

## Price Indexes

There is more than one method for constructing a price index. The easiest to understand is probably the *weighted-average* method explained in this activity. This method compares the total cost of a fixed market basket of goods in different years. The total cost is weighted by multiplying the price of each item in the basket by the number of units of the item in the basket and then adding up all the prices. The cost of the basic market basket in the current year is then expressed as a percentage of the cost of the basic market basket in the base year using this formula:

$$\text{index number} = \frac{\text{current-year cost}}{\text{base-year cost}} \times 100$$

Multiplying by 100 converts the number so it is comparable to the base-year number. The base year always has an index number of 100 since the current-year cost and the base-year cost of the market basket are the same in the base year.

### Part A

#### Constructing a Price Index

Using this information, let us now construct a price index. Fill in the blanks in Figure 13.1.



Figure 13.1

#### Constructing a Price Index

Basic Market Basket Item	No. of Units	Year 1		Year 2		Year 3	
		Price Per Unit	Cost of Market Basket	Price Per Unit	Cost of Market Basket	Price Per Unit	Cost of Market Basket
Cheese	2 lbs.	\$1.75	\$3.50	\$1.50	\$3.00	\$1.50	\$3.00
Blue Jeans	2 pair	12.00	24.00	15.50		20.00	40.00
Gasoline	10 gals.	1.25	12.50	1.60	16.00	2.70	
Total Expenditure	—	—	\$40.00	—	\$50.00	—	

- We now have the information needed to construct a price index. The first step is to pick a base year and apply the formula. If Year 1 is selected as the base year, the index number for Year 1 is  $(\$40 / \$40) \times 100 = 100$ . The index number for Year 2 is  $(\$50 / \$40) \times 100 = 125$  and the index number for Year 3 is  $(\text{_____} / \$40) \times 100 = \text{_____}$ .
- These index numbers indicate that there was a 25 percent increase in prices between Year 1 and Year 2.
  - What is the percentage increase between Year 1 and Year 3? \_\_\_\_\_.
  - What is the percentage increase between Year 2 and Year 3? \_\_\_\_\_.

Adapted from Phillip Saunders, *Introduction to Macroeconomics: Student Workbook*, 18th ed. (Bloomington, Ind., 1998). Copyright 1998 Phillip Saunders. All rights reserved.

**Part B**  
**Changing the Base Year**

We need not have chosen Year 1 to be our base year. To determine if our choice of base year influenced the results, let's use Year 2 as our base year and recompute both the index numbers and the percentage changes between years. The first percentage change in prices has been done for you.



Figure 13.2  
**Changing the Base Year of a Price Index**

Year	Index Numbers (Year 2 = Base)	Percentage Change in Prices (calculated by using changes in index numbers)	
Year 1	$(\$40 / \$50) \times 100 = 80$	Between Yr. 1 and Yr. 2	$([100 - 80] / 80) \times 100 = 25\%$
Year 2	$(\$50 / \$50) \times 100 = 100$	Between Yr. 2 and Yr. 3	
Year 3	$(\$70 / \$50) \times 100 = 140$	Between Yr. 1 and Yr. 3	

3. Do the index numbers change when the base year is changed from Year 1 to Year 2? \_\_\_\_\_
4. Does the percentage change in prices between years change when the base year is changed from Year 1 to Year 2? \_\_\_\_\_ Why or why not?
5. Would the price index numbers you have computed above change if a different set of expenditure patterns were selected for weighting? \_\_\_\_\_ Why?
6. Under what conditions would each price index number computed above be a cost-of-living index?
7. Would each price index number computed above be accurate if the quality of the goods in the basic market basket changed? \_\_\_\_\_ Explain why.
8. How do you know if the quality of a product changes for the better? For the worse?