

# Formulae

The following formulae will be used in business management external assessment. A copy of the formulae will be provided to students for the examination.

## Formulae for ratio analysis (SL/HL)

### Profitability ratios (SL/HL)

$$\text{Gross profit margin} = \frac{\text{gross profit}}{\text{sales revenue}} \times 100$$

$$\text{Net profit margin} = \frac{\text{net profit before interest and tax}}{\text{sales revenue}} \times 100$$

### Liquidity ratios (SL/HL)

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{Acid test (quick) ratio} = \frac{\text{current assets} - \text{stock}}{\text{current liabilities}}$$

### Efficiency ratios (SL/HL)

$$\text{Return on capital employed (ROCE)} = \frac{\text{net profit before interest and tax}}{\text{capital employed}} \times 100$$

where *capital employed* = loan capital (or long-term liabilities) + share capital + retained profit

### Efficiency ratios (HL only)

$$\text{Stock turnover (number of times)} = \frac{\text{cost of goods sold}}{\text{average stock}}$$

or

$$\text{Stock turnover (number of days)} = \frac{\text{average stock}}{\text{cost of goods sold}} \times 365$$

where *cost of goods sold* is an approximation of total credit purchases

$$\text{and } \textit{average stock} = \frac{\text{opening stock} + \text{closing stock}}{2}$$

$$\text{Debtor days ratio (number of days)} = \frac{\text{debtors}}{\text{total sales revenue}} \times 365$$

where *total sales revenue* is an approximation of total credit sales

$$\text{Creditor days ratio (number of days)} = \frac{\text{creditors}}{\text{cost of goods sold}} \times 365$$

where *cost of goods sold* is an approximation of total credit purchases

$$\text{Gearing ratio} = \frac{\text{loan capital}}{\text{capital employed}} \times 100$$

where *capital employed* = loan capital (or long-term liabilities) + share capital + retained profit

## Other formulae (SL/HL)

### Investment appraisal

#### SL/HL

$$\text{Average rate of return (ARR)} = \frac{(\text{total returns} - \text{capital cost}) \div \text{years of use}}{\text{capital cost}} \times 100$$

#### HL only

$$\text{Net present value (NPV)} = \sum \text{present values of return} - \text{original cost}$$

### Capacity utilization and productivity (HL only)

$$\text{Capacity utilization rate} = \frac{\text{actual output}}{\text{productive capacity}} \times 100$$

$$\text{Productivity rate} = \frac{\text{total output}}{\text{total input}} \times 100$$

### Cost to buy and cost to make (HL only)

$$\text{Cost to buy} = \text{price} \times \text{quantity}$$

$$\text{Cost to make} = \text{fixed costs} + (\text{variable costs} \times \text{quantity})$$

## Discount tables (HL only)

A discount table will be provided for students in the examination.

Years	Discount rate				
	4%	6%	8%	10%	20%
1	0.9615	0.9434	0.9259	0.9091	0.8333
2	0.9246	0.8900	0.8573	0.8264	0.6944
3	0.8890	0.8396	0.7938	0.7513	0.5787
4	0.8548	0.7921	0.7350	0.6830	0.4823
5	0.8219	0.7473	0.6806	0.6209	0.4019
6	0.7903	0.7050	0.6302	0.5645	0.3349
7	0.7599	0.6651	0.5835	0.5132	0.2791
8	0.7307	0.6271	0.5403	0.4665	0.2326
9	0.7026	0.5919	0.5002	0.4241	0.1938
10	0.6756	0.5584	0.4632	0.3855	0.1615