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

# ACCOUNTING AND FINANCE ATAR COURSE

# SPECIFICATIONS BOOKLET

# 2018

## Calculation for depreciation

**Straight-line method**

Depreciation expense per annum

$$= \frac{\text{Original cost} - \text{Residual value}}{\text{Useful life}}$$

**or**

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

**Reducing/Diminishing balance method**

Depreciation expense = Carrying amount × Depreciation rate

Carrying amount = Original cost – Accumulated depreciation

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

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

A: Income tax is to be charged at the specified company rate
B: Net sales = Sales revenue – Sales returns and allowances – Discount allowed
C: Cost of sales (total) = Cost of sales (account) + Import duties + Freight inwards – Discount received

# Cost accounting and variance analysis

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

$$\text{Predetermined overhead recovery rate} = \frac{\text{Total estimated manufacturing overheads}}{\text{Total estimated allocation base}}$$

Cost of production/service = Direct materials + Direct labour + Overheads

Selling/quotation price = Cost + (Mark-up % × Cost)

## Direct material variances

Price variance = (AP – SP) × AQP
i.e. (Actual price of input – Standard price of input) × Actual quantity of input purchased

Usage variance = (AQI – SQA) × SP
i.e. (Actual quantity of input Issued – Standard quantity of input allowed for actual output) × Standard price of input

*where* SQA = SQ × AO
i.e. Standard quantity per unit × Actual output in units produced

## Direct labour variances

Rate variance = (AR – SR) × ADLH
i.e. (Actual rate per direct labour hour worked – Standard rate per direct labour hour worked) × Actual direct labour hours worked

Efficiency variance = (ADLH – SDLHA) × SR
i.e. (Actual direct labour hours worked – Standard direct labour hours allowed for actual output) × Standard rate per direct labour hour

*where* SDLHA = SDLH × AO
i.e. Standard direct labour hours allowed per unit × Actual output in units produced

## Cost volume profit analysis for profit planning

**Standard abbreviations include:**

FC = Fixed costs

OC = Opportunity costs

QS = Quantity sold or budgeted

SP = Selling price

TC = Total costs

TFC = Total fixed costs

TVC = Total variable costs

TR = Total Revenue

VC = Variable costs

**Basic cost profit concepts**

Profit $=$ TR $-$ TC

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

TC $=$ TVC + TFC

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

**Calculation of contribution margin**

Contribution margin per unit $=$ SP per unit $-$ VC per unit

**or**

Total contribution margin $=$ TR $-$ TVC

**or**

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

**Break-even point for a single product firm**

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

**or**

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

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

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

## Weighted average contribution margin

Weighted average contribution margin per unit $= \sum$ (Contribution margin per unit × Sales mix %)

$$where \; \sum \textbf{ means } \text{the sum of a set of numbers}$$

Sales mix % $= \dfrac{\text{number of units sold of a given product}}{\text{total units sold of all products}} \times 100$

## Forecast revenue for target profit

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

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

## Margin of safety

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

Margin of safety % $= \dfrac{\text{Margin of safety in dollars}}{\text{Total actual/budgeted sales}} \times 100$

## Special order

Gain/Loss $=$ (SP x QS) – (VC x QS) – new FC – OC
i.e. Special order income – Special order variable costs – New or additional fixed costs – Opportunity costs

*where* OC $=$ Units forgone in usual production × Usual contribution margin

## Capital investment/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 |

**Net present value (NPV)**

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

where $i$ = Interest rate

$n$ = Number of periods

NPV = Present value of future net cash flows − Present value of cost of project

**Payback period**

*Where annual net cash flows are constant:*

$$\text{Payback period} = \frac{\text{Initial cost of investment}}{\text{Annual net cash flow}}$$

Results from calculations are to be presented in years and months.