CHAPTER 8
EARNINGS PER SHARE

Quick test

Question 1

20X8

Weighted average no. of shares:

	Shares in issue	*Time factor*	
1 Jan – 30 April	3,000,000	4/12	1,000,000
1 May – 31 Dec	4,000,000	8/12	2,666,667
			3,666,667

EPS = $\frac{750{,}000}{3{,}666{,}667}$ = 20.5p

20X9

1,600,000 new shares issued – treat as if issued from beginning of year:

EPS = $\frac{1{,}200{,}000}{4{,}000{,}000 + 1{,}600{,}000}$ = 21.4p

[Alternative way of looking at this is to calculate a 'bonus fraction'.
Bonus fraction = 7/5 (5 shares to begin with, after 2 for 5 bonus issue, 7 shares)]

20X8 comparative adjusted to $\frac{750{,}000}{3{,}666{,}667 \times 7/5}$ = 14.6p

Question 2

(a) Earnings = Profits after tax, non-controlling interests, preference dividends
= 2,412,000 – 45,000
= £2,367,000

Theoretical ex-rights value per share:

		£
Pre-rights share value	4 x £1.50	6.00
Rights issue	1 x £1.00	1.00
	5	7.00

Theoretical ex-rights value per share = 7.00 / 5 = £1.40

Bonus fraction = 1.50 / 1.40

Weighted average no. of shares:

	Shares in issue	*Time factor*	
1/1/X6 – 31/3/X6	12,000,000		
x bonus fraction	x 1.50/1.40	3/12	3,214,286
1/4/X6 – 31/12/X6	15,000,000	9/12	11,250,000
			14,464,286

EPS for 20X6 = 2,367,000 / 14,464,286 = 16.4p

(b) EPS for 20X5 = 15p

Restated EPS = Earnings / Restated no. of shares OR Divide EPS by bonus fraction

= 15p / (1.50 / 1.40)
= 14p

(c) The basic EPS figure (16.4p) will be stated on the face of the statement of profit or loss, together with the adjusted EPS (14p) for the previous period. The basis of calculation should be disclosed, revealing the amount of the earnings and the number of shares used in the calculation.

Develop your understanding

Question 3

Earnings per share (basic and diluted) is required to be shown on the face of the statement of profit or loss for all listed companies.

EPS is a key measure of return to the equity investor – it provides an indication of the total earnings available to the equity shareholder on a per share basis, and is therefore comparable to other companies. Basic EPS uses the profits available to the equity shareholder after all other demands on these profits have been met (including servicing of debt, tax and returns to preferred shareholders). These profits can essentially be used either to provide a dividend to the equity shareholder or to reinvest in the company. Thus EPS is a measure of the wealth creating abilities of a company.

It is used in the calculation of the all-important price earnings (PE) ratio (Market price per share / Earnings per share) which is published daily for listed companies, and which is used by investors as a measure of the market's confidence in a company. Consistency in the calculation of this ratio is therefore important.

Basic EPS uses an all-encompassing earnings figure (total profit / loss after tax and preference dividends), yet the results of a complex organisation arise from the different entities in a group, and different business segments within these, all of which will have performed differently, some more successfully than others. Basic EPS is therefore based on an amalgamated profit / loss figure from all the businesses and segments, and can therefore only provide an amalgamated measure of performance.

Companies also acquire and dispose of other entities and business segments during an accounting period. All of these activities will affect current results and future forecasts. Although the results of entities and segments disposed of will probably be disclosed separately as discontinued operations, basic EPS includes these, although recalculations of earnings can be done to exclude these results. In addition one-off or unusual events will affect a company's profits in a particular accounting period, and although a company may decide to disclose information about the effect on results from these so that adjustments to EPS calculations can be made, there is significant judgement in the application of the recommendation for this by IAS 1.

Basic EPS should therefore be viewed with all of this in mind. It is not the only measure of a company's performance, and to fully understand the performance of a complex business organisation, many more financial ratios need to be calculated and analytical techniques applied in conjunction with the interpretation of EPS. Many companies do calculate additional EPS figures based on other profit figures for these reasons. This is permitted by IAS 33, but if done, a full reconciliation of these alternative EPS figures to basic EPS has to be disclosed.

Question 4

Year ended 31 December 20X8

Theoretical ex-rights value per share

$$= \frac{2 \times 1.65 + 3 \times 0.90}{2 + 3} = £1.20$$

Bonus fraction = 1.65/1.2 = 1.375

Period	*No. of shares*	*Time factor*	*Weighted no. of shares*
1.1.X8-31.8.X8	7,500,000 x 1.375	8/12	6,875,000
1.9.X8-31.12.X8	18,750,000	4/12	6,250,000
	(7,500 x 5/2)		13,125,000

20X8 EPS $= \frac{2{,}300{,}000 - 24{,}000}{13{,}125{,}000} = 17.3p$

Original 20X7 EPS $= \frac{3{,}460{,}000 - 24{,}000}{7{,}500{,}000} = 45.8p$

Restated 20X7 EPS $= \frac{45.8}{1.375} = 33.3p$

Year ended 31 December 20X9

No. of bonus shares issued = 40% x 18,750,000/3 = 2,500,000
Total no. of shares in issue after bonus issue = 18,750,000 + 2,500,000 = 21,250,000

Bonus fraction = 21,250/18,750

20X9 EPS = $\frac{3{,}970{,}000 - 24{,}000}{21{,}250{,}000}$ = 18.6p

Restated 20X8 EPS = $\frac{17.3p}{21{,}250/18{,}750}$ = 15.3p

Question 5

20X4

Earnings available to equity shareholders

		£000
Profit after tax		2,150
Preference dividend	4,600 x 6%	(276)
		1,874

Theoretical ex-rights value per equity share = $\frac{5 \times 0.90 + 1 \times 0.60}{6}$
= 0.85

Bonus fraction = 0.90 / 0.85

Weighted average no. of shares:

Period	*No. of shares*	*Time factor*	*Weighted no. of shares*
1/1/X4 – 30/9/X4	8,280,000 x 0.90/0.85	9/12	6,575,294
1/10/X4 – 31/12/X4	9,936,000	3/12	2,484,000
			9,059,294

20X4 EPS = $\frac{£1{,}874{,}000}{9{,}059{,}294}$
= 20.7p

Restated 20X3 EPS = 20.5 / (0.90/0.85)
= 19.4p

20X5

Earnings available to equity shareholders

		£000
Profit after tax		2,770
Preference dividend	4,600 x 6%	(276)
		2,494

No. of new shares issued at full market price = $\frac{2{,}750{,}000}{1.10}$ = 2,500,000

Weighted average no. of shares:

Period	*No. of shares*	*Time factor*	*Weighted no. of shares*
1/1/X5 – 30/4/X5	9,936,000	4/12	3,312,000
1/5/X5 – 31/12/X5	12,436,000	8/12	8,290,667
			11,602,667

20X5 EPS = $\frac{£2{,}494{,}000}{11{,}602{,}667}$

= 21.5p

No restatement of 20X4 EPS required.

Question 6

Basic EPS = $\frac{£1.5 \text{ million}}{6 \text{ million}}$ = 25p

Diluted EPS

Where there are differing conversion terms at different dates, the terms to be used for this calculation are those which result in the *largest* number of additional shares being issued. The largest number of additional shares will result from the conversion terms on 31 December 20X4 = $\frac{7.5 \text{ million}}{125}$ x 40 = 2,400,000

	£
Earnings for basic EPS	1,500,000
Finance cost saved on conversion, net of tax	
7,200,000 x 8.5% x (100-20)%	489,600
Earnings for diluted EPS	1,989,600

Diluted EPS = $\frac{1{,}989{,}600}{6{,}000{,}000 + 2{,}400{,}000}$ = 23.7p

Take it further

Question 7

Importance of EPS:

- Denominator in the PE ratio, which is one of the most widely publicised ratios for a public company
- PE ratio is used by those making investment decisions, because by combining it with a forecast of company earnings, analysts can determine whether shares are under or over-valued
- PE ratio reflects investors' confidence in the company
- EPS is a key return ratio for the equity investor as it summarises the earnings available to the equity investor and is not influenced by dividend policy
- EPS is used in the earnings yield calculation
- EPS is used by investors to estimate future growth

Limitations for investors who are comparing the performance of different companies:

- EPS is all-inclusive (deliberately, so companies do not try to manipulate what is included in earnings) so one-off items that impact on earnings will affect the EPS for that year
- Even though companies can calculate and disclose different EPS figures, these will not be consistent between companies
- Earnings are affected by management's choice of accounting policies – e.g. valuation v. cost model for non-current assets which impacts on depreciation
- Movements in capital affect EPS, so one company may have a bonus issue of shares one year, which greatly affects its EPS

Question 8

Year ended 31 December 20X7

No. of equity shares in issue at 1 Jan 20X7 = 1,800,000 x 5 = 9,000,000

No. of shares issued on 1 March 20X7 = $\frac{1{,}110{,}000}{1.85}$ = 600,000

Weighted average no. of shares:

Time period	*No. of shares*	*Time factor*	*Weighted average*
1 Jan – 28 Feb	9,000,000	2/12	1,500,000
1 Mar – 31 Dec	9,600,000	10/12	8,000,000
			9,500,000

Earnings = PAT - Pref. dividend
= 960,000 - 6% x 600,000

= £924,000

Basic EPS = 924,000 / 9,500,000 = 9.73p

No change to **20X6 comparative** = (846,000 – 36,000) / 9,000,000 = 9p

Diluted EPS

No. of shares under share option	500,000
No. of these shares to be issued at fair value	
1.50/2.10 x 500,000	(357,143)
Notional no. of shares issued at no value	142,857

Diluted EPS = 924,000 / (9,500,000 + 142,857) = 9.58p

Year ended 31 December 20X8

No. of shares issued in rights issue = 9,600,000 / 4 = 2,400,000

Theoretical ex-rights value per share = (4 x 2.50 + 1 x 1.80) / 5 = £2.36

Bonus fraction = 2.50/2.36

Weighted average no. of shares:

Time period	*No. of shares*	*Time factor*	*Weighted average*
1 Jan – 30 Apr	9,600,000 x 2.50/2.36	4/12	3,389,831
1 May – 31 Dec	12,000,000	8/12	8,000,000
			11,389,831

Basic EPS = (1,250,000 – 36,000) / 11,389,831 = 10.66p

20X7 comparative changed to 924,000 / (9,500,000 x 2.50/2.36) = 9.18p

Diluted EPS

No. of shares under share option	500,000
No. of these shares to be issued at fair value	
1.50/2.60 x 500,000	(288,462)
Notional no. of shares issued at no value	211,538

Diluted EPS = 1,214,000 / (11,389,831 + 211,538) = 10.46p

Question 9

(i) Number of equity shares in issue at 1 January 20X6

	'000
Equity shares at 31 December 20X6	12,500
Less:	
Options exercised	(1,200)
Shares issued	(3,600)
Equity shares at 1 January 20X6	7,700

(ii) Basic EPS

Earnings	£000
Profit after tax	4,820
Less: Cumulative preference dividends	(70)
	4,750

Weighted average no. of shares:

Time period	*No. of shares* '000	*Time factor*	*Weighted average* '000
1 Jan – 31 July	7,700	7/12	4,492
1 Aug – 30 Sep	11,300	2/12	1,883
1 Oct – 31 Dec	12,500	3/12	3,125
			9,500

Basic EPS = £4,750 / 9,500 = 50p

Diluted EPS

Increase in earnings attributable to equity holders on conversion of potential equity shares:

		Increase in earnings £000	*Increase in number of equity shares* '000	*Earnings per incremental share* £000
Share options				
Increase in earnings		Nil		
Incremental shares issued for no consideration				
1st option	[1,200 – (1,200 x 2/5)] x 9/12		540	
2nd option	2,000 – (2,000 x 3/5)		800	
3rd option	1,000 – (1,000 x 4/5)		200	
			1,540	Nil

Convertible preference shares				
Increase in earnings	7% x 1,000,000	70		
Incremental shares	1,000,000 x 3/20		150	0.467
6% convertible bonds				
Increase in earnings	6,000,000 x 6% x 0.65	234		
Incremental shares	6,000,000/1,000 x 200		1,200	0.195

The order in which to include the dilutive instruments is therefore:
1. Share options
2. 6% convertible bonds
3. Convertible preference shares

Calculation of diluted EPS:

	Profit £000	*No. of equity shares* '000	*Per share* £
Net profit	4,820		
Preference dividends	(70)		
Profit attributable to equity shareholders	4,750	9,500	0.5
Share options	-	1,540	
	4,750	11,040	0.430 Dilutive
6% convertible bonds	234	1,200	
	4,984	12,240	0.407 Dilutive
Convertible preference shares	70	150	
	5,054	12,390	0.408 Anti-dilutive

Because diluted EPS is increased when taking the convertible preference shares into account, these shares are anti-dilutive and are ignored in the calculation of diluted EPS.

Diluted EPS = 40.7p

Question 10

(a) Bonus issue occurred on 1 July, hence no. of shares in issue prior to this is inflated by the bonus fraction of (10 + 2) / 10 = 1.2

Time period	*Number of shares outstanding*	*Weight*	*Weighted no. of shares*
1 Jan – 30 Apr	800,000 x 1.2 = 960,000	4/12	320,000
1 May – 30 Jun	1,100,000 x 1.2 = 1,320,000	2/12	220,000
1 July – 30 Sep	1,320,000	3/12	330,000
1 Oct – 31 Dec	1,720,000	3/12	430,000
	Weighted average no. of shares		1,300,000

(b)

	Increase in earnings (after tax)	Increase in number of equity shares	Earnings per incremental share
Option A			
Increase in earnings	Nil		
Incremental shares:			
700,000 x (1 - £3 / £5) x 6/12		140,000	Nil
Convertible preference shares			
Increase in earnings:			
£1,200,000 x 6%	£72,000		
Incremental shares		1,200,000	£0.06
Convertible bonds			
Increase in earnings:			
£1,300,000 x 8% x 85%	£88,400		
Incremental shares:			
£1,300,000 / £10		130,000	£0.68

Note
Option B is anti-dilutive because its exercise price (£6.00 per share) is higher than the average market price of Juno's equity shares for 20X3 (£5.00 per share).

(c)

	Net profit attributable to equity shareholders £	No. of equity shares	Earnings per share £	
Net income	1,172,000			
Undeclared divided on cumulative preference shares: £1,200,000 x 6%	(72,000)			
Basic EPS	1,100,000	1,300,000	0.846	
Option A	-	140,000		
	1,100,000	1,440,000	0.764	Dilutive
Convertible preference shares	72,000	1,200,000		
	1,172,000	2,640,000	0.444	Dilutive
Convertible bonds	88,400	130,000		
	1,260,400	2,770,000	0.455	Anti-dilutive

Basic EPS = 84.6p
Diluted EPS = 44.4p

(d) It is not true that options will always be included in calculating diluted earnings per share. They are included in the calculation only when they are dilutive.

In determining the number of additional equity shares issued from the exercise of options, the assumed proceeds received from the exercise of these options are deemed to have been used to buy back the company's own equity shares from the market at the fair market price. The average market price for the period is used to represent this fair market price. The difference between the number of equity shares issued and the number of equity shares that would have been bought back at the average market price of equity shares during the period shall be treated as an issue of equity shares for no consideration.

From the above discussion, options are dilutive only when the average market price of equity shares during the period exceeds the exercise price of the options. When the fair market price of the company's equity shares is lower than the exercise price of the options, option holders will not exercise the options as they can buy the shares from the market at a cheaper price.

In the question, Option A is dilutive because its exercise price is lower than the average market price of equity shares during the year. As shown in the answer to part (b), the incremental number of equity shares is 140,000. However, since the exercise price of Option B is higher than the average market price of equity shares during the year, this option is anti-dilutive because both the incremental number of equity shares and the incremental EPS are negative. The weighted average incremental number of equity shares resulting from exercising Option B is computed as below:

Number of shares assumed to be issued under option	500,000
Less: Number of shares assumed to be bought back:	
500,000 x £6 / £5	(600,000)
Increase in number of shares outstanding	(100,000)
Proportion of the year outstanding (5 months from 1 August to 31 December)	x 5/12
Weighted average increase in number of shares	(41,667)