



Government of **Western Australia**
School Curriculum and Standards Authority



Western Australian Certificate of Education Examination, 2015

ACCOUNTING AND FINANCE

Stage 3

SPECIFICATIONS BOOKLET

Calculation for depreciation

Straight-line method $\frac{\text{Original cost} - \text{Residual value}}{\text{Useful life}}$

or

$$\frac{\text{Depreciable amount}}{\text{Useful life}}$$

Reducing/Diminishing balance method

Carrying amount = Original cost – Accumulated depreciation

Annual depreciation expense = Carrying amount × depreciation rate

Preparation of ratios

| Ratio | Method of calculation |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Profit | $\frac{\text{Profit (after income tax)}^A}{\text{Total revenue}}$ |
| Debtors collection | $\frac{\text{Average debtors}}{\text{Net credit sales}} \times \frac{365}{1}$ |
| Inventory/stock turnover | $\frac{\text{Cost of sales}}{\text{Cost of average inventory}}$ |
| Debt to equity | $\frac{\text{Total liabilities}}{\text{Equity (end)}}$ |
| Working capital/current | $\frac{\text{Current assets}}{\text{Current liabilities}}$ |
| Quick asset/liquidity | $\frac{\text{Current assets (excluding inventory and prepayments)}}{\text{Current liabilities (excluding bank overdraft)}}$ |
| Rate of return on assets | $\frac{\text{Profit before income tax} + \text{interest expense}}{\text{Average total assets}}$ |
| Times interest earned | $\frac{\text{Profit before income tax} + \text{interest expense}}{\text{Interest costs (expensed and capitalised)}}$ |
| Earnings per ordinary share | $\frac{\text{Profit (after income tax)} - \text{preference dividends}}{\text{Weighted average number of ordinary shares issued}}$ |
| Price/earnings | $\frac{\text{Market price per ordinary share}}{\text{Earnings per ordinary share}}$ |
| Dividend yield | $\frac{\text{Annual dividend per ordinary share}}{\text{Market price per ordinary share}}$ |

A = at the prevailing company rate (e.g. 30%)

Results from calculations may be presented either as a percentage or as a ratio, to two decimal places.

Cost volume profit analysis for profit planning

Standard abbreviations include:

- SP = Selling Price
- QS = Quantity Sold
- VC = Variable Costs
- TVC = Total Variable Costs
- FC = Fixed Costs
- TFC = Total Fixed Costs
- TC = Total Costs

Basic cost profit concepts

$$\text{Profit} = (\text{SP} \times \text{QS}) - [(\text{VC} \times \text{QS}) + \text{TFC}]$$

$$\text{TC} = \text{TVC} + \text{TFC}$$

$$\text{Unit cost} = \frac{\text{TC}}{\text{Number of units}}$$

$$\text{Net profit} = \text{Total revenue} - \text{TC}$$

Break-even is where profit = zero; therefore Total revenue = TC

Calculation of contribution margin

$$\text{Contribution margin per unit} = \text{SP per unit} - \text{VC per unit}$$

or

$$\text{Total contribution margin} = \text{Total revenue} - \text{TVC}$$

or

$$\text{Contribution margin ratio} = \frac{\text{Contribution margin per unit}}{\text{SP per unit}}$$

Break-even point for a single product firm

$$\text{Break-even point (in units)} = \frac{\text{TFC}}{\text{Contribution margin}}$$

or

$$\text{Break-even point (in sales dollars)} = \frac{\text{TFC}}{\text{Contribution margin ratio}}$$

Break-even point in total units in multi-product firm

$$\text{Break-even point (in units)} = \frac{\text{TFC}}{\text{Weighted average contribution margin per unit}}$$

Weighted average contribution margin

Weighted average contribution margin per unit = $\sum(\text{Contribution margin per unit} \times \text{Sales mix per unit})$

Where \sum **means** the sum of a set of numbers

Sales mix = the number of units sold of a given product relative to the total units sold by the firm

For example: If a company sells 6,000 units of product A and 4,000 units of product B, the sales mix is 60% A and 40% B

Forecast revenue for target net profit

Forecast revenue (in sales dollars) = **TVC + TFC + Target net profit**

Forecast target revenue (in units) = $\frac{\text{TFC} + \text{Target net profit}}{\text{Contribution margin per unit}}$

Margin of safety

Margin of safety = Actual or budgeted sales LESS break-even sales

Margin of safety % = $\frac{\text{Margin of safety in dollars}}{\text{Total actual/budgeted sales}}$

Standard cost accounting and variance analysis

Standard cost per unit = Standard input quantity allowed per output unit × Standard price per input unit

Direct material variance

Price variance = (Actual Price of input – Standard Price of input) × Actual Quantity of input Purchased
[i.e. (AP – SP) × AQP]

or

(Actual Price per input unit × Actual Quantity Purchased) – (Standard Price per input unit × Actual Quantity Purchased)
[i.e. (AP × AQP) – (SP × AQP)]

Usage variance = (Actual Quantity of input Issued – Standard Quantity of input Allowed for actual output) × Standard Price of input
[i.e. (AQI – SQA*) × SP]

SQA formula: * (Standard Quantity per unit × Actual Output in units produced)
SQA = (SQ × AO)

or

(Standard Price of input × Actual Quantity of input Issued) – (Standard Price of input × Standard Quantity of input Allowed for actual output)
[i.e. (SP × AQI) – (SP × SQA)]

Direct labour variances

Rate variance = (Actual Rate per Direct Labour Hour worked – Standard Rate per Direct Labour Hour worked) × Actual Direct Labour Hours worked
[i.e. (AR – SR) × ADLH]

or

(Actual Rate per Direct Labour Hour worked × Actual Direct Labour Hours worked) – (Standard Rate per Direct Labour Hour worked × Actual Direct Labour Hours worked)
[i.e. (AR × ADLH) – (SR × ADLH)]

Efficiency variance = (Actual Direct Labour Hours worked – Standard Direct Labour Hours Allowed for actual output) × Standard Rate per Direct Labour Hour
[i.e. (ADLH – SDLHA**) × SR]

SDLHA formula: ** (Standard Direct Labour Hours allowed per unit × Actual Output in units produced)
SDLHA = (SDLH × AO)

or

(Standard Rate per Direct Labour Hour × Actual Direct Labour Hours worked) – (Standard Rate per Direct Labour Hour × Standard Direct Labour Hours Allowed for actual output)
[i.e. (SR × ADLH) – (SR × SDLHA)]

Capital budgeting

Net present value (NPV) method (time value of money)

Present value of \$1 at the end of future periods

| Periods | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 16% |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.9804 | 0.9709 | 0.9615 | 0.9524 | 0.9434 | 0.9346 | 0.9259 | 0.9174 | 0.9091 | 0.8929 | 0.8772 | 0.8621 |
| 2 | 0.9612 | 0.9426 | 0.9246 | 0.9070 | 0.8900 | 0.8734 | 0.8573 | 0.8417 | 0.8264 | 0.7972 | 0.7695 | 0.7432 |
| 3 | 0.9423 | 0.9151 | 0.8890 | 0.8638 | 0.8396 | 0.8163 | 0.7938 | 0.7722 | 0.7513 | 0.7118 | 0.6750 | 0.6407 |
| 4 | 0.9238 | 0.8885 | 0.8548 | 0.8227 | 0.7921 | 0.7629 | 0.7350 | 0.7084 | 0.6830 | 0.6355 | 0.5921 | 0.5523 |
| 5 | 0.9057 | 0.8626 | 0.8219 | 0.7835 | 0.7473 | 0.7130 | 0.6806 | 0.6499 | 0.6209 | 0.5674 | 0.5194 | 0.4761 |
| 6 | 0.8880 | 0.8375 | 0.7903 | 0.7462 | 0.7050 | 0.6663 | 0.6302 | 0.5963 | 0.5645 | 0.5066 | 0.4556 | 0.4104 |
| 7 | 0.8706 | 0.8131 | 0.7599 | 0.7107 | 0.6651 | 0.6227 | 0.5835 | 0.5470 | 0.5132 | 0.4523 | 0.3996 | 0.3538 |
| 8 | 0.8535 | 0.7894 | 0.7307 | 0.6768 | 0.6274 | 0.5820 | 0.5403 | 0.5019 | 0.4665 | 0.4039 | 0.3506 | 0.3050 |
| 9 | 0.8368 | 0.7664 | 0.7026 | 0.6446 | 0.5919 | 0.5439 | 0.5002 | 0.4604 | 0.4241 | 0.3606 | 0.3075 | 0.2630 |
| 10 | 0.8203 | 0.7441 | 0.6756 | 0.6139 | 0.5584 | 0.5083 | 0.4632 | 0.4224 | 0.3855 | 0.3220 | 0.2697 | 0.2267 |
| 11 | 0.8043 | 0.7224 | 0.6496 | 0.5847 | 0.5268 | 0.4751 | 0.4289 | 0.3875 | 0.3505 | 0.2875 | 0.2366 | 0.1954 |
| 12 | 0.7885 | 0.7014 | 0.6246 | 0.5568 | 0.4970 | 0.4440 | 0.3971 | 0.3555 | 0.3186 | 0.2567 | 0.2076 | 0.1685 |
| 13 | 0.7730 | 0.6810 | 0.6006 | 0.5303 | 0.4688 | 0.4150 | 0.3677 | 0.3262 | 0.2897 | 0.2292 | 0.1821 | 0.1452 |
| 14 | 0.7579 | 0.6611 | 0.5775 | 0.5051 | 0.4423 | 0.3878 | 0.3405 | 0.2992 | 0.2633 | 0.2046 | 0.1597 | 0.1252 |
| 15 | 0.7430 | 0.6419 | 0.5553 | 0.4810 | 0.4173 | 0.3624 | 0.3152 | 0.2745 | 0.2394 | 0.1827 | 0.1401 | 0.1079 |
| 16 | 0.7284 | 0.6232 | 0.5339 | 0.4581 | 0.3936 | 0.3387 | 0.2919 | 0.2519 | 0.2176 | 0.1631 | 0.1229 | 0.0930 |
| 17 | 0.7142 | 0.6050 | 0.5134 | 0.4363 | 0.3714 | 0.3166 | 0.2703 | 0.2311 | 0.1978 | 0.1456 | 0.1078 | 0.0802 |
| 18 | 0.7002 | 0.5874 | 0.4936 | 0.4155 | 0.3503 | 0.2959 | 0.2502 | 0.2120 | 0.1799 | 0.1300 | 0.0946 | 0.0691 |
| 19 | 0.6864 | 0.5703 | 0.4746 | 0.3957 | 0.3305 | 0.2765 | 0.2317 | 0.1945 | 0.1635 | 0.1161 | 0.0829 | 0.0596 |
| 20 | 0.6730 | 0.5537 | 0.4564 | 0.3769 | 0.3118 | 0.2584 | 0.2145 | 0.1784 | 0.1486 | 0.1037 | 0.0728 | 0.0514 |
| 21 | 0.6598 | 0.5375 | 0.4388 | 0.3589 | 0.2942 | 0.2415 | 0.1987 | 0.1637 | 0.1351 | 0.0926 | 0.0638 | 0.0443 |
| 22 | 0.6468 | 0.5219 | 0.4220 | 0.3418 | 0.2775 | 0.2257 | 0.1839 | 0.1502 | 0.1228 | 0.0826 | 0.0560 | 0.0382 |
| 23 | 0.6342 | 0.5067 | 0.4057 | 0.3256 | 0.2618 | 0.2109 | 0.1703 | 0.1378 | 0.1117 | 0.0738 | 0.0491 | 0.0329 |
| 24 | 0.6217 | 0.4919 | 0.3901 | 0.3101 | 0.2470 | 0.1971 | 0.1577 | 0.1264 | 0.1015 | 0.0659 | 0.0431 | 0.0284 |
| 25 | 0.6095 | 0.4776 | 0.3751 | 0.2953 | 0.2330 | 0.1842 | 0.1460 | 0.1160 | 0.0923 | 0.0588 | 0.0378 | 0.0245 |

Present value of an ordinary annuity of \$1 at the end of future periods

| Periods | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 16% |
|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| 1 | 0.9804 | 0.9709 | 0.9615 | 0.9524 | 0.9434 | 0.9346 | 0.9259 | 0.9174 | 0.9091 | 0.8929 | 0.8772 | 0.8621 |
| 2 | 1.9416 | 1.9135 | 1.8861 | 1.8594 | 1.8334 | 1.8080 | 1.7833 | 1.7591 | 1.7355 | 1.6901 | 1.6467 | 1.6052 |
| 3 | 2.8839 | 2.8286 | 2.7751 | 2.7232 | 2.6730 | 2.6243 | 2.5771 | 2.5313 | 2.4869 | 2.4018 | 2.3216 | 2.2459 |
| 4 | 3.8077 | 3.7171 | 3.6299 | 3.5460 | 3.4651 | 3.3872 | 3.3121 | 3.2397 | 3.1699 | 3.0373 | 2.9137 | 2.7982 |
| 5 | 4.7135 | 4.5797 | 4.4518 | 4.3295 | 4.2124 | 4.1002 | 3.9927 | 3.8897 | 3.7908 | 3.6048 | 3.4331 | 3.2743 |
| 6 | 5.6014 | 5.4172 | 5.2421 | 5.0757 | 4.9173 | 4.7665 | 4.6229 | 4.4859 | 4.3553 | 4.1114 | 3.8887 | 3.6847 |
| 7 | 6.4720 | 6.2303 | 6.0021 | 5.7864 | 5.5824 | 5.3893 | 5.2064 | 5.0330 | 4.8684 | 4.5638 | 4.2883 | 4.0386 |
| 8 | 7.3255 | 7.0197 | 6.7327 | 6.4632 | 6.2098 | 5.9713 | 5.7466 | 5.5348 | 5.3349 | 4.9676 | 4.6389 | 4.3436 |
| 9 | 8.1622 | 7.7861 | 7.4353 | 7.1078 | 6.8017 | 6.5152 | 6.2469 | 5.9952 | 5.7590 | 5.3282 | 4.9464 | 4.6065 |
| 10 | 8.9826 | 8.5302 | 8.1109 | 7.7217 | 7.3601 | 7.0236 | 6.7101 | 6.4177 | 6.1446 | 5.6502 | 5.2161 | 4.8332 |
| 11 | 9.7868 | 9.2526 | 8.7605 | 8.3064 | 7.8869 | 7.4987 | 7.1390 | 6.8052 | 6.4951 | 5.9377 | 5.4527 | 5.0286 |
| 12 | 10.5753 | 9.9540 | 9.3851 | 8.8633 | 8.3838 | 7.9427 | 7.5361 | 7.1607 | 6.8137 | 6.1944 | 5.6603 | 5.1971 |
| 13 | 11.3484 | 10.6350 | 9.9856 | 9.3936 | 8.8527 | 8.3577 | 7.9038 | 7.4869 | 7.1034 | 6.4235 | 5.8424 | 5.3423 |
| 14 | 12.1062 | 11.2961 | 10.5631 | 9.8986 | 9.2950 | 8.7455 | 8.2442 | 7.7862 | 7.3667 | 6.6282 | 6.0021 | 5.4675 |
| 15 | 12.8493 | 11.9379 | 11.1184 | 10.3797 | 9.7122 | 9.1079 | 8.5595 | 8.0607 | 7.6061 | 6.8109 | 6.1422 | 5.5755 |
| 16 | 13.5777 | 12.5611 | 11.6523 | 10.8378 | 10.1059 | 9.4466 | 8.8514 | 8.3126 | 7.8237 | 6.9740 | 6.2651 | 5.6685 |
| 17 | 14.2919 | 13.1661 | 12.1657 | 11.2741 | 10.4773 | 9.7632 | 9.1216 | 8.5436 | 8.0216 | 7.1196 | 6.3729 | 5.7487 |
| 18 | 14.9920 | 13.7535 | 12.6593 | 11.6896 | 10.8276 | 10.0591 | 9.3719 | 8.7556 | 8.2014 | 7.2497 | 6.4674 | 5.8178 |
| 19 | 15.6785 | 14.3238 | 13.1339 | 12.0853 | 11.1581 | 10.3356 | 9.6036 | 8.9501 | 8.3649 | 7.3658 | 6.5504 | 5.8775 |
| 20 | 16.3514 | 14.8775 | 13.5903 | 12.4622 | 11.4699 | 10.5940 | 9.8181 | 9.1285 | 8.5136 | 7.4694 | 6.6231 | 5.9288 |
| 21 | 17.0112 | 15.4150 | 14.0292 | 12.8212 | 11.7641 | 10.8355 | 10.0168 | 9.2922 | 8.6487 | 7.5620 | 6.6870 | 5.9731 |
| 22 | 17.6580 | 15.9369 | 14.4511 | 13.1630 | 12.0416 | 11.0612 | 10.2007 | 9.4424 | 8.7715 | 7.6446 | 6.7429 | 6.0113 |
| 23 | 18.2922 | 16.4436 | 14.8568 | 13.4886 | 12.3034 | 11.2722 | 10.3711 | 9.5802 | 8.8832 | 7.7184 | 6.7921 | 6.0442 |
| 24 | 18.9139 | 16.9355 | 15.2470 | 13.7986 | 12.5504 | 11.4693 | 10.5288 | 9.7066 | 8.9847 | 7.7843 | 6.8351 | 6.0726 |
| 25 | 19.5235 | 17.4131 | 15.6221 | 14.0939 | 12.7834 | 11.6536 | 10.6748 | 9.8226 | 9.0770 | 7.8431 | 6.8729 | 6.0971 |

Capital budgeting

Net Present Value (NPV)

$$\text{Present value} = \frac{\text{Net Cash Flow}}{(1 + i)^n}$$

i = Interest rate
n = Number of periods

NPV = Present Value of Future Net Cash Flows – Present Value of Cost of Project

Payback period

The payback period calculates the period of time needed for any investment to pay for itself. This method does not use the time value of money.

The formula, where Annual Net Cash Flows are constant, is:

$$\text{Payback period} = \frac{\text{Initial cost of investment}}{\text{Annual Net Cash Flow}}$$

Final figures are to be specified in years and months.

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303 Sevenoaks Street
CANNINGTON WA 6107