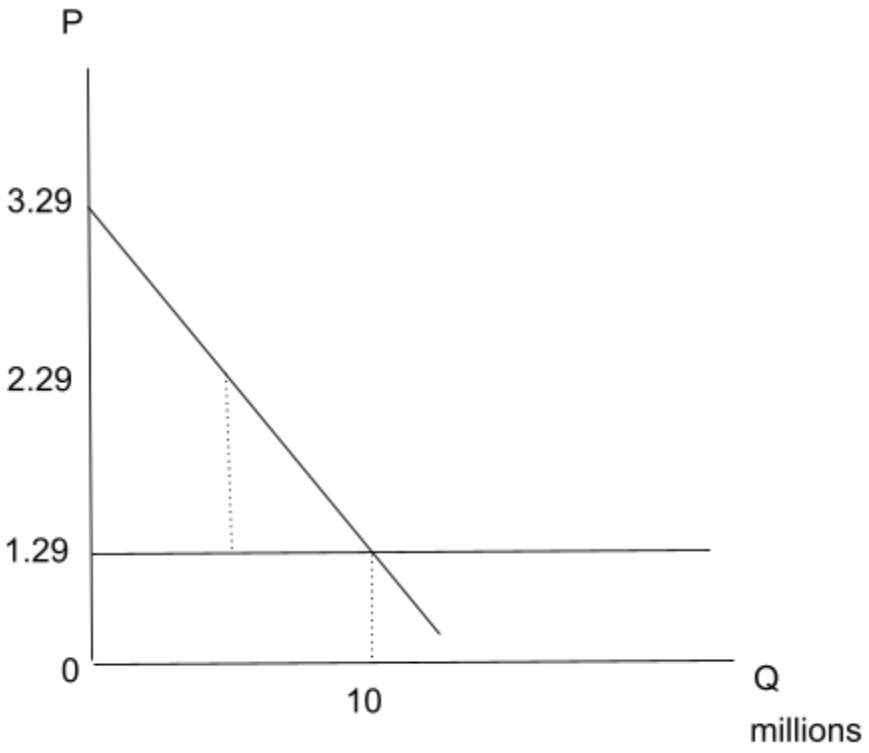
30 - 15 = 15 (Height) ½ Base x Height

½ (80 x 15) = 600 **DWL = 600**

Consumer Surplus

Rihanna's song "Work," sold 10 million copies of this song for roughly $1.29 a copy. If half the people who bought this song said in a survey that they would have been willing to pay at least $2.29 for it, then we have two points on the demand curve for this song. If we connect these two points to get an estimate of the demand curve for this song, we'll discover that the demand curve cuts the vertical axis at $3.29.

What is the Consumer Surplus <u>AND</u> Total Consumer Surplus for this song?



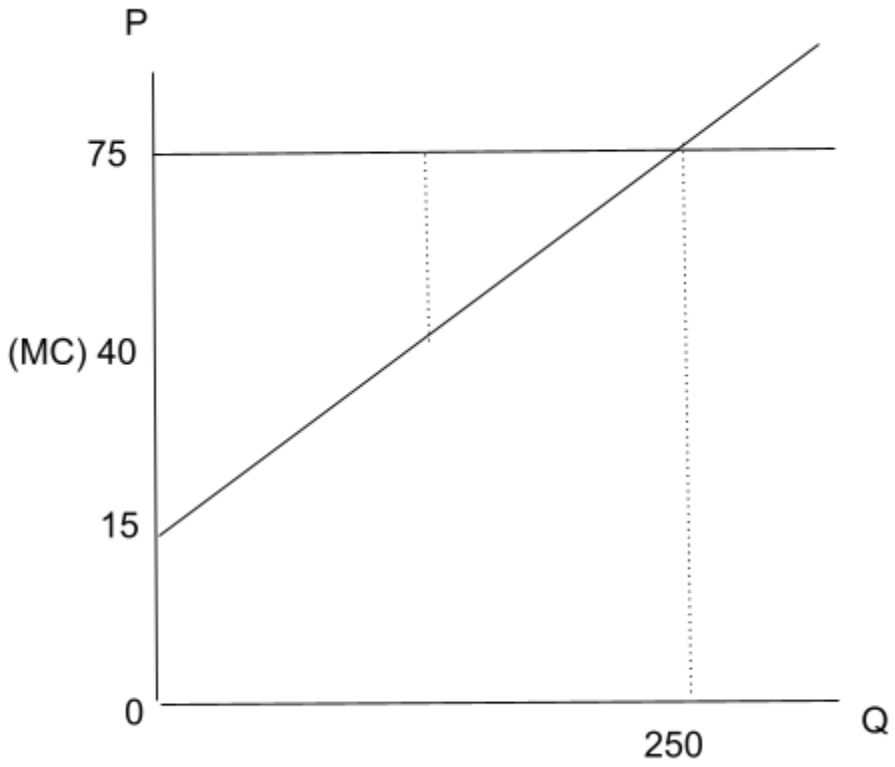
CS = MB - PRICE = 2.29 - 1.29 = **1.00**

TCS = ½ Base x Height
½ (3.29- 1.29) x 10
½ (1 x 10)
½ 10
5 million

Producer Surplus

Levi Strauss sells 250 jeans for roughly $75 per pair.It costs the company $40 in denim, thread, and labor to make each pair of jeans. If we connect these two points to get an estimate of the supply curve for jeans, we'll discover that the supply curve cuts the vertical axis at $15.

What is Levi Strauss' Producer Surplus <u>AND</u> Total Producer Surplus for jeans?



PS = PRICE - MC = 75 - 40 = **35**

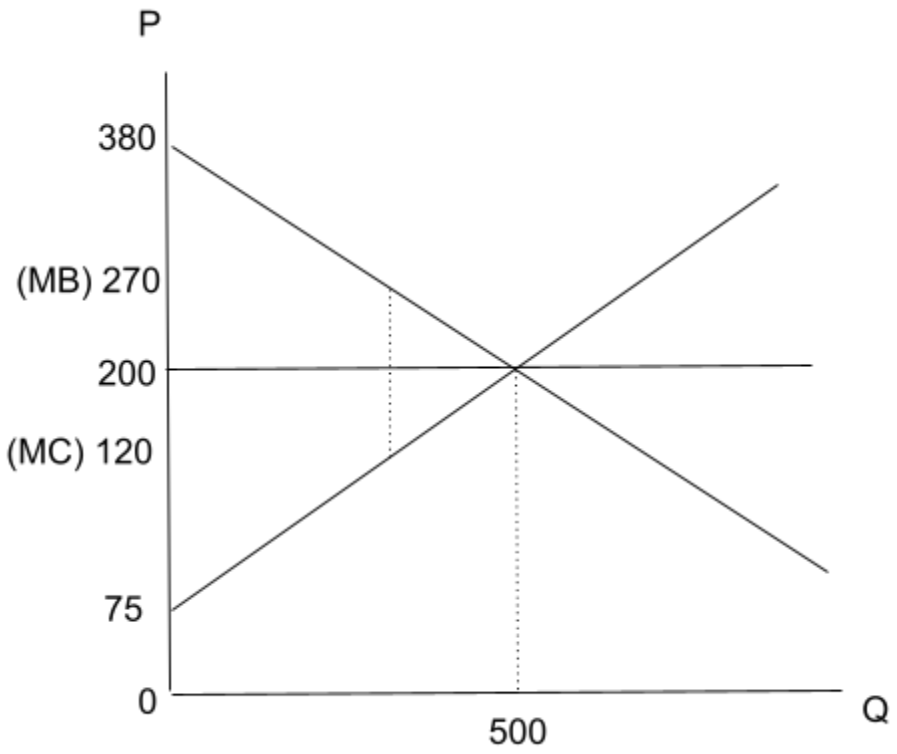
TPS = ½ base x height
½ (75 - 15) x 250
½ (60 x 250) = **7,500**

Economic Surplus

Lego sold 500 sets of their Disney Castle for roughly $200 per set. If half the people who bought this lego set said in a survey that they would have been willing to pay at least $270 for it, then we have two points on the demand curve for this lego set. If we connect these two points to get an estimate of the demand curve for this lego set, we discover that the demand curve cuts the vertical axis at $380.

Lego is thrilled to get $200 in return for $120 in plastic and labor to make each set. If we connect these two points to get an estimate of the supply curve for the lego set, we discover that the supply curve cuts the vertical axis at $75.

What is Lego's economic surplus for its Disney Castle?



Economic surplus of buying ONE castle: 270 - 120 = 150

CS = ½ base x height = ½ (380 - 200) x 500 = 45,000

PS = ½ base x height = ½ (200 - 75) x 500 = 31,250

Total Surplus = 45,000 + 31,250 = 76,250

Gains from Trade Analysis

The regions of Winterfell and Riverrun are small independent kingdoms. Both produce swords and shields. Each kingdom has devoted a **labor force of 6 (identical) men** to the production of both goods.

1 man from Winterfell can produce 4 swords or 2 shields in one month.
1 man from Riverrun can produce 2 swords or 4 shields in one month.

	Swords	**Shields**
Winterfell	4	2
RiverRun	2	4

Absolute Advantage

Swords: Winterfell because 4 swords > 2 swords
Shields: RiverRn because 4 shields> 2 shields

Comparative Advantage

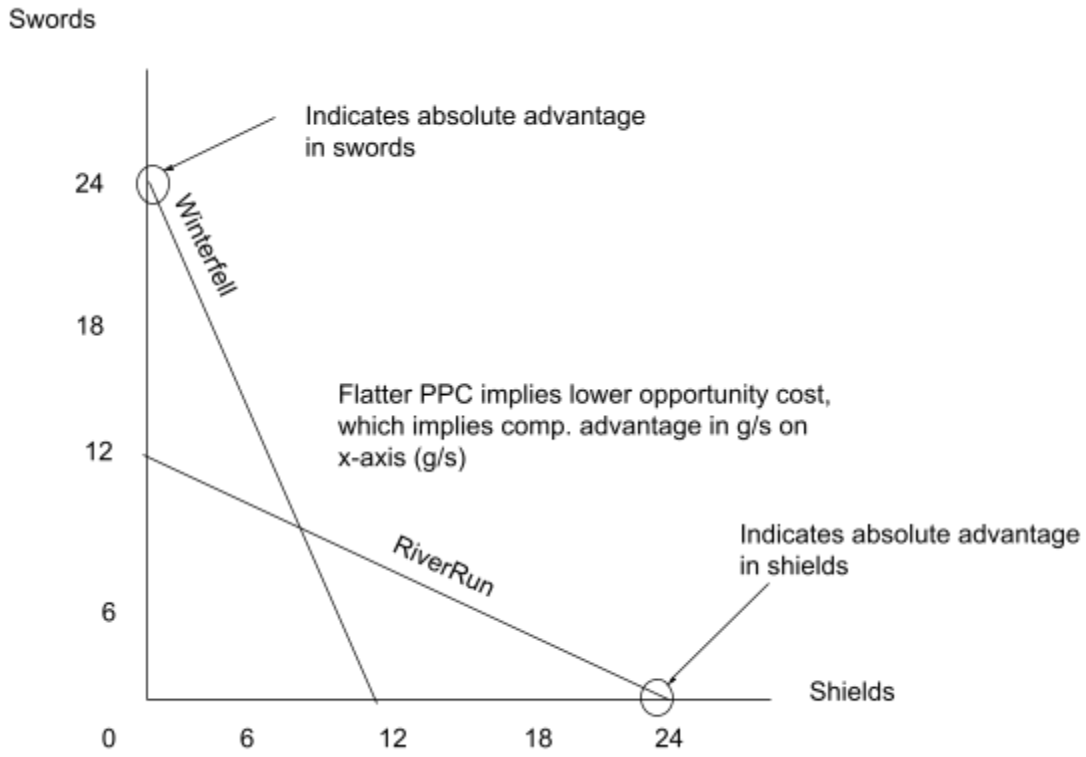
Opportunity Cost of	**1 Sword**	**1 Shields**
Winterfell	0.5 Shields	2 Swords
RiverRun	2 Shields	0.5 Swords

- **Winterfell:** 1 sword costs 2/4 = 0.5 shields; 1 shield costs 4/2 = 2 swords
- **Riverrun**: 1 sword costs 4/2 = 2 shields; 1 shield costs 2/4 = 0.5 swords

Conclusion:

- Winterfell has comparative advantage in swords (0.5 < 2)
- Riverrun has comparative advantage in shields (0.5 < 2)

Total Production	Swords	Shields
Winterfell	4x6 = 24	2x6 = 12
RiverRun	2x6 = 12	4x6 = 24
Total	24 +12 = 36	12 + 24 = 36



Absolute Advantage:

- Winterfell's PPC reaches 24 on swords axis → absolute advantage in swords
- Riverrun's PPC reaches 24 on shields axis → absolute advantage in shields

Comparative Advantage: Riverrun's PPC is flatter, so it has comparative advantage in shields. Winterfell has comparative advantage in swords.

Production Without Trade

Assuming: 6 workers available.

	Workers	**Swords**	**Shields**
Winterfell	2 swords, 4 shields	2 x 4 = 8	4 x 2 = 8
RiverRun	4 shields, 2 swords	4 x 2 = 8	2 x 4 = 8
Totals		16	16

Production After Trade (Specialization)

Winterfell has CA in Swords & RiverRun has CA in Shields

	Swords	**Shields**
Winterfell	24 (6 workers x 4 swords)	0
RiverRun	0	24 (6 workers x 4 shields)
Totals	24	24

Trade: If they want equal amounts, they each end up with 12 swords and 12 shields.

Gains from trade: Each kingdom gains 4 swords and 4 shields compared to autarky (16 tp 24 total, split equally = 12 each, so 12-8 = 4 gain each).

Terms of Trade

- Winterfell's opportunity cost: 1 sword = 0.5 shields (min. Winterfell would accept)
- Riverrun's opportunity cost: 1 sword = 2 shields (max River.run would pay)

Range of terms of trade: 0.5 shields < 1 sword < 2 shields
Or equivalently: 1 sword trades for between 0.5 and 2 shields