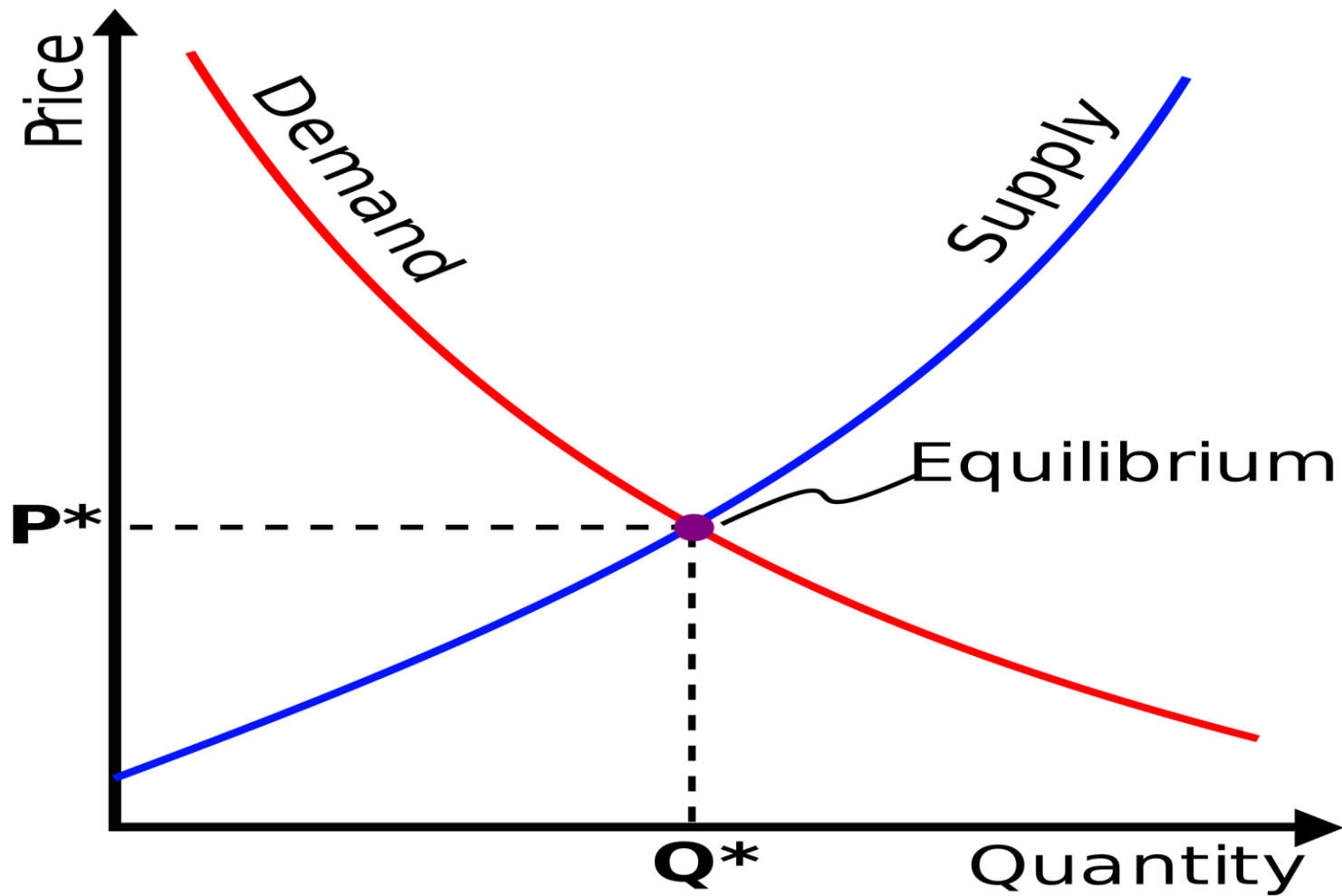
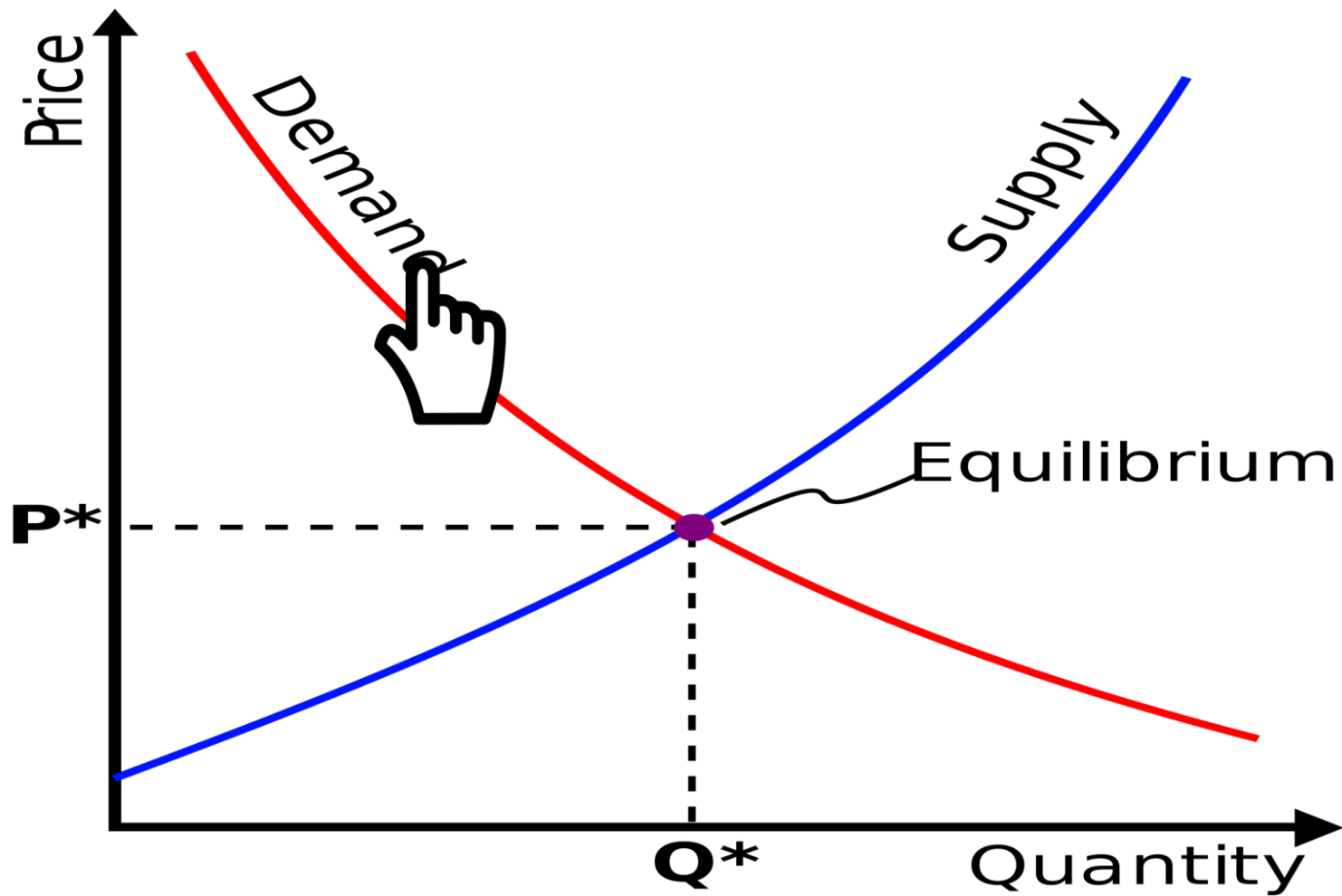


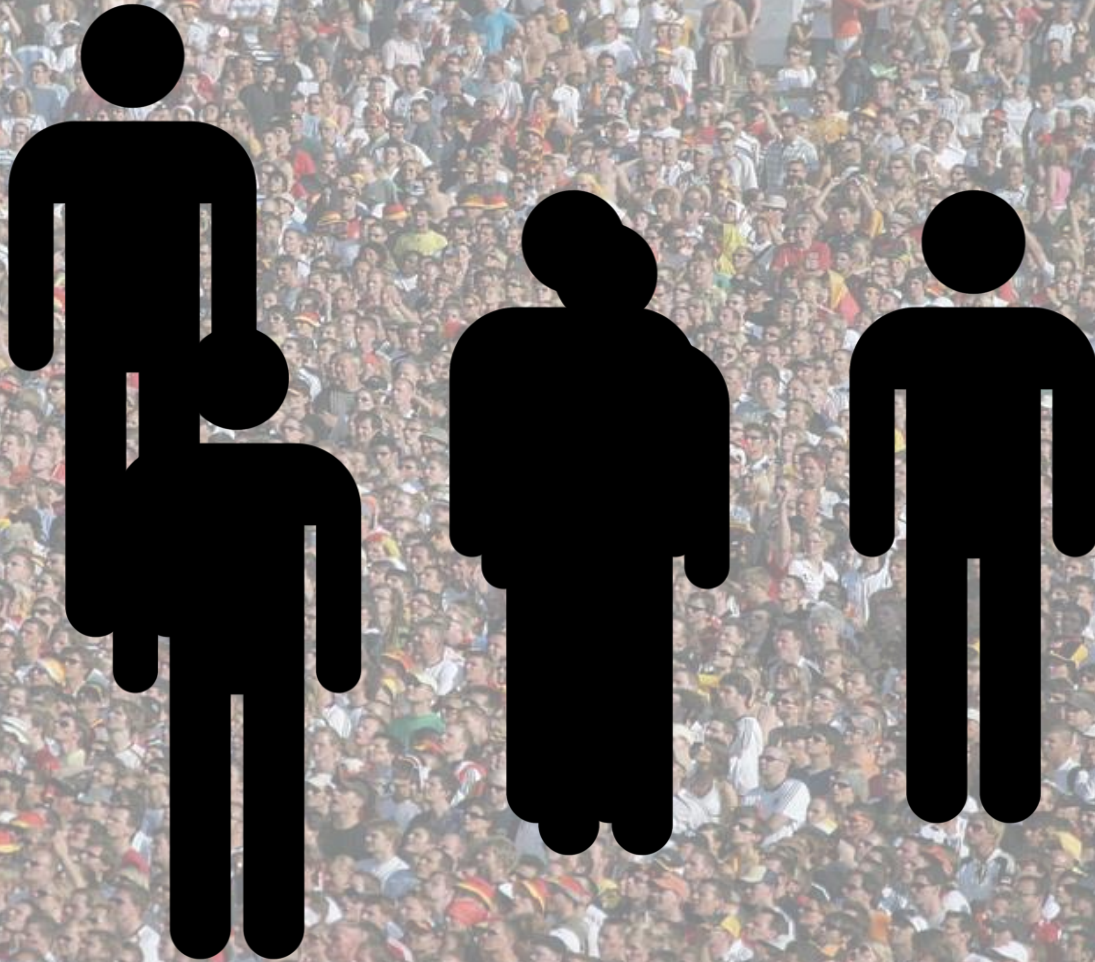
AP Microeconomics

Guaranteed 5









Plan:

- Today:
 - Defining Demand
 - A theory of Choice
 - Optimal choice
- On Monday:
 - Individual demand and Welfare
 - Market demand and Welfare

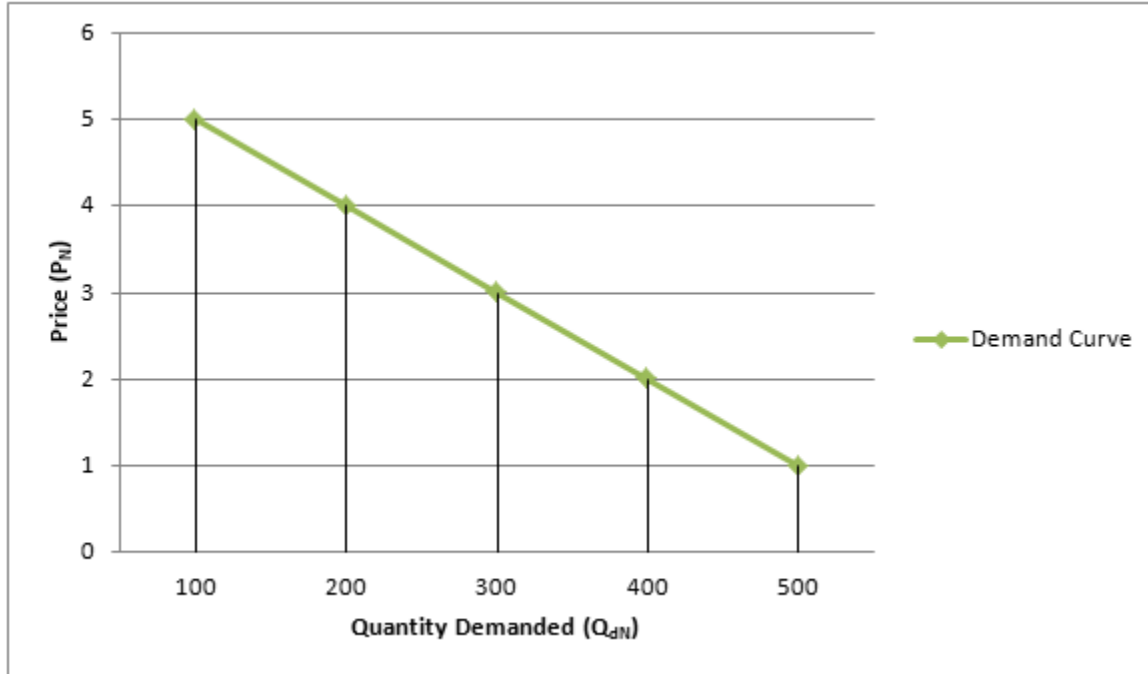


Demand?

- Demand? A useful construct
- The answer to the following question:
 - “If the price of a kg of pink lady apples in the UK is p , how many kg of pink lady apples will be bought in the uk?”
 - Provides an answer for any p
- Can be measured empirically, but tricky...
- Useful:
 - Companies use it to determine pricing,
 - Government uses it to determine taxes.
 - The courts use it to determine monopoly power...
 - Economists use it to model markets and firm behaviour.
 - Has both positive as well as normative aspects to it.



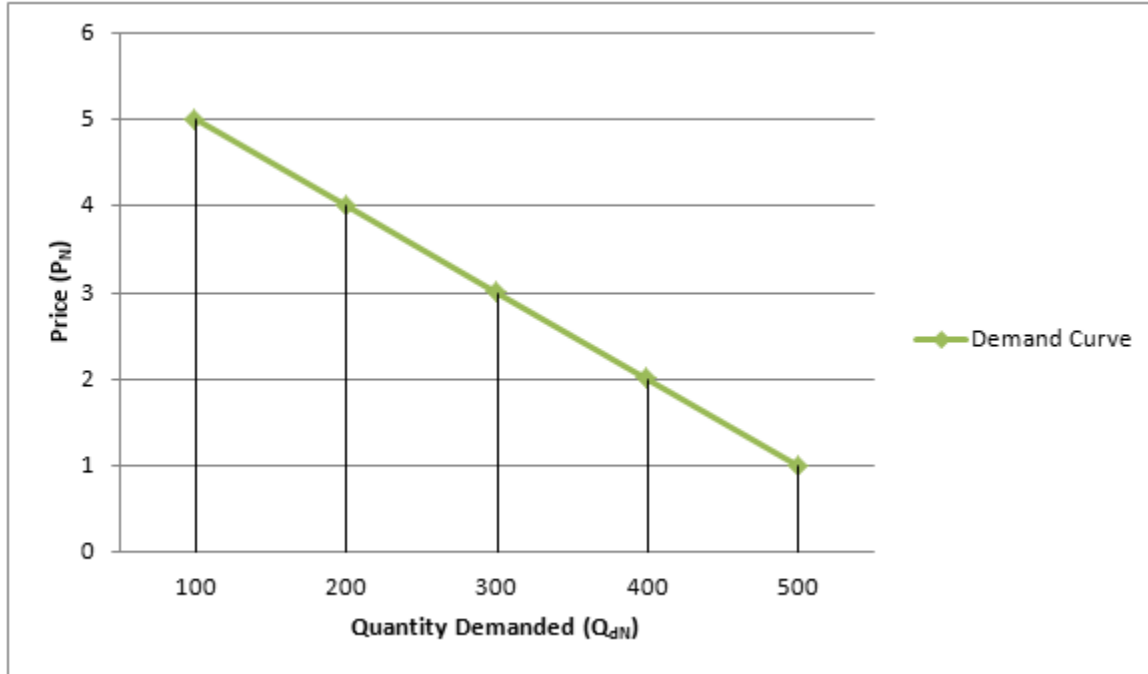
Typical, text book, (real life?) Demand curve:



“If the price of a kg of pink lady apples in the UK is p , how many kg of pink lady apples will be bought in the uk?”



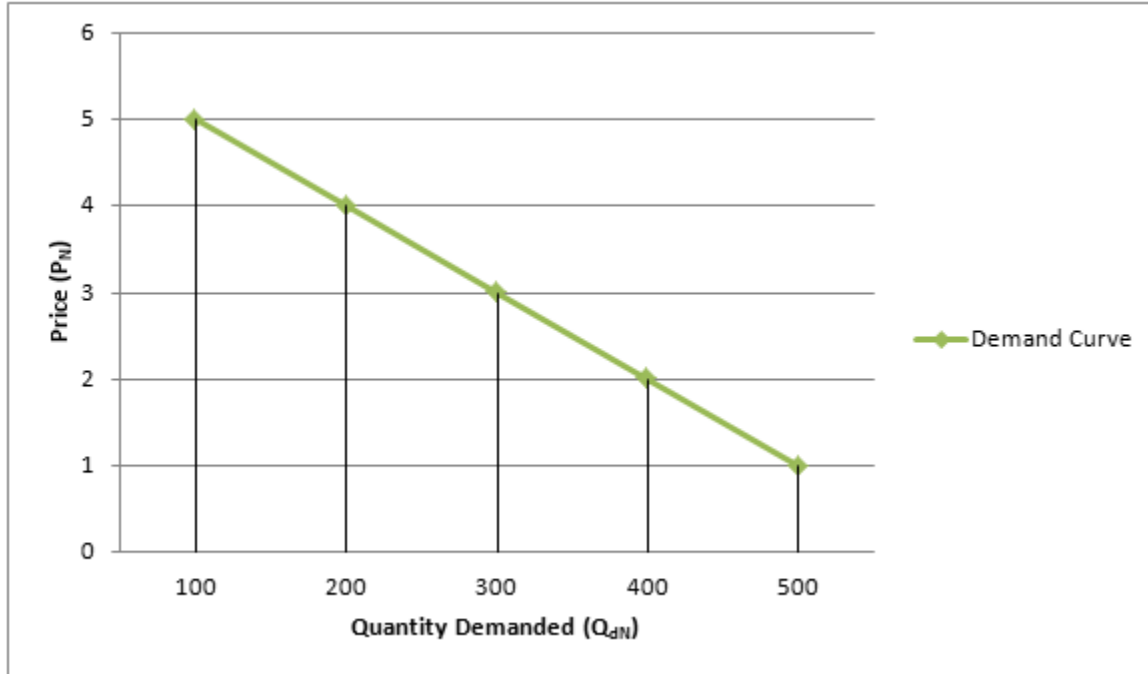
Typical, text book (real life?) Demand curve:



- Downward sloping (real life?)



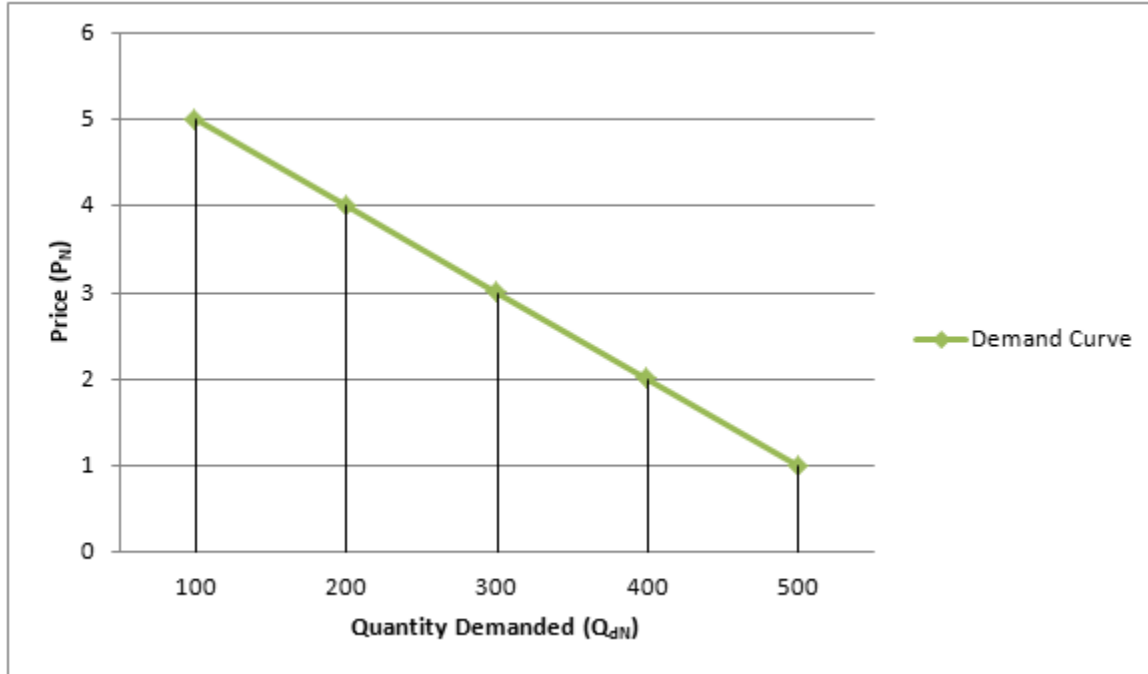
Typical, text book (real life?) Demand curve:



- Downward sloping (real life?)
- Linear (real life?)

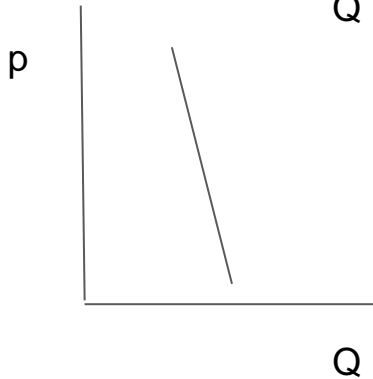
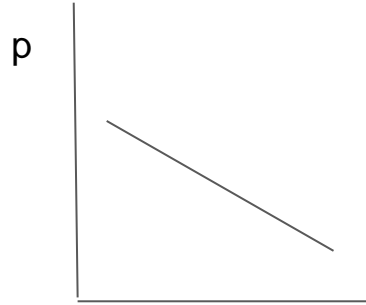


Typical, text book (real life?) Demand curve:

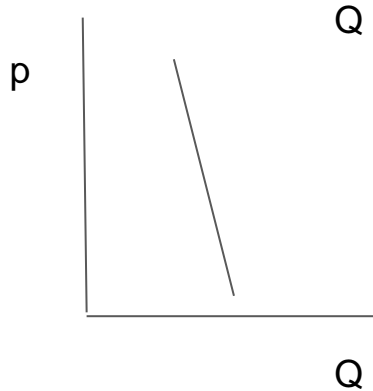
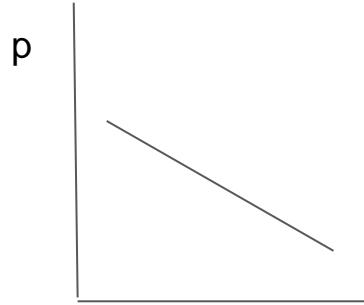


- Downward sloping (real life?)
- Linear (real life?)
- Slope is important!

Demand curve: Slope is important



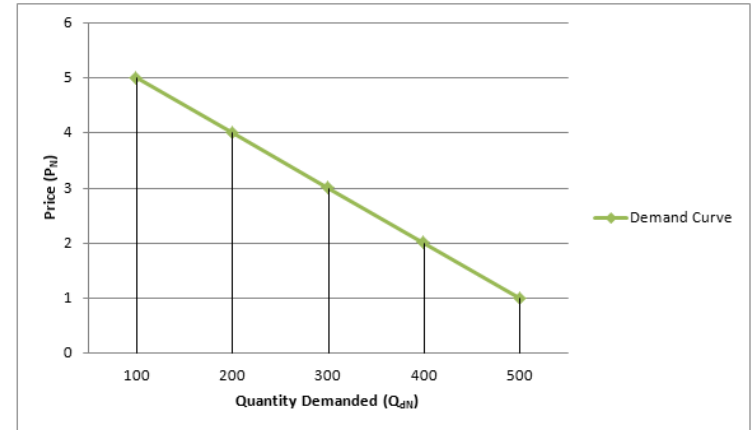
Demand curve: Slope is important





Demand for Pink Lady apples:

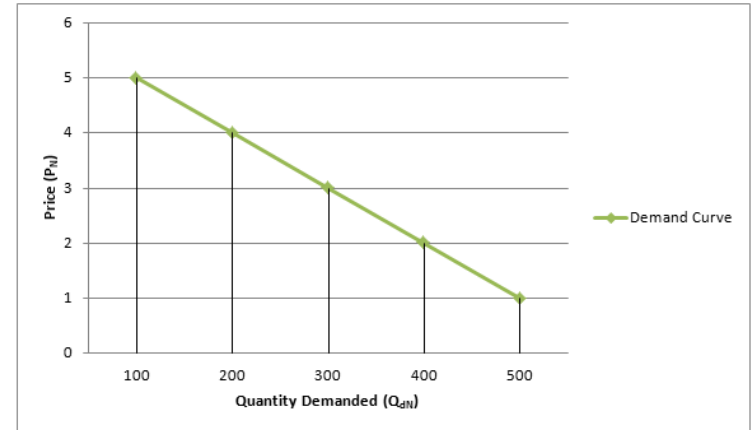
- We might understand what the demand curve means but...
 - How do we know what it should look like?
 - What are its properties?
 - What can we learn from it, how can we use it?





Demand for Pink Lady apples:

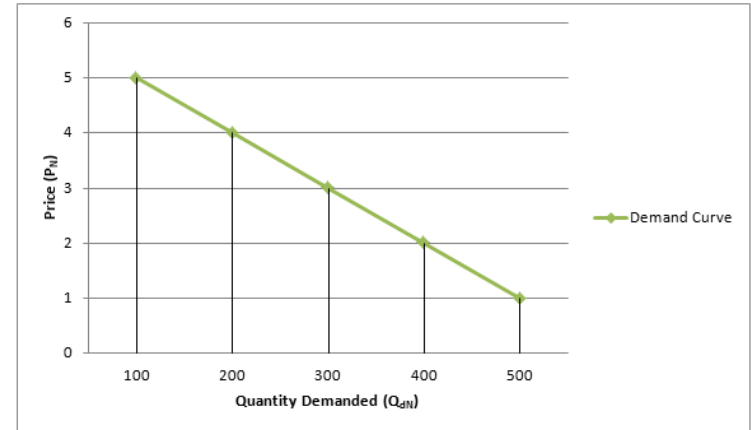
- How do we know what it should look like?
 - Theory: We can come up with explanations of what it should look like.
 - Empirics: We can use data to measure the demand function





Demand for Pink Lady apples:

- How do we know what it should look like?
 - Theory: We can come up with explanations of what it should look like.
 - Empirics: We can use data to measure the demand function
- Theory feeds on Empirics that feeds on Theory that feeds on Empirics that feeds on....





Demand: Important concepts

- Consumption bundles
- Preferences/utility
- Budget line
- Lines of equal preferences - Indifference curves
- Rationality/Optimal consumption
- Elasticities
- Consumer surplus
- Individual/market demand



A Theory of optimal consumption



Ronny

???#ZZ###??



Theory of Choice



Ingredients:

1. Products to choose from.
2. Prices.
3. Wallet (income)



and...



Theory of Choice

Preferences: How you feel about different baskets of consumption (consumption bundles)



Theory of Choice: Rationality as the prediction



A rational economic agent will always consume a consumption bundle that optimises her preferences given the amount of money in her wallet and the prices of the goods available.



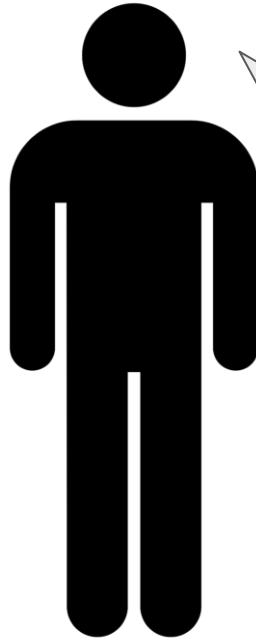
Theory of Choice: Rationality as the prediction



A rational economic agent will always consume a consumption bundle that optimises her preferences given the amount of money in her wallet and the prices of the goods available.



But how do I calculate this?



But how do I calculate
this?

Theory of Choice: A simple, two-product reduction



$P_{\text{pink}}=4$

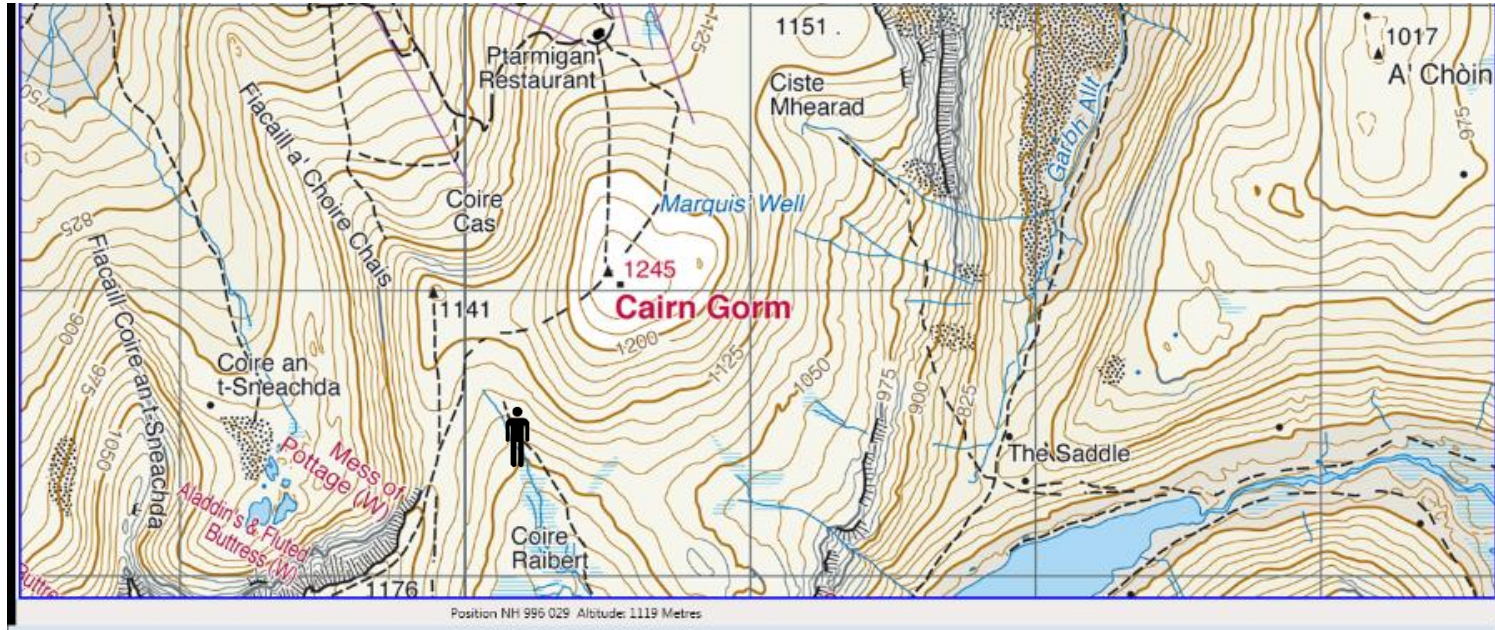


$P_{\text{granny}}=5$



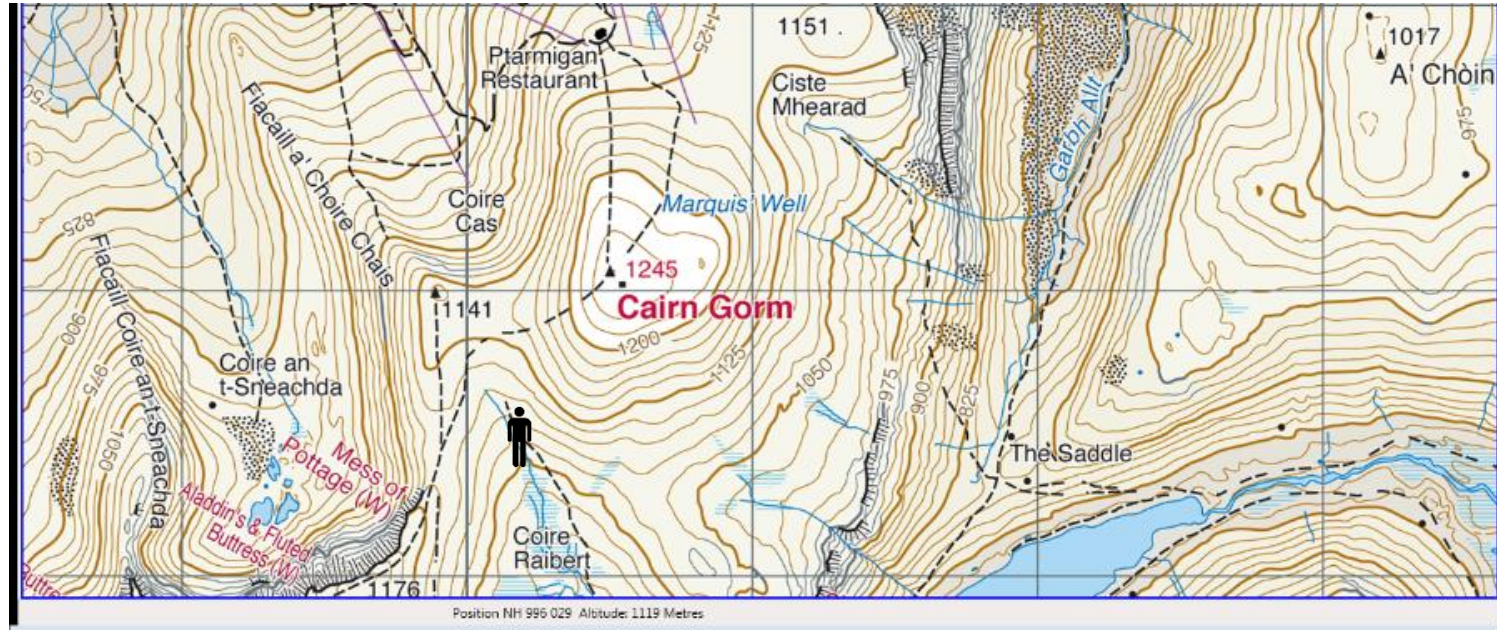
$I=100$

Distraction: Hiking...

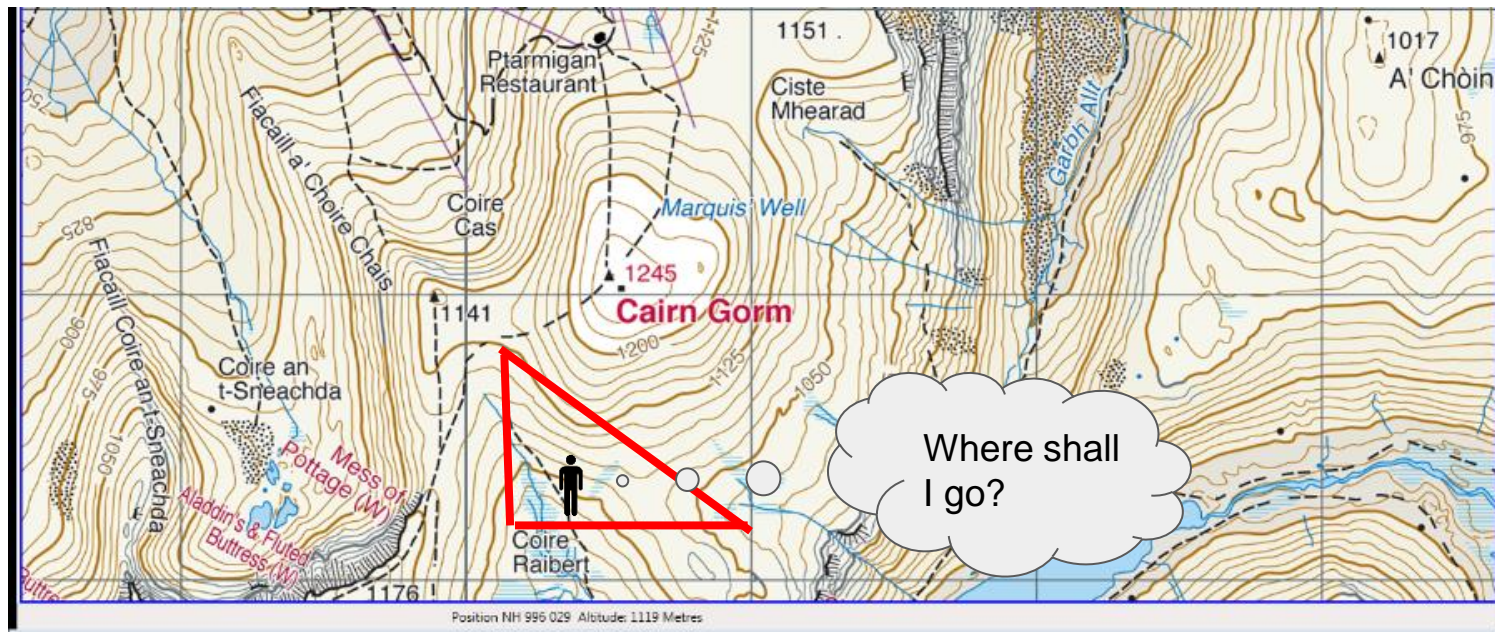


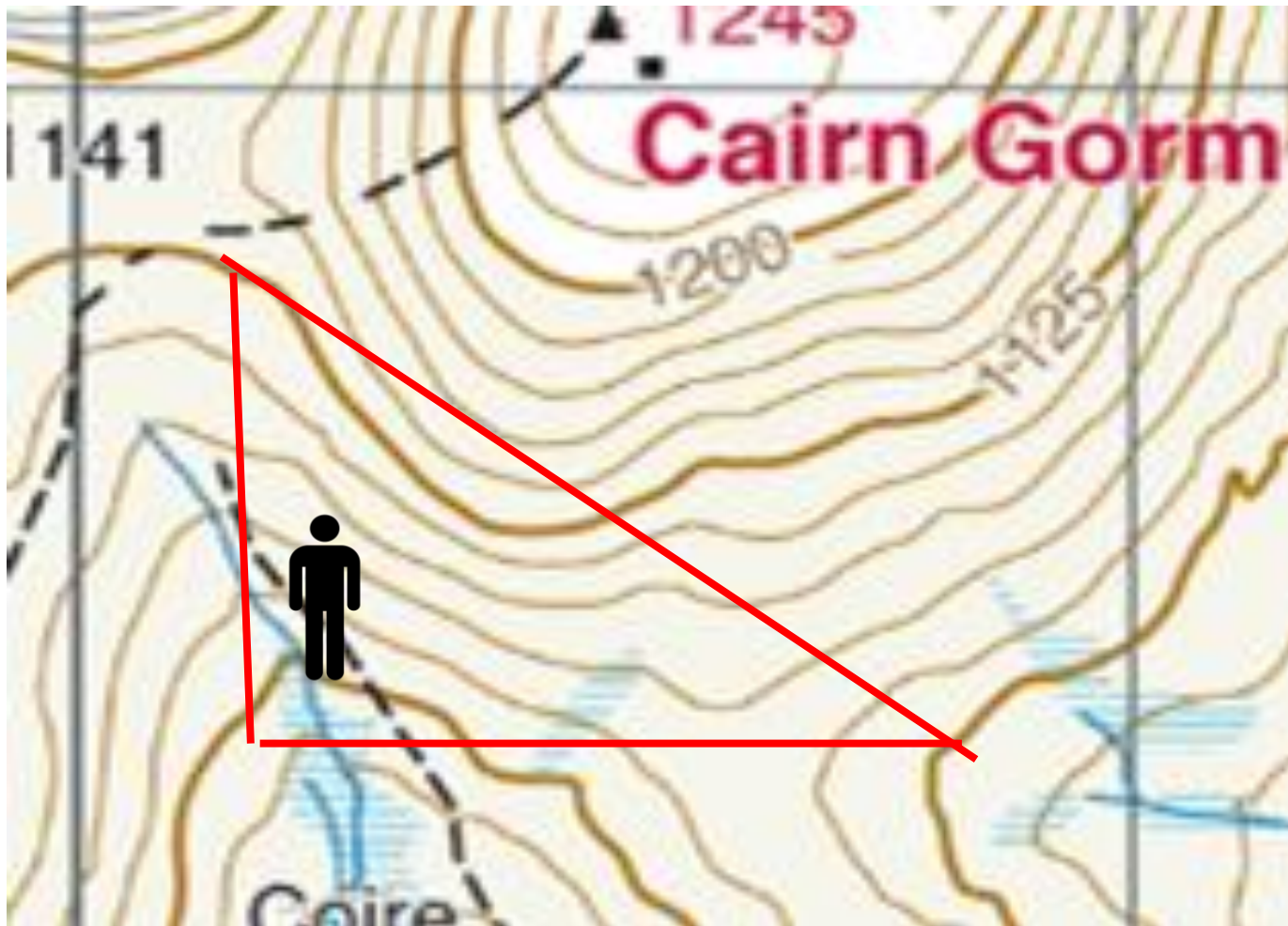


Distraction: You want to reach the highest point...



But there is a fence...

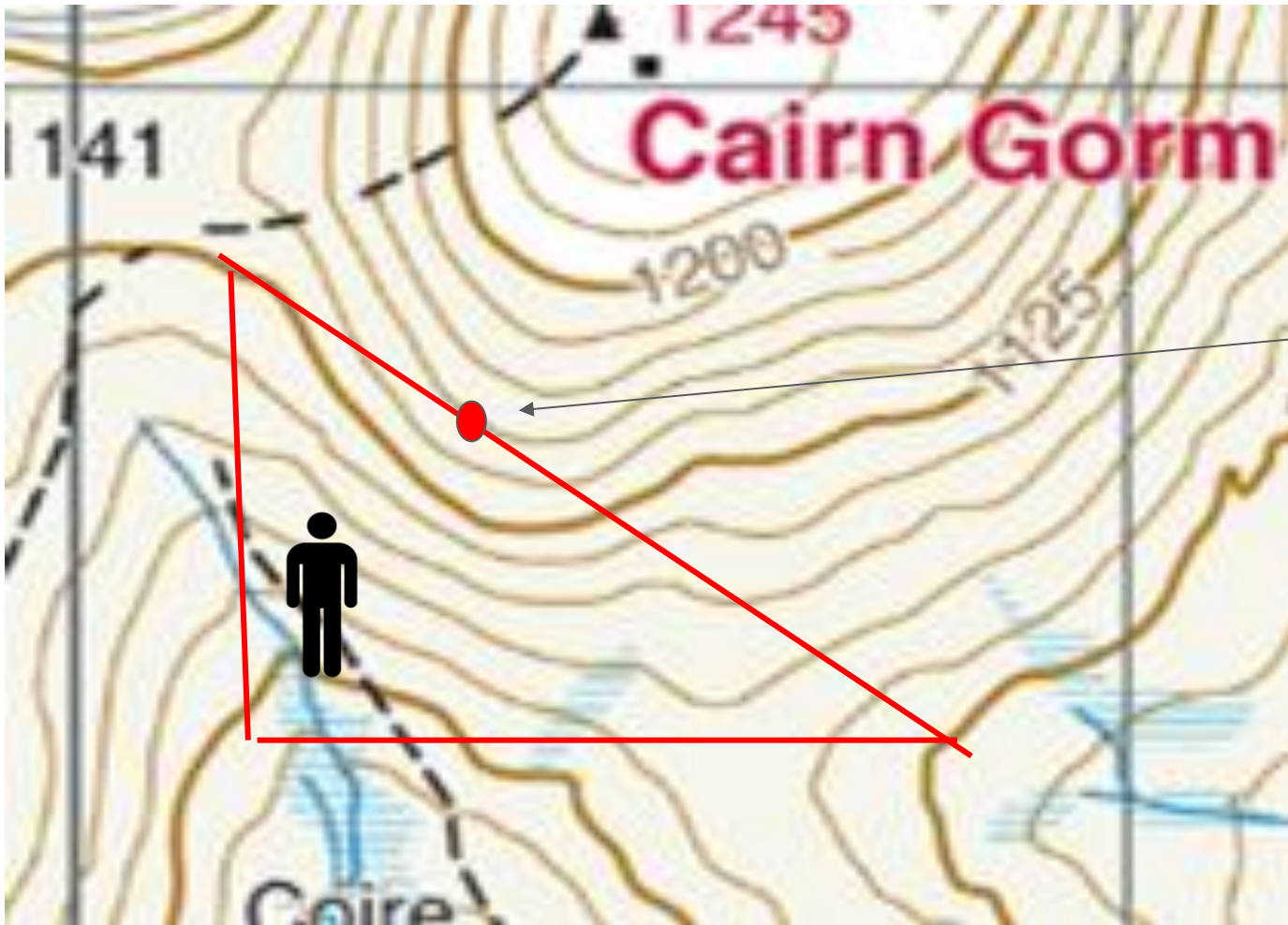






The highest point in the fenced area!

Coordinates:
51.5144° N,
0.1174° W



Going North

Going East



The highest point in the fenced area!

At the highest point the slope of the fence equals the slope of the altitude line!



Going East →

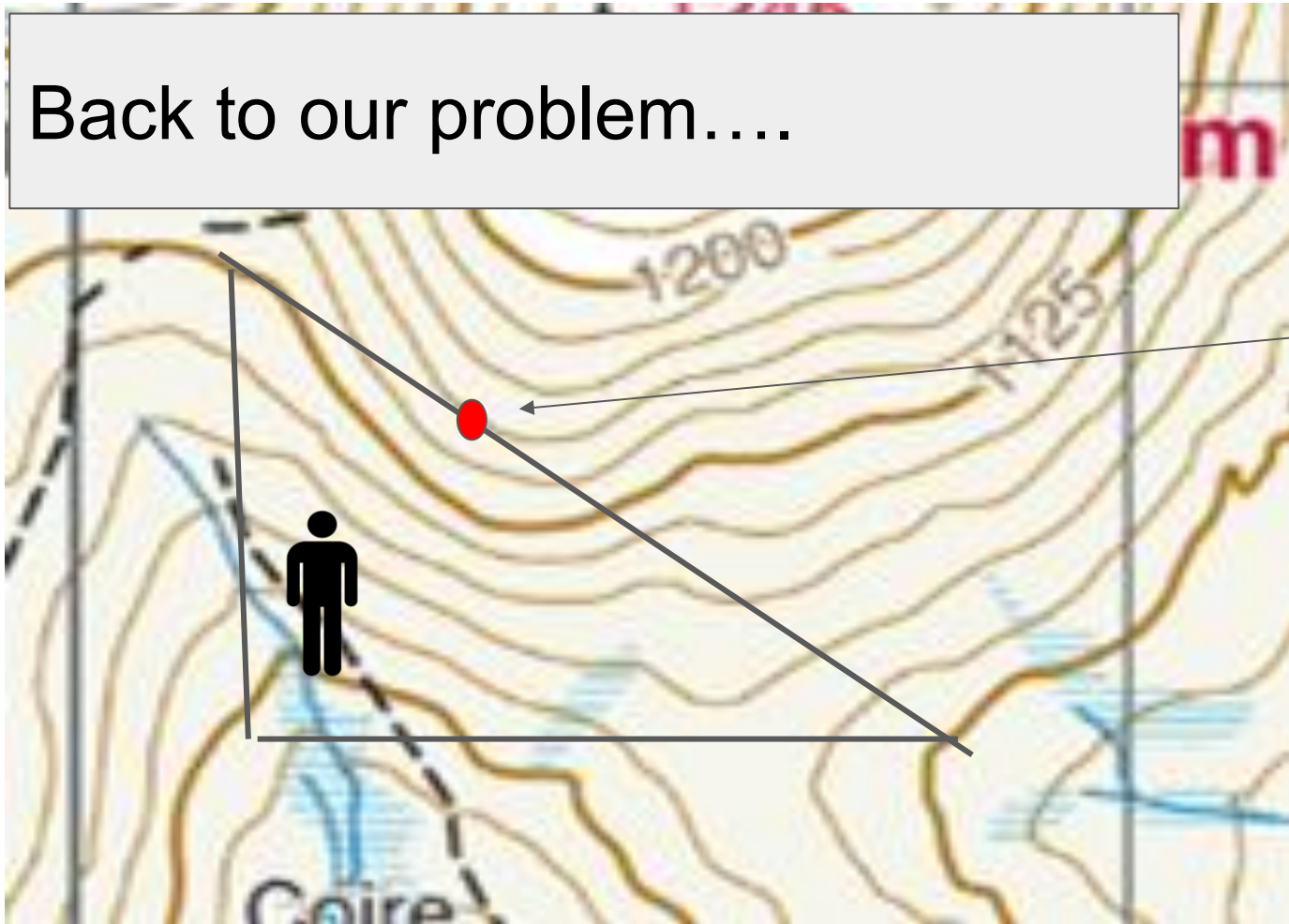
Going North ↑



Back to our problem....

The highest point in the fenced area!

At the highest point the slope of the fence equals the slope of the altitude line!



Going North ↑

Going East →



Mountain of preferences!

kgs of Granny Smith apples

Going East



Going North

**kgs of
Pink
Lady
apples**



Line of equal preference in consumption (“indifference curves”)

Going North
↑
kgs of Pink Lady apples

kgs of Granny Smith apples Going East →



The budget line

kgs of Pink
Lady apples

Y

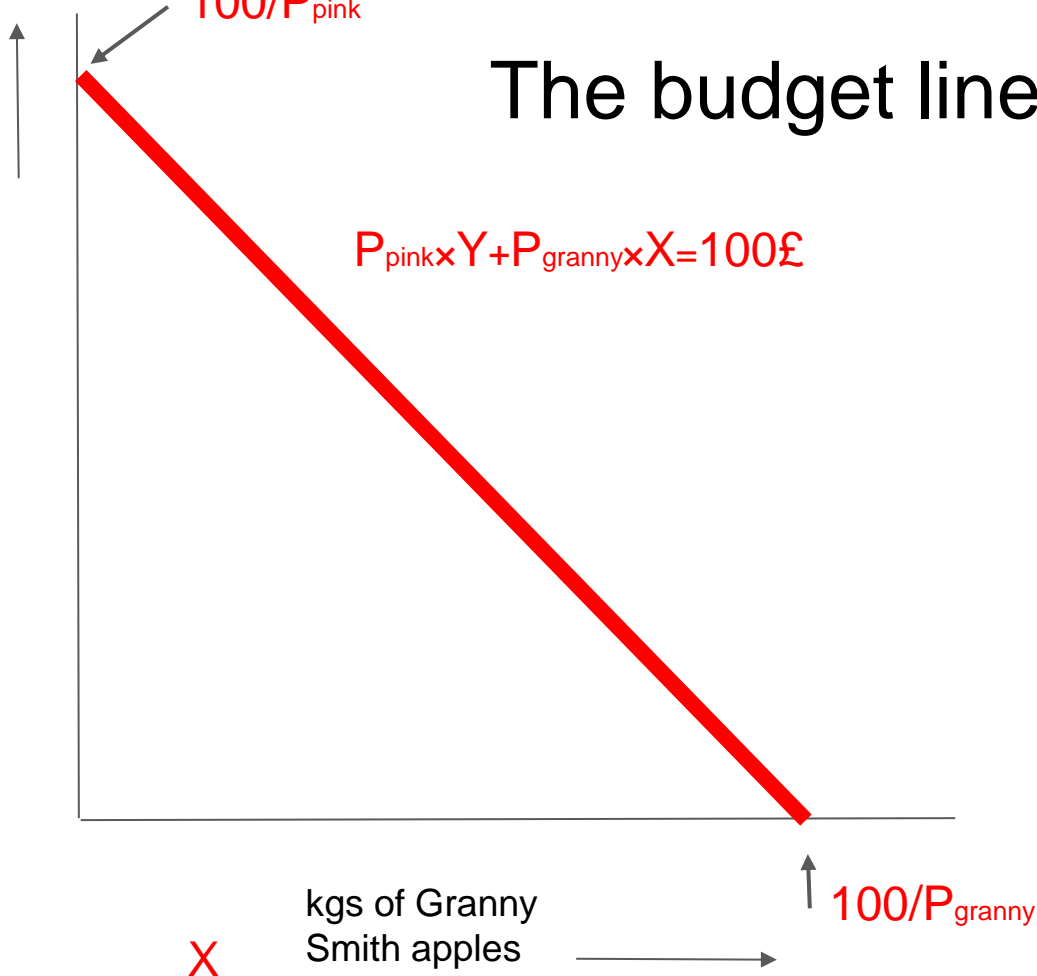
$100/P_{\text{pink}}$

$$P_{\text{pink}} \times Y + P_{\text{granny}} \times X = 100\text{£}$$

X

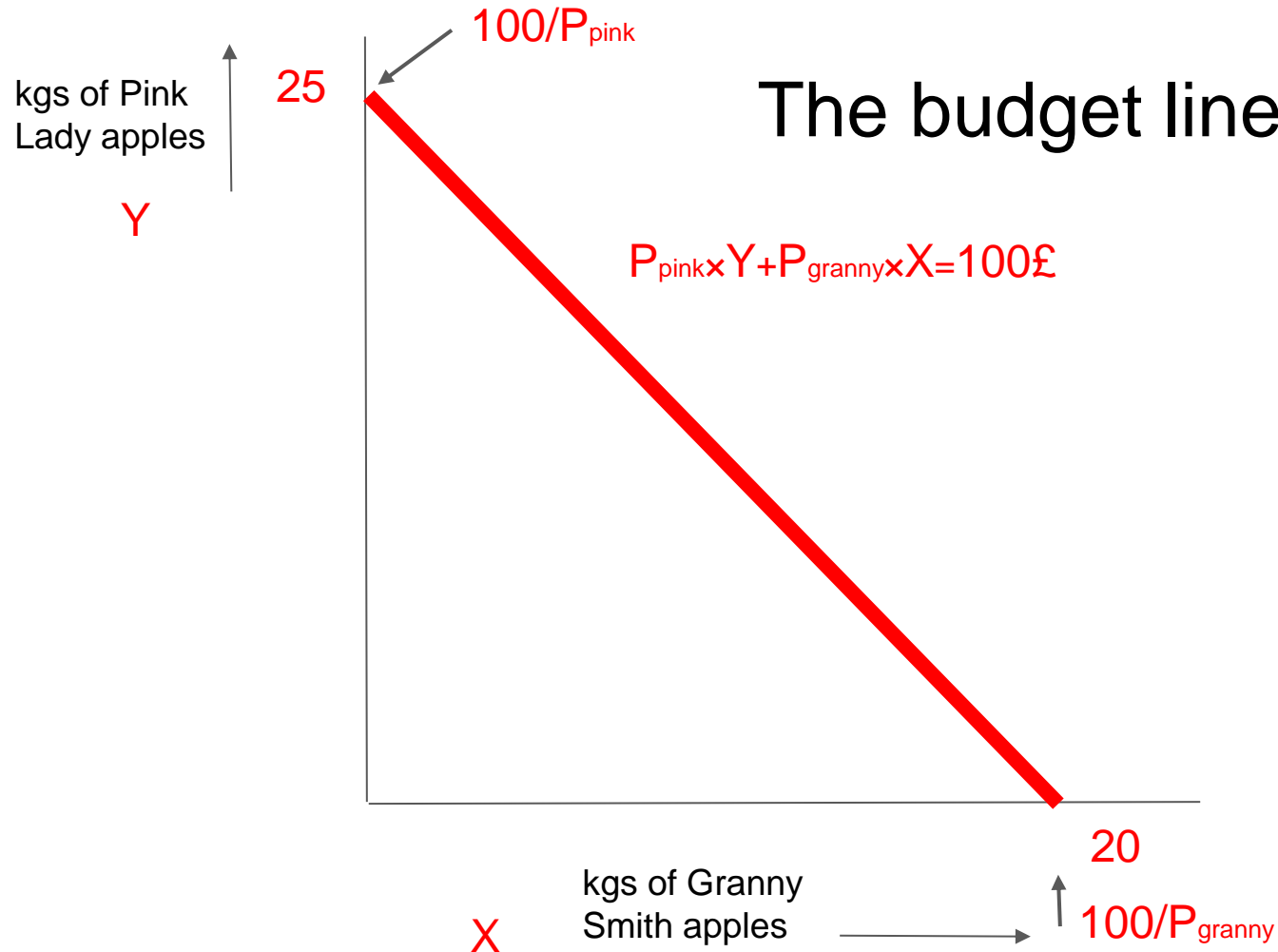
kgs of Granny
Smith apples

$100/P_{\text{granny}}$



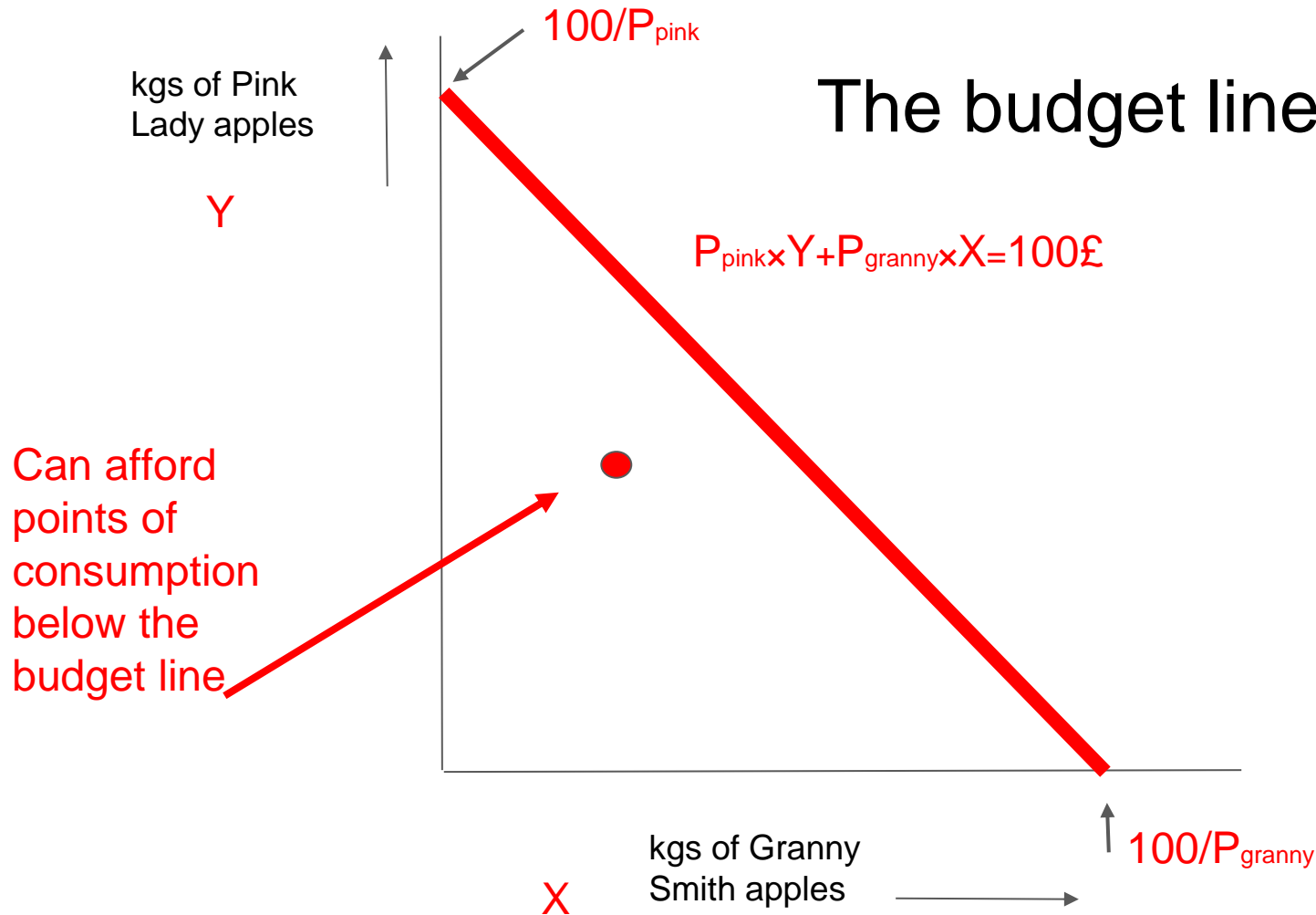


The budget line





The budget line





The budget line

CANNOT
afford points
of
consumption
ABOVE the
budget line

kgs of Pink
Lady apples

Y

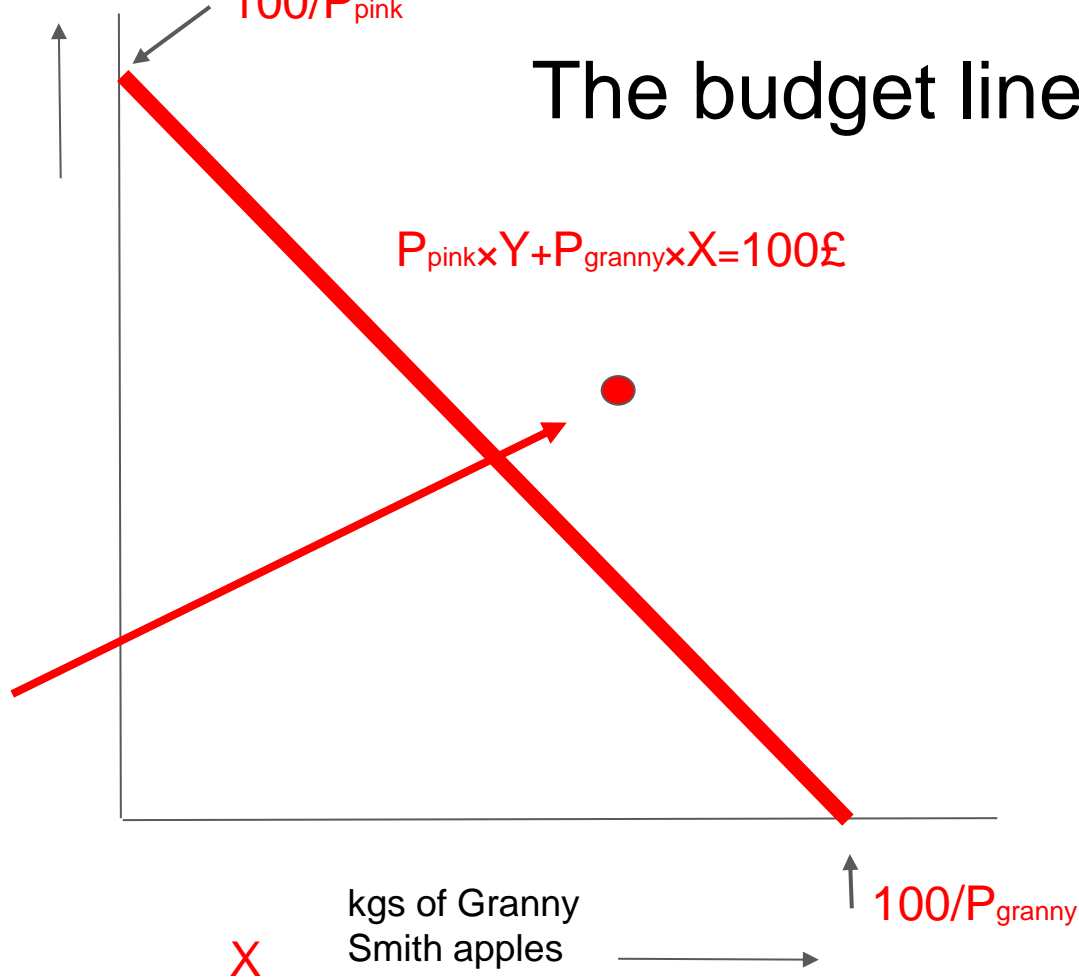
$100/P_{\text{pink}}$

$$P_{\text{pink}} \times Y + P_{\text{granny}} \times X = 100\text{£}$$

X

kgs of Granny
Smith apples

$100/P_{\text{granny}}$





The budget line

kgs of Pink
Lady apples

Y

$100/P_{\text{pink}}$

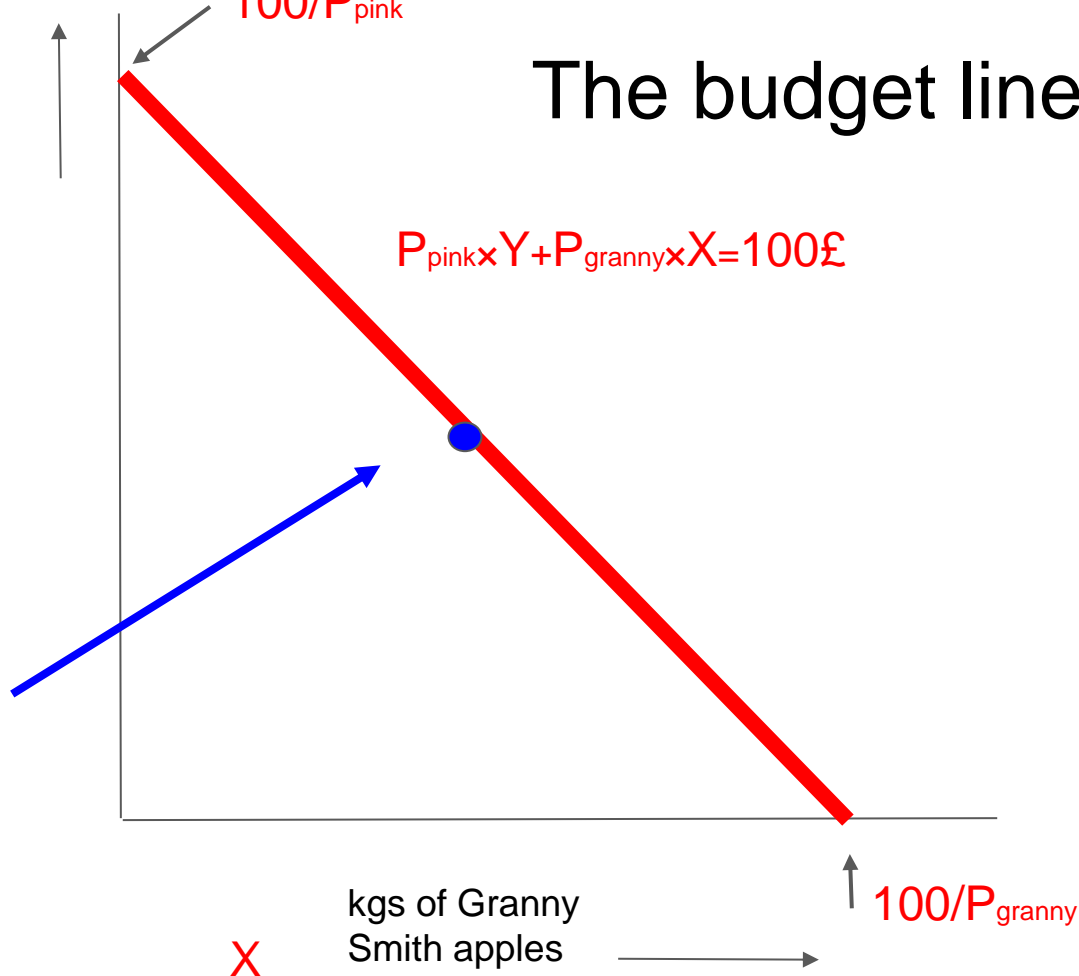
$$P_{\text{pink}} \times Y + P_{\text{granny}} \times X = 100\text{£}$$

A point of
consumption
that is ON
the budget
line means
that the
consumer
has spent all
his income!

X

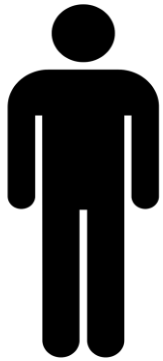
kgs of Granny
Smith apples

$100/P_{\text{granny}}$





Assumptions about Ronny ...and more generally what we will assume throughout today:



- **Goods:** Ronny always loves pink lady apples and granny smith apples
- **Non satiation:** Ronny would always strictly prefer to get an extra pink lady or an extra granny smith apple
- **No saving:** Ronny has no use for money left over today

kgs of Pink
Lady apples

Y

$100/P_{\text{pink}}$

$$P_{\text{pink}} \times Y + P_{\text{granny}} \times X = 100\text{£}$$

Lines of equal
preferences.

X

kgs of Granny
Smith apples

$100/P_{\text{granny}}$



kgs of Pink
Lady apples

Y

$100/P_{\text{pink}}$

$$P_{\text{pink}} \times Y + P_{\text{granny}} \times X = 100\text{£}$$

Lines of equal
preferences.

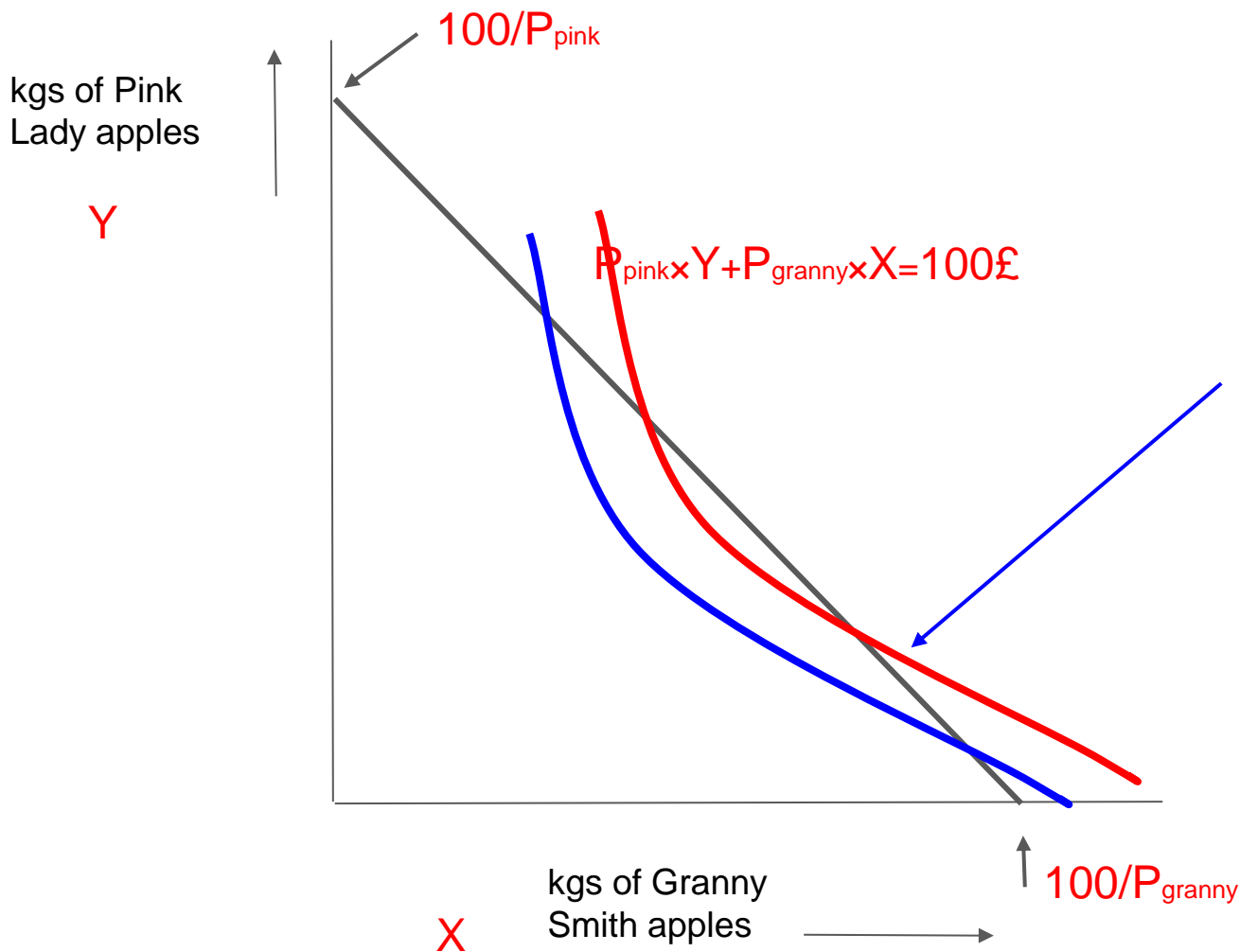
Always
decreasing,
why?

X

kgs of Granny
Smith apples

$100/P_{\text{granny}}$





The **Red Line** represents points of consumption that are better than the **blue line**!

Why?



kgs of Pink
Lady apples

Y

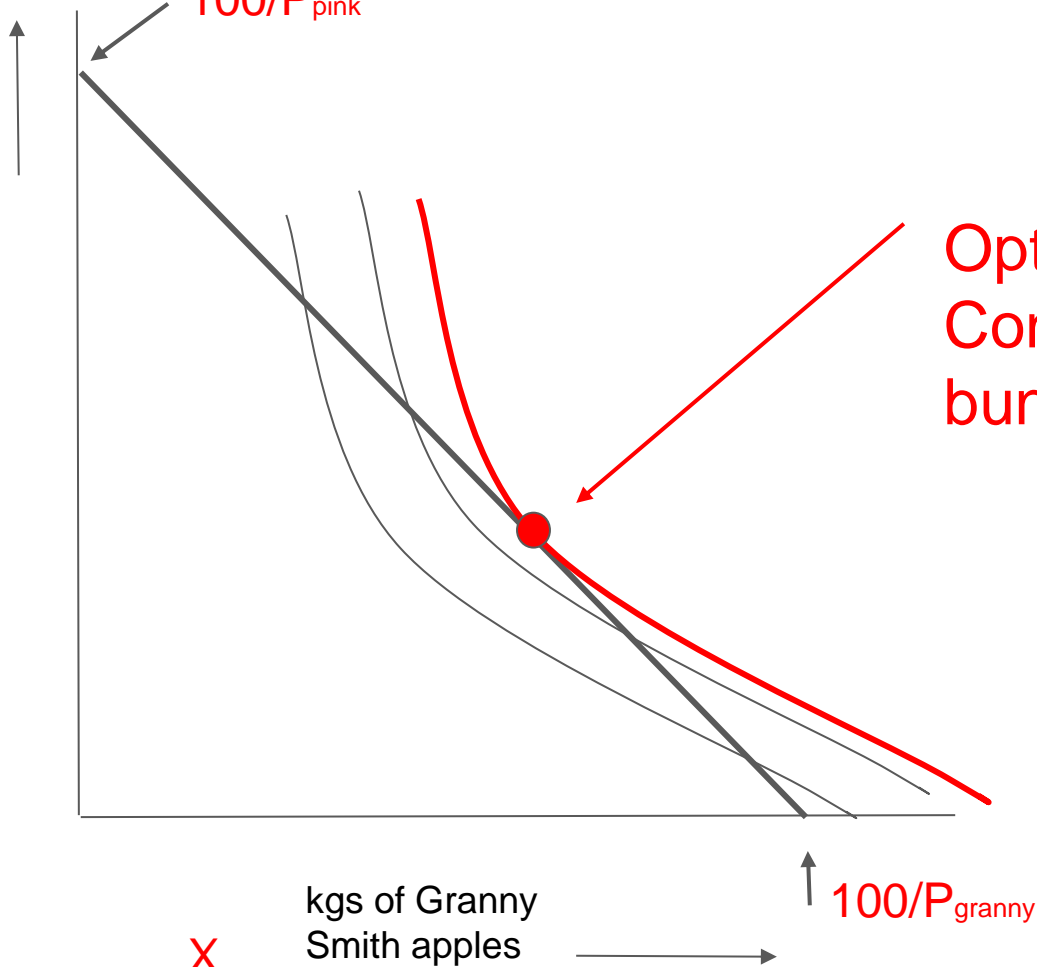
$100/P_{\text{pink}}$

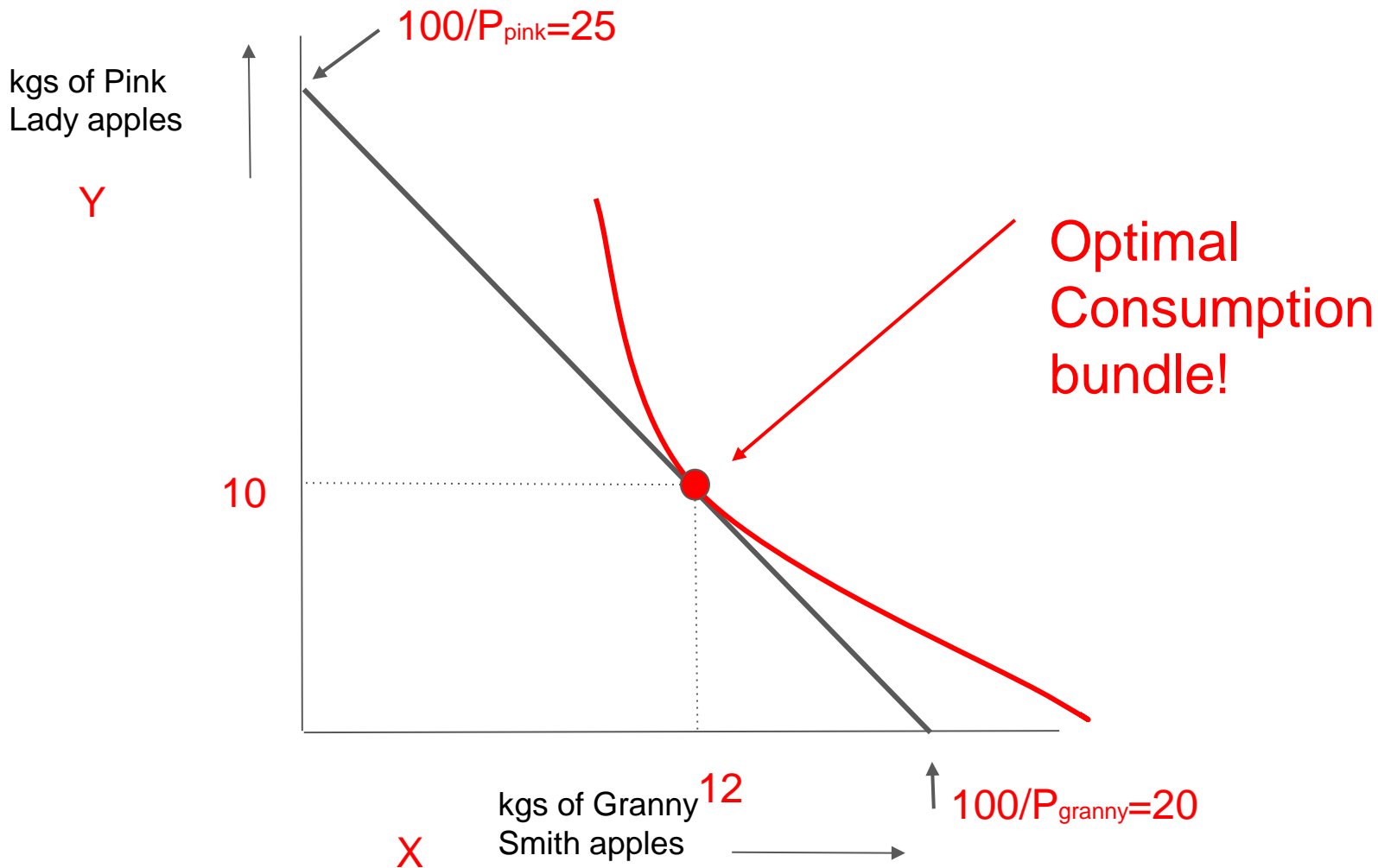
X

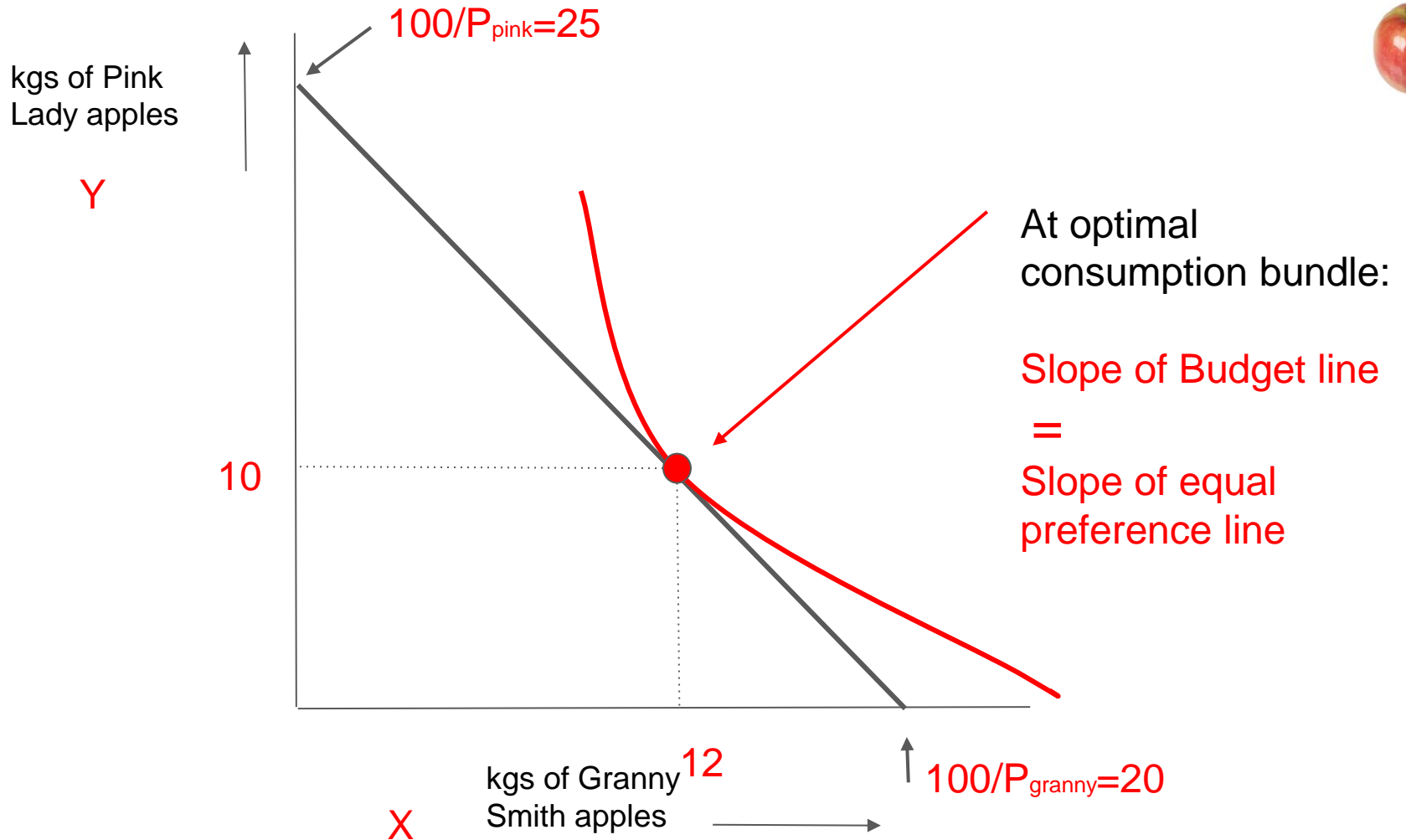
kgs of Granny
Smith apples

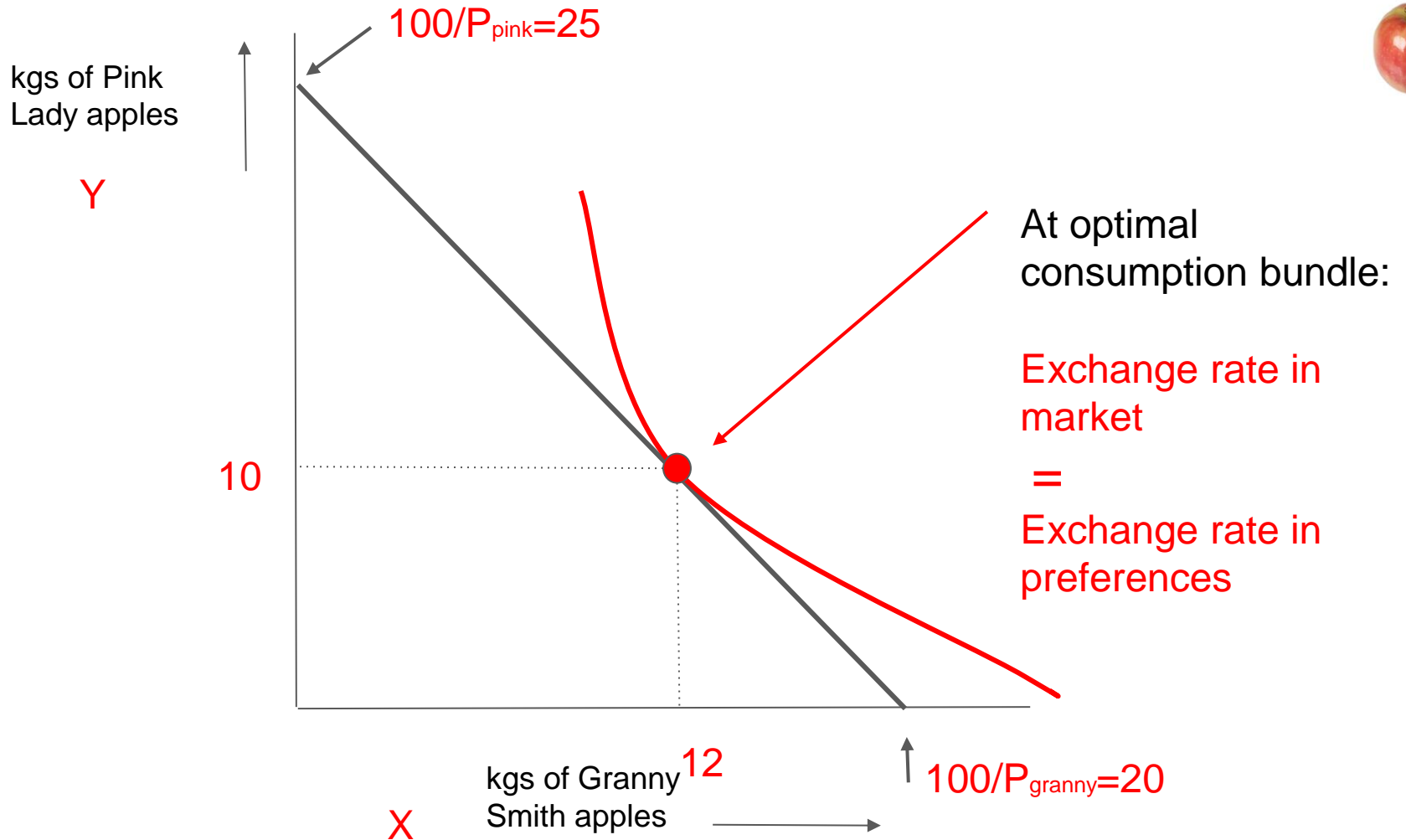
$100/P_{\text{granny}}$

Optimal
Consumption
bundle!











At optimal consumption bundle:

Exchange rate in the market

=

Exchange rate in preferences



At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

Forego one granny smith and save P_{granny}



At optimal consumption bundle:

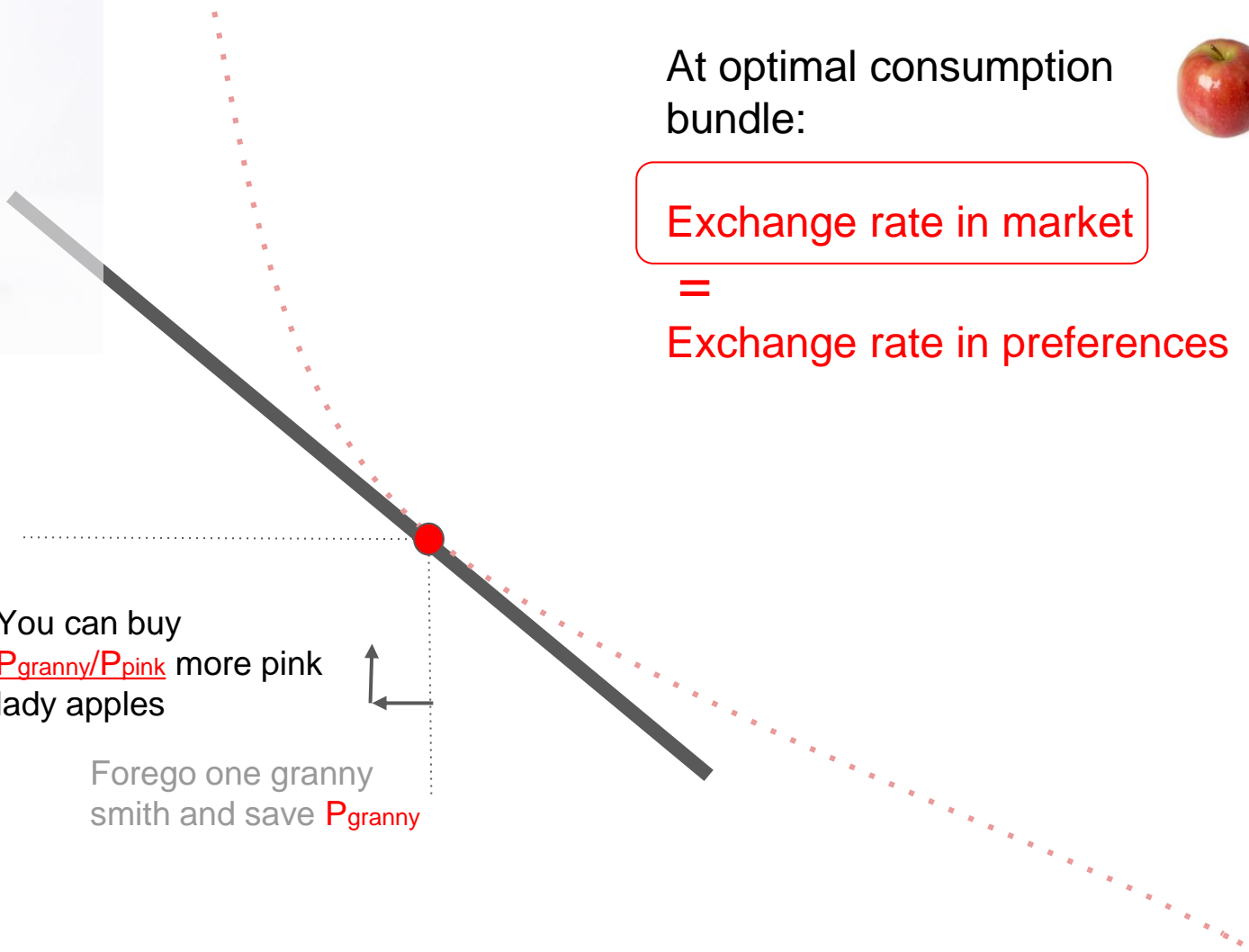
Exchange rate in market

=

Exchange rate in preferences

You can buy
 $\frac{P_{\text{granny}}}{P_{\text{pink}}}$ more pink
lady apples

Forego one granny
smith and save P_{granny}





At optimal consumption bundle:

Exchange rate in market

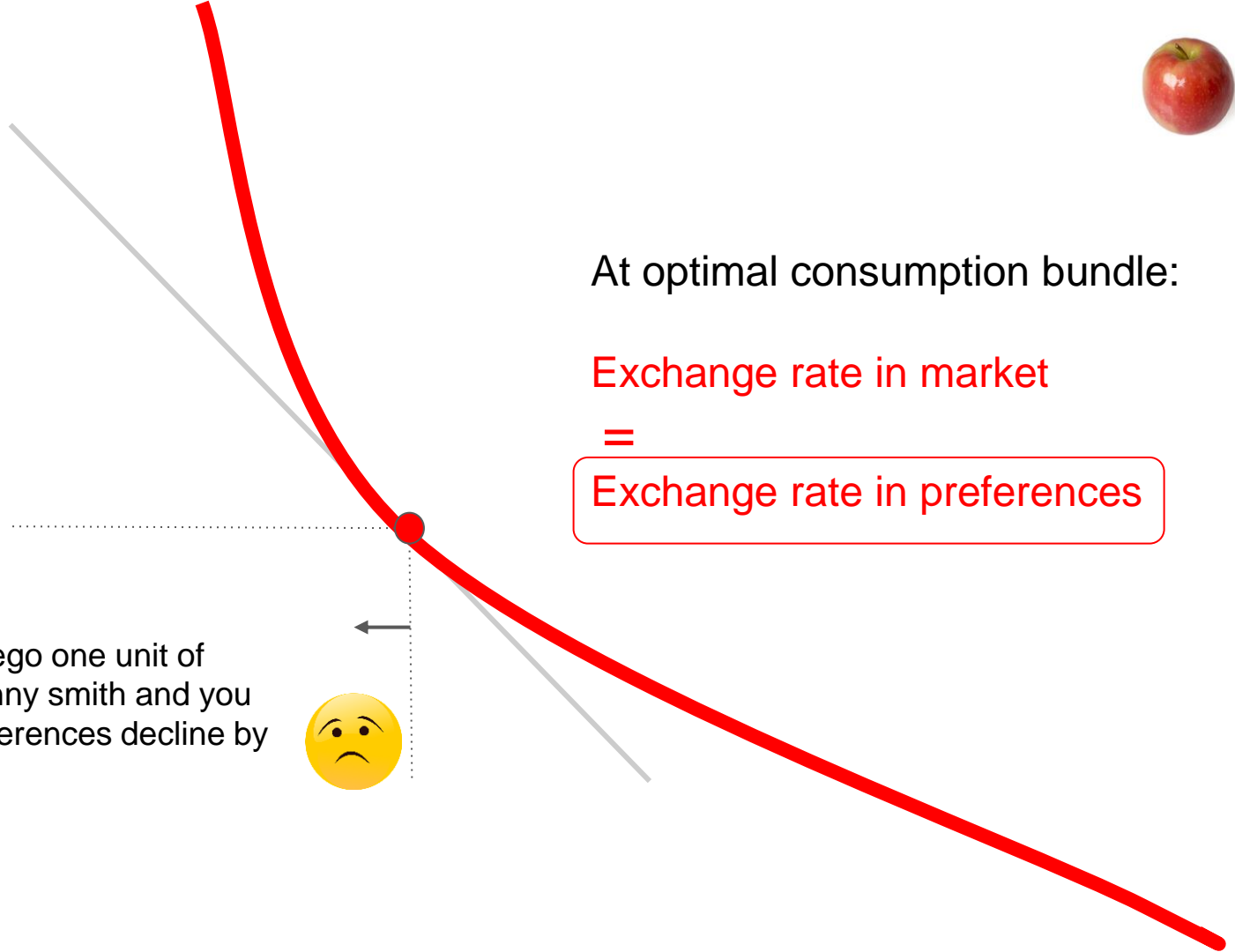
=

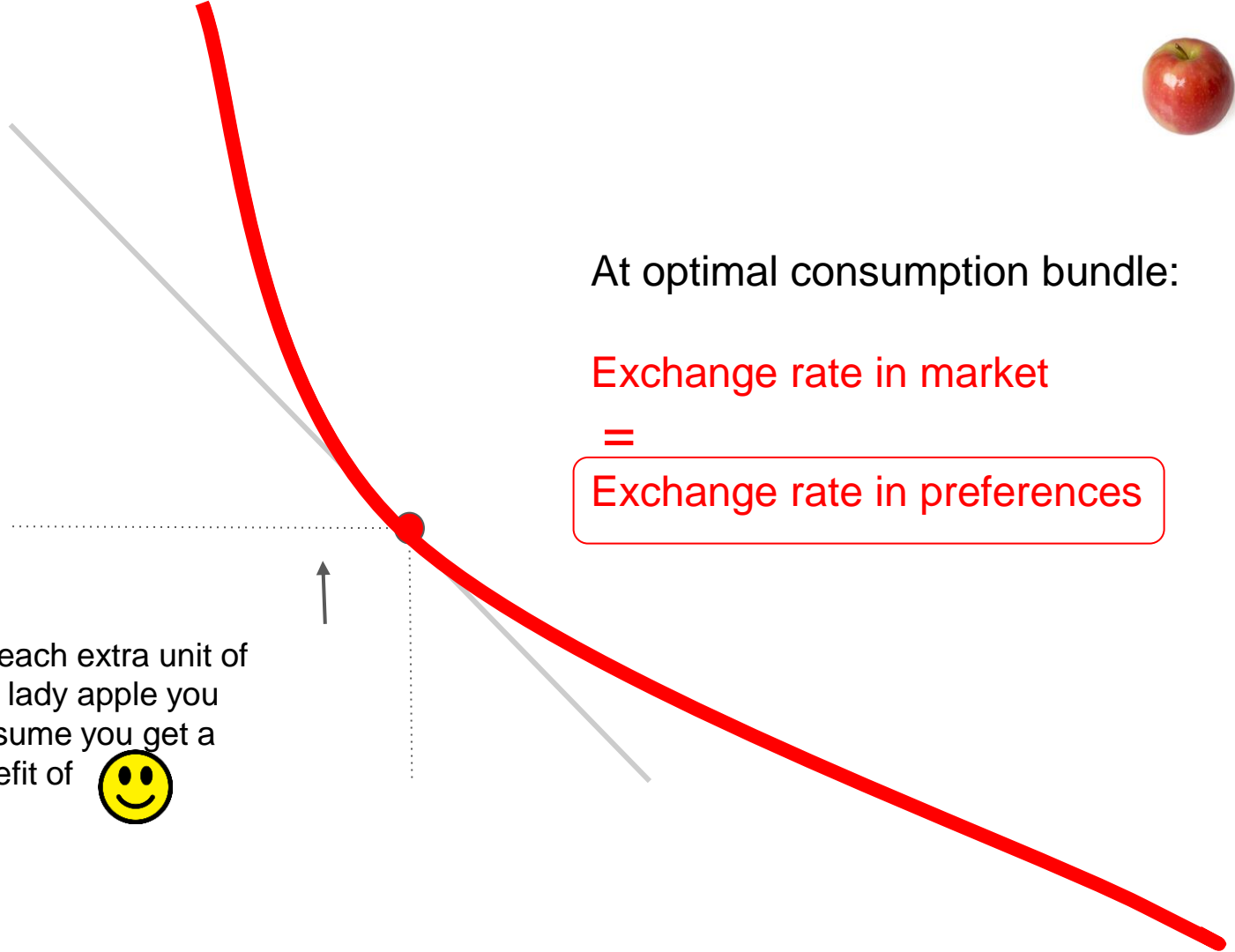
Exchange rate in preferences

You can buy
 $\frac{P_{\text{granny}}}{P_{\text{pink}}}$ more pink
lady apples

Forego one granny
smith and save P_{granny}

The negative of
the slope of the
budget line





For each extra unit of
pink lady apple you
consume you get a
benefit of







At optimal consumption bundle:

Exchange rate in market

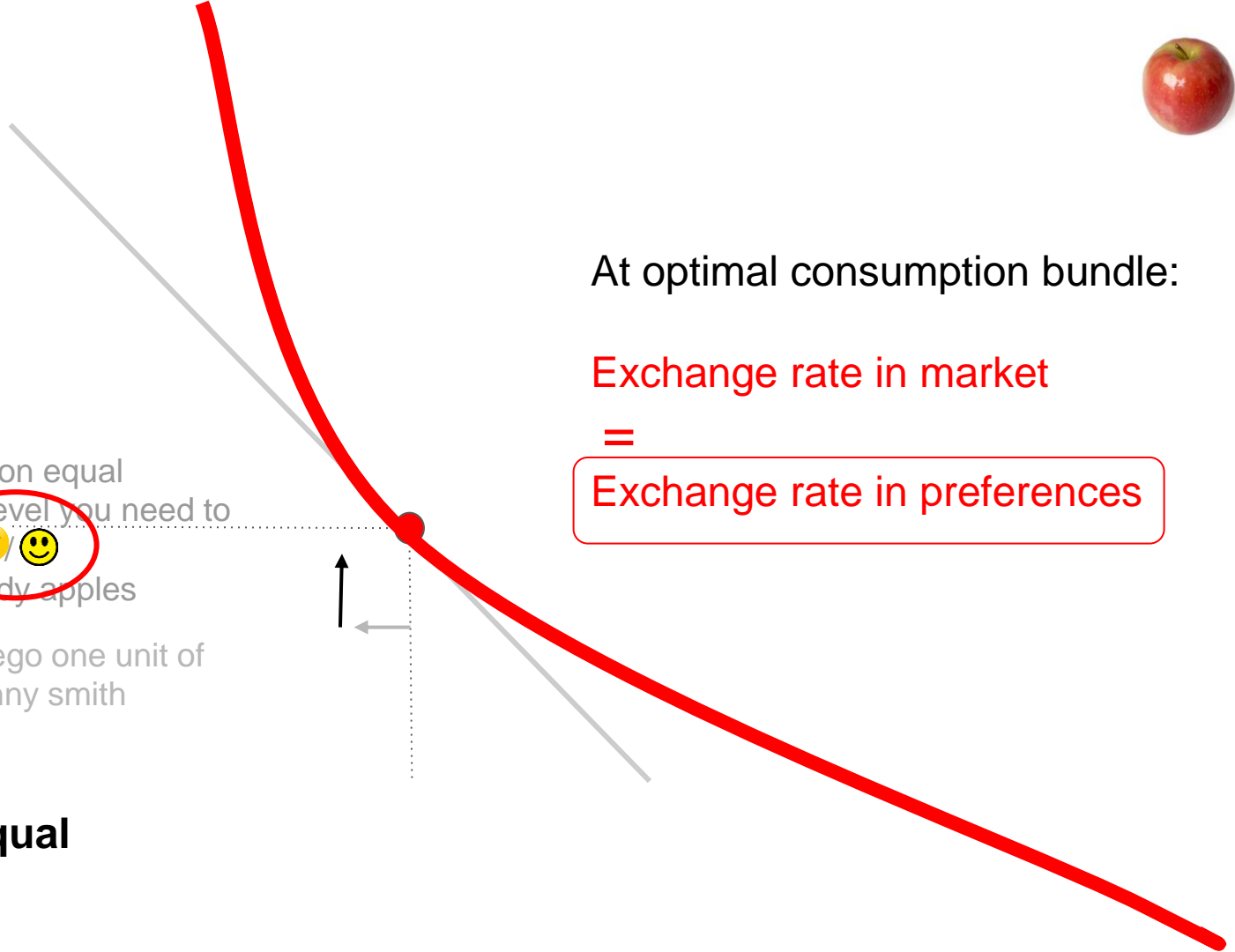
=

Exchange rate in preferences

To get back on equal
preference level you need to
consume  
more pink lady apples

Forego one unit of
granny smith

**The slope of the equal
preference line**



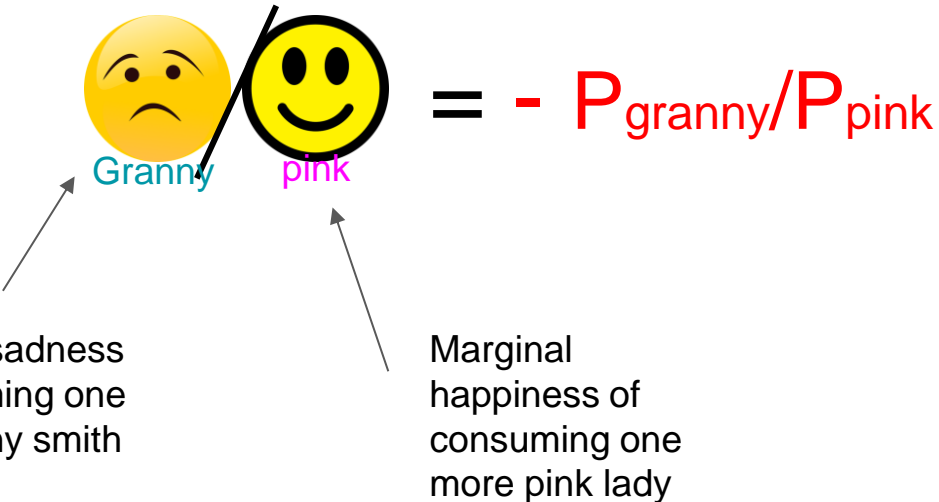
At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

OR



The diagram illustrates the relationship between marginal utility and market price at an optimal consumption bundle. It features two yellow circular icons: a sad face on the left and a happy face on the right, separated by a diagonal line. The sad face is labeled 'Granny' in blue text, and the happy face is labeled 'pink' in pink text. Below the sad face, an arrow points to the text 'Marginal sadness of consuming one less granny smith'. Below the happy face, an arrow points to the text 'Marginal happiness of consuming one more pink lady'. To the right of the icons, the equation $= - P_{\text{granny}}/P_{\text{pink}}$ is displayed in red text.

$$= - P_{\text{granny}}/P_{\text{pink}}$$



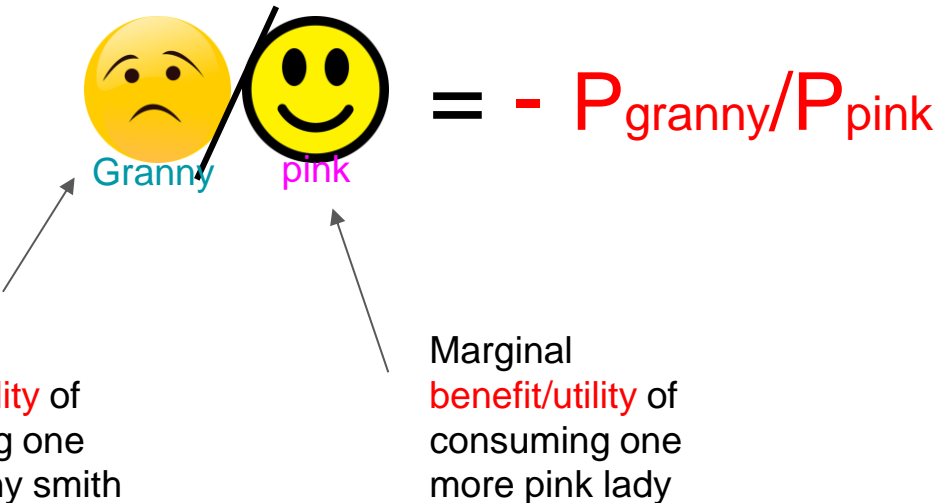
At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

OR



The diagram illustrates the condition for optimal consumption. It features two yellow circular icons representing faces. The left icon is a frowning face, labeled 'Granny' in blue text below it. An arrow points from the text 'Marginal benefit/utility of consuming one less granny smith' to this frowning face. The right icon is a smiling face, labeled 'pink' in pink text below it. An arrow points from the text 'Marginal benefit/utility of consuming one more pink lady' to this smiling face. A thick black diagonal line is drawn across both faces. To the right of the faces, the text '= - P_{granny}/P_{pink}' is written in red.

$$\text{Marginal benefit/utility of consuming one less granny smith} = - \frac{P_{\text{granny}}}{P_{\text{pink}}} \text{Marginal benefit/utility of consuming one more pink lady}$$



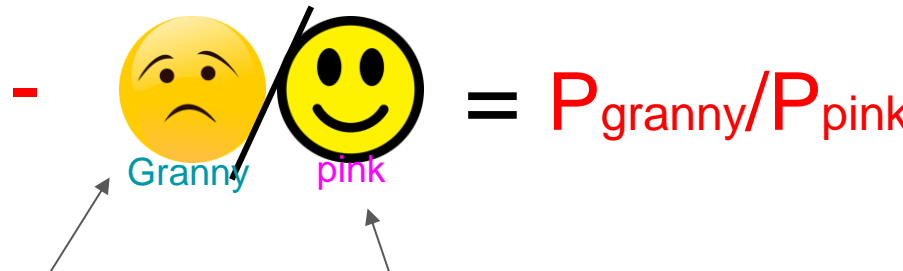
At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

OR



The diagram illustrates the relationship between marginal utility and the market price ratio. It features two yellow circular icons. The left icon is a frowning face with a sad expression, labeled 'Granny' in blue text below it. The right icon is a smiling face with a happy expression, labeled 'pink' in pink text below it. A black diagonal line is drawn across both icons, separating them. To the left of the frowning face is a minus sign (-). To the right of the smiling face is an equals sign (=) followed by the text $P_{\text{granny}}/P_{\text{pink}}$ in red. Below the frowning face, an arrow points to it from the text 'Marginal benefit/utility of consuming one less granny smith'. Below the smiling face, an arrow points to it from the text 'Marginal benefit/utility of consuming one more pink lady'.

$$- \text{Granny} / \text{pink} = P_{\text{granny}}/P_{\text{pink}}$$

Marginal benefit/utility of consuming one less granny smith

Marginal benefit/utility of consuming one more pink lady



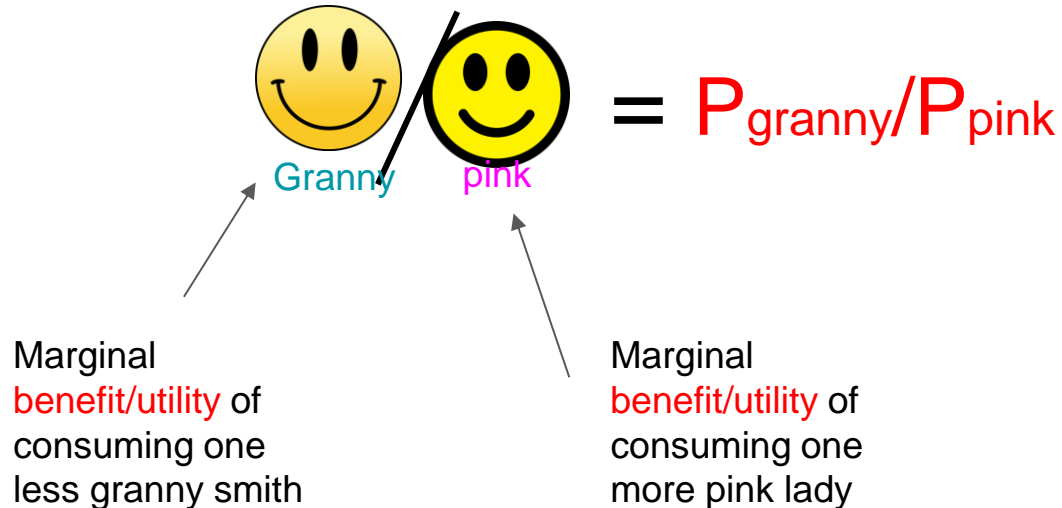
At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

OR



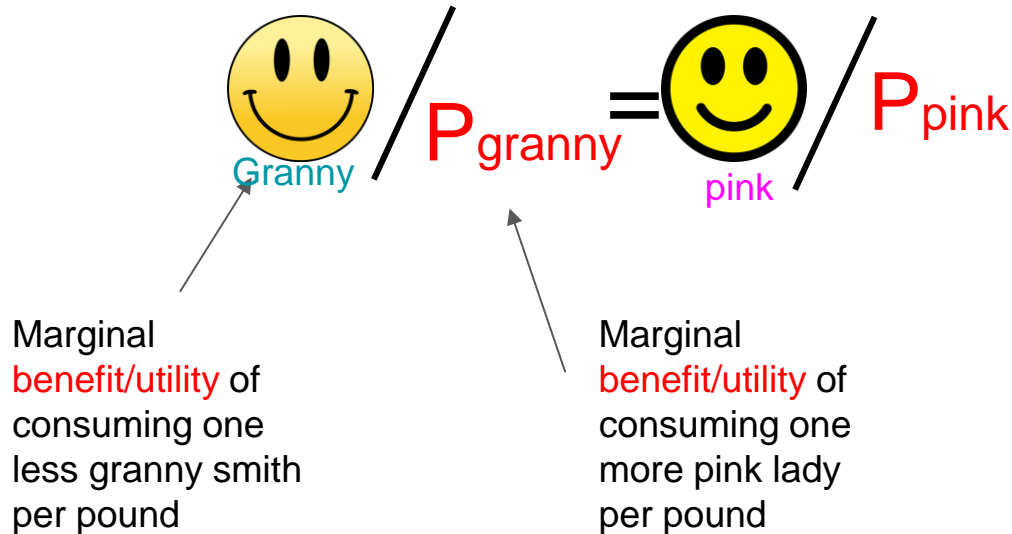
At optimal consumption bundle:

Exchange rate in market

=

Exchange rate in preferences

OR



What have we learned so far?

- How a rational consumer chooses what to buy?
- Ingredients of our model:
 - The consumer knows the different goods he/she could buy.
 - The consumer knows the prices of each good.
 - The consumer has a fixed amount of income they want to spend on the goods.
 - The consumer has “well defined” preferences.
 - Our prediction: The consumer will consume at a point that maximises her preferences!
- The optimal consumption satisfies:
 - Consume at the point at which the slope of the indifference curves is tangent to the slope of the budget line.
- At the optimal consumption point:
 - Exchange rate in market = Exchange rate in preferences