

Section 2 Macroeconomics: Answers to Test your understanding quantitative questions (Chapters 8–12)

Answers have been provided for all quantitative Test your understanding questions throughout the textbook.

Chapter 8 The level of overall economic activity

Test your understanding 8.6 (page 230)

1 $GDP = C + I + G + (X - M)$

$$125 + 35 + 46 + (12 - 17) = 201$$

GDP = Ftl 201 billion

2 $GNI = GDP + \text{income from abroad} - \text{income sent abroad}$

$$201 + 4.5 - 3.7 = 201.8$$

GNI = Ftl 201.8 billion

4 (a) Base year is 2007.

(b)

	2006	2007	2008	2009	2010
Real GDP, billion Lkl (in 2007 Lkl)	20.2	20.7	21.4	21.0	21.5

- (c) Real GDP is the same as nominal GDP in 2007, because 2007 is the base year.
- (d) Nominal GDP is calculated in nominal prices, while real GDP is calculated in constant (2007) prices. Real GDP fell because the amount of output produced in 2009 valued in constant (2007) prices actually fell relative to the amount of output produced in 2008, i.e. a smaller amount of output was produced. Nominal GDP on the other hand increased because prices on average increased (this can be seen in the increase in the GDP deflator) making the value of nominal output greater.
- (e) Real GDP increased because the amount of output produced in 2010 valued in constant (2007) prices actually increased relative to the amount of output produced in 2009, i.e. a larger amount of output was produced. Nominal GDP on the other hand fell because prices on average fell (this can be seen in the decrease in the GDP deflator) lowering the value of output in nominal terms.

Chapter 9 Aggregate demand and aggregate supply

Test your understanding 9.8 (page 264)

3 multiplier = $\frac{1}{1 - MPC}$

(a) $MPC = \frac{4}{5}$: multiplier = $\frac{1}{1 - \frac{4}{5}} = \frac{1}{\frac{1}{5}} = 5$

(b) $MPC = \frac{3}{4}$: multiplier = $\frac{1}{1 - \frac{3}{4}} = \frac{1}{\frac{1}{4}} = 4$

(c) $MPC = \frac{2}{3}$: multiplier = $\frac{1}{1 - \frac{2}{3}} = \frac{1}{\frac{1}{3}} = 3$

(d) $MPC = \frac{1}{2}$: multiplier = $\frac{1}{1 - \frac{1}{2}} = \frac{1}{\frac{1}{2}} = 2$

- 4 The larger the MPC , the larger the multiplier; the smaller the MPC , the smaller the multiplier. The reason is that if the MPC is large, there are small leakages (withdrawals) from the spending stream; therefore the consumption spending that feeds back into the spending stream is larger, making the multiplier larger.

Chapter 10 Macroeconomic objectives I: Low unemployment, low and stable rate of inflation

Test your understanding 10.1 (page 268)

5 Unemployment rate = $\frac{3.1}{27.3} \times 100 = 11.35\%$

Test your understanding 10.4 (page 280)

- 2 (a) Real income falls by 3%.
(b) Real income falls by 13%.
(c) Real income remains unchanged.

Test your understanding 10.6 (page 283)

- 1 (a) Real income increases by 8%.
 (b) Real income falls by 8% (–8%).
 (c) Real income increases by 1%.

Test your understanding 10.7 (page 286)

- 1 (a) 1999
 (b) 1999–2000: 5% (= 105 – 100)
 1999–2001: 7% (= 107 – 100)
 (c) 1998–99: $\frac{100-95}{95} \times 100 = \frac{5}{95} \times 100 = 5.3\%$
 2000–1: $\frac{107-105}{105} \times 100 = \frac{2}{105} \times 100 = 1.9\%$
 (d) 1997–98, because the price index falls from 97 to 95.
 (e) The rates of inflation during this time period (calculated above) are:
- 1998–99: 5.3%
 1999–2000: 5.0%
 2000–1: 1.9%

Disinflation occurred in 1999–2000 and in 2000–1, because in both cases the rate of inflation is lower than in the previous year.

- 3 (a)

	Quantity in basket	<i>P</i> (£) 2008	Value of basket 2008	<i>P</i> (£) 2009	Value of basket 2009	<i>P</i> (£) 2010	Value of basket 2010	<i>P</i> (£) 2011	Value of basket 2011
Pizzas	25	7	175	6	150	7	175	6	150
DVDs	9	15	135	17	153	18	162	18	162
Bus rides	47	2	94	4	188	4	188	3	141
Total value			404		491		525		453



Price index:

$$2008: \frac{404}{491} \times 100 = 82.3$$

2009: 100 (since this is the base year)

$$2010: \frac{525}{491} \times 100 = 106.9$$

$$2011: \frac{453}{491} \times 100 = 92.3$$

- (b)** The weights here are the quantity (number of units) of each good in the basket, appearing in the first column of the table.

(c) 2008–9: $\frac{100 - 82.3}{82.3} \times 100 = 21.5\%$

2009–10: 6.9% (we can 'read' this off directly from the price index)

$$2010–11: \frac{92.3 - 106.9}{106.9} \times 100 = -13.7\%$$

- (d)** Inflation occurred in 2008–9 and 2009–10, because there was an increase in the average price level.

Deflation occurred in 2010–11, because there was a decrease in the average price level.

Disinflation occurred in 2009–10 because the rate of inflation (6.9%) was lower than in the previous year (21.5%).

- (e)** Use the same method as in part (a) (and in the textbook, pages 283–4) to calculate the price index:

2008 76.9

2009 93.5

2010 100

2011 86.3

- (f)** You should find that the rates of inflation/deflation are the same as those you have calculated in part (c) above (any small difference is due to rounding).
- (g)** See part (f) above.
- (h)** No, it would not make sense. Each price index is calculated relative to a particular base year, and the index numbers make sense only in relation to that base year. (You can see this by comparing the index numbers of the two price indices you calculated above.)



Chapter 11 Macroeconomic objectives II: Economic growth and equity in the distribution of income

Test your understanding 11.1 (page 295)

- 4 (a) 2007–8: $\frac{1611-1579}{1579} \times 100 = 2.03\%$
- (b) 2008–9: $\frac{1597-1611}{1611} \times 100 = -0.87\%$
- (c) In 2008–9.
- 5 This can happen if the population is growing more rapidly (a higher rate of growth) than nominal GDP.
- 6 $2.2\% - 1.5\% = 0.7\%$ growth in real GDP *per capita*.

Test your understanding 11.8 (pages 316–17)

- 1 (a) Zero income tax.
- (b) Income between \$10 001 and \$25 000 is taxed at 9%.
- $\$15\,700 - \$10\,000 = \$5\,700$
- $\$5\,700 \times 0.09 = \513 is the amount of income tax paid.
- (c) Income between \$10 001 and \$25 000 is taxed at 9%; therefore tax paid is $\$15\,000 \times 0.09 = \$1\,350$
- Income above \$25 000 and less than \$55 000 is taxed at 22%:
- $\$31\,000 - \$25\,000 = \$6\,000$
- $\$6\,000 \times 0.22 = \$1\,320$
- Therefore total income tax is $\$1\,350 + \$1\,320 = \$2\,670$
- (d) For income between \$10 001 and \$25 000, income tax is \$1 350 (see part (c)).
- Income above \$25 001 and less \$55 000 is taxed at 22%:
- $\$47\,000 - \$25\,000 = \$22\,000$
- $\$22\,000 \times 0.22 = \$4\,840$
- Therefore total income tax is $\$1\,350 + \$4\,840 = \$6\,190$



- (e) For income between \$10 001 and \$25 000, income tax is \$1350.

For income between \$25 001 and \$55 000, income tax is $\$30\,000 \times 0.22 = \6600

For income between \$55 001 and \$115 000, income tax is $\$60\,000 \times 0.40 = \$24\,000$

For income above \$115:

$$\$120\,000 - \$115\,000 = \$5000$$

$$\$5000 \times 0.55 = \$2750$$

Therefore total income tax is $\$1350 + \$6600 + \$24\,000 + \$2750 = \$34\,700$

- 2 (a) Average income tax rates:

$$\$6500: \quad 0$$

$$\$15\,700: \quad \frac{\$513}{\$15\,700} \times 100 = 3.3\%$$

$$\$31\,000: \quad \frac{\$2670}{\$31\,000} \times 100 = 8.6\%$$

$$\$47\,000: \quad \frac{\$6190}{\$47\,000} \times 100 = 13.2\%$$

$$\$120\,000: \quad \frac{\$34\,700}{\$120\,000} \times 100 = 28.9\%$$

- (b) The average tax rate increases as income increases because this is a progressive tax system.

- (c) Marginal tax rates:

$$\$6500: \quad 0$$

$$\$15\,700: \quad 9\%$$

$$\$31\,000: \quad 22\%$$

$$\$47\,000: \quad 22\%$$

$$\$120\,000: \quad 55\%$$

- 3 (a) $\$25\,000 \times 0.20 = \5000

(b) $\frac{\$5000}{\$31\,000} \times 100 = 16.1\%$

- 4 $8.6\% + 16.1\% = 24.7\%$