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

ACCOUNTING AND FINANCE
ATAR COURSE

SPECIFICATIONS BOOKLET

2016

Calculation for depreciation

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

or

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

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

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

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

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

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

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

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

Calculation of contribution margin

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

or

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

or

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

Break-even point for a single product firm

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

or

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

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

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

Weighted average contribution margin

Weighted average contribution margin per unit = $\sum$(Contribution margin per unit × Sales mix 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) = $\dfrac{\textbf{TFC} + \text{Target net profit}}{\text{Contribution margin per unit}}$

Margin of safety

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

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

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 = (**A**ctual **P**rice of input – **S**tandard **P**rice of input) × **A**ctual **Q**uantity of input **P**urchased
[i.e. (AP – SP) × AQP]

or

(**A**ctual **P**rice per input unit × **A**ctual **Q**uantity **P**urchased) – (**S**tandard **P**rice per input unit × **A**ctual **Q**uantity **P**urchased)
[i.e. (AP × AQP) – (SP × AQP)]

Usage variance = (**A**ctual **Q**uantity of input **I**ssued – **S**tandard **Q**uantity of input **A**llowed for actual output) × **S**tandard **P**rice of input
[i.e. (AQI – SQA*) × SP]

SQA formula: * (**S**tandard **Q**uantity per unit × **A**ctual **O**utput in units produced)
SQA = (SQ × AO)

or

(**S**tandard **P**rice of input × **A**ctual **Q**uantity of input **I**ssued) – (**S**tandard **P**rice of input × **S**tandard **Q**uantity of input **A**llowed for actual output)
[i.e. (SP × AQI) – (SP × SQA)]

Direct labour variances

Rate variance = (**A**ctual **R**ate per Direct Labour Hour worked – **S**tandard **R**ate per Direct Labour Hour worked) × **A**ctual **D**irect **L**abour **H**ours worked
[i.e. (AR – SR) × ADLH]

or

(**A**ctual **R**ate per Direct Labour Hour worked × **A**ctual **D**irect **L**abour **H**ours worked) – (**S**tandard **R**ate per Direct Labour Hour worked × **A**ctual **D**irect **L**abour **H**ours worked)
[i.e. (AR × ADLH) – (SR × ADLH)]

Efficiency variance = (**A**ctual **D**irect **L**abour **H**ours worked – **S**tandard **D**irect **L**abour **H**ours **A**llowed for actual output) × **S**tandard **R**ate per Direct Labour Hour
[i.e. (ADLH – SDLHA**) × SR]

SDLHA formula: ** (**S**tandard **D**irect **L**abour **H**ours allowed per unit × **A**ctual **O**utput in units produced)
SDLHA = (SDLH × AO)

or

(**S**tandard **R**ate per Direct Labour Hour × **A**ctual **D**irect **L**abour **H**ours worked) – (**S**tandard **R**ate per Direct Labour Hour × **S**tandard **D**irect **L**abour **H**ours **A**llowed 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)

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

      $i =$ 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:

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

Final figures are to be specified in years and months.