

**Big Question: Why is inflation a problem?**

Calculation of Inflation

What is inflation and how to calculate it using the simple price index and the composite price index ?

**What is inflation?**

Inflation is a consistent rise in the average price level (basket in Germany = 700 goods and services) and the increases in prices are sustained over time. It measures average changes in price level:

Visit [www.destatis.de](http://www.destatis.de) to learn about how the Bundesamt for Statistics measures inflation in Germany. Note: in Germany today the base year that is currently in use is **2015**.

**Price Level: how is inflation measured?**

- ⊙ CPI / RPI
- ⊙ Simple vs composite price index (weighted index)
- ⊙ To express any number as or a % of another number do the following:
  - 1 )  $\frac{\text{change in price}}{\text{base price}} \times 100$ , this gives you the % change
  - 2 )

e.g. Table 1:  $54 - 50 = 4$ . Divide by base =  $4/50 \times 100 = 8\%$

**How to calculate a simple price index?**

1. choose a base period
2. find the price of each good and make a simple price index for each good
3. Income is spent equally on each of the 4 goods

**How to calculate a composite price index?**

1. follow steps 1+2 for a simple price index
2. discover the fraction of income spent on each good: see weights below in blue box.
3. multiply each simple index by the relevant fraction and add the result to form the composite index. See weights below

**Table 1:** Simple price index for goods for country names HY BRASIL

	wheat	honey	mead	sun oil	Simple
1968	50	20	40	10	100
1969	54	16	40	5	84,5
1970	56	19	40	5	89,25
1971	62	21	50	5	101
1972	64	22	50	5	103,25

prices →

**Table 2:** Composite price index for 4 goods for country names HY BRASIL

	wheat	honey	mead	sun tan oil	Composite
1968	100	100	100	100	100.0
1969	108	80	100	50	95.5
1970	112	95	100	50	99.5
1971	124	105	125	50	117.0
1972	128	110	125	50	119.0

Index numbers →

Key: These are the weights for the composite price index. This is where the items in the basket are weighted according to the amount of income spent on each good in the basket. Answers differ significantly. **1971: 119 (weighted) versus 103.25 (simple)**

Weights/Fractions for HY BRASIL:

Weights: **Wheat 25%, honey 20%, mead 50% and Sun tan oil 5%**

**NB** for HP 3 Calculate the change in price of the “whole basket” i.e. multiply each price by the weight and get a total index for each year. Then divide each year using the formula above. E.g. Table 1 multiply each price by the weight and get a total index for each year.

**Example:** So in Table 2 for 1972 that would be:  $128 \times 0.25 + 110 \times 0.20 + 125 \times 0.5 + 10 \times 0.05 = 119$ .

**The inflation rate increased from 1971-1972 by 2% (119-117).**

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See HL 3 2016 Q3 for example. See sample answer below. In this case you are multiplying the price by the weight to get the price index. Then divide the new by the old and multiply by 100 to get the index i.e. 104.34

3. (a) Calculate the consumer price index (CPI) for Country A in 2016. [3]

In 2015, the typical basket costs  
 $5.6 \times 25 + 3.45 \times 18 + 1.2 \times 40 + 8.40 \times 5 + 2.55 \times 12 = 322.70$  [1]

In 2016, the typical basket costs  
 $6.3 \times 25 + 3.5 \times 18 + 1.05 \times 40 + 9.20 \times 5 + 2.35 \times 12 = 336.70$  [1]

*Any valid working is sufficient for [1].*

The CPI in 2016 =  $\frac{336.70}{322.70} \times 100$   
= 104.34 [1]

*An answer of 104.34 without workings is sufficient for [1].  
OFR applies, assuming that the correct method of calculating the cost of the baskets is applied.*

See German inflation indices below: Index numbers are calculated for each of the categories of good in the basket of goods used to calculate the inflation index.

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Verbraucherpreisindex für Deutschland August 2017

Gesamtindex / Teilindex	Gewichtung	Index 2010 = 100	Veränderung gegenüber Vorjahres- zeitraum	Veränderung gegenüber Vormonat
	in %		in %	
Gesamtindex	1 000,00	109,5	1,8	0,1
Nahrungsmittel und alkoholfreie Getränke	102,71	115,7	2,8	-0,2
Nahrungsmittel	90,52	115,9	3,0	-0,2
Fleisch und Fleischwaren	20,76	115,9	2,6	0,2
Obst	8,76	128,1	0,5	0,1
Gemüse	11,26	102,5	-4,5	-2,2
Alkoholische Getränke und Tabakwaren	37,59	119,8	2,8	0,1
Bekleidung und Schuhe	44,93	105,9	2,7	2,5
Wohnung, Wasser, Strom, Gas und andere Brennstoffe	317,29	109,6	1,6	0,1
Nettokalmmiete	209,93	109,9	1,7	0,1
Haushaltsenergie	68,19	108,8	1,4	0,2
Strom	26,21	128,1	2,0	0,1
Gas	14,46	103,3	-2,9	0,1
Leichtes Heizöl	11,11	81,9	10,4	1,9
Möbel, Leuchten, Geräte und anderes Haushaltszubehör	49,78	104,0	0,5	-0,2
Gesundheitspflege	44,44	107,3	1,8	0,1
Verkehr	134,73	107,5	2,7	0,4
Kraftstoffe	38,37	94,0	3,9	0,9
Superbenzin	28,38	94,8	3,6	0,7
Dieselkraftstoff	9,19	92,1	4,8	1,3
Nachrichtenübermittlung	30,10	89,6	-0,6	0,1
Freizeit, Unterhaltung und Kultur	114,92	111,1	1,6	-0,4