| FACULTY/COLLEGE | College of Business and Economics |
|---|---|
| SCHOOL | School of Accounting |
| DEPARTMENT | Commercial Accounting |
| CAMPUS(ES) | SWC |
| MODULE NAME | Cost & Financial Management 3B |
| MODULE CODE | CFM33B3 |
| SEMESTER | Second |
| ASSESSMENT OPPORTUNITY, MONTH AND YEAR | Final Summative Assessment November 2019 |

| ASSESSMENT DATE | November 2019 | SESSION | |
|---|---|---|---|
| ASSESSOR(S) | M Janse van Rensburg, L Joubert, K Matshego | | |
| MODERATOR(S) | L Boyce (internal), M Odendaal (external) | | |
| DURATION | 3 hours (180 min) | TOTAL MARKS | 100 |

| NUMBER OF PAGES OF QUESTION PAPER (Including cover page) | 11 |
|---|---|

**INFORMATION / INSTRUCTIONS:**
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- **Answer questions 1, 2 and 4 in the green book, and questions 3 and 5 in the blue book.**
- This is a closed-book assessment.
- You may use silent, non-programmable calculators.
- Where applicable, round all calculations to two decimals, unless stipulated otherwise.
- **Indicate your index number (next to your name on the attendance register) next to the UJ logo on your all your scripts.**
- Read the questions carefully and answer only what is required.
- Number your answers clearly and correctly as per the question paper.
- Write neatly and legibly on both sides of the paper in the answer book, starting on the first page.
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## QUESTION 1 (10)
## MCQ – All topics 18 Minutes

*Choose the correct option (letter) and write it next to the question number in your script.*

1.1 How is the required working capital in the operations of investments treated in discounted cash flow analysis? **(1)**

    a. Added to the cost of investment.
    b. Added to cash inflows when recovery occurs.
    c. Both a and b.
    d. Working capital does not influence investment decisions.

1.2 Which of the following statements is true when deciding between two alternatives? **(1)**

    a. Variable costs may not be relevant when the decision alternatives have the same activity levels.
    b. Variable costs are not relevant when the decision alternatives have different activity levels.
    c. Sunk costs are always relevant.
    d. Fixed costs are never relevant.

1.3 You are considering a particular short-term pricing decision. **(1)**

    a. You should place more emphasis on qualitative factors that will influence the decision.
    b. You should consider both quantitative and qualitative factors that will influence the decision.
    c. You should place more emphasis on quantitative factors that will influence the decision.
    d. Qualitative factors do not influence the decision. You should ignore this aspect in your decision-making process.

1.4 Your manager requested an evaluation of special orders where firstly, excess capacity is available and, secondly, a shortage of capacity exist. What is the difference in your calculation between the two options? **(1)**

    a. Include incremental variable cost in your calculation.
    b. Ignore unavoidable fixed cost in your calculation.
    c. Ignore sunk cost in your calculation.
    d. Include opportunity cost in your calculation.

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1.5 Which factor, indicated below, would you consider in your decision to outsource a part of a machine produced by your company? **(1)**

    a. The suppliers' cost of direct materials.
    b. The original cost of equipment currently used for the production of that part.
    c. Historical design costs used to develop the current composition of the part.
    d. Whether the supplier is reliable.

1.6 Which of the following costs always differ among future alternatives? **(1)**

    a. Fixed costs
    b. Historical costs
    c. Relevant costs
    d. Variable costs

1.7 The net present value method, used in capital budgeting, focuses on _____. **(1)**

    a. Cash flows and required cost of capital
    b. Inventory cost and required cost of capital
    c. Working capital and required cost of capital
    d. Profit and required cost of capital

1.8 The contribution income statement highlights: **(1)**

    a. Variable and fixed costs
    b. Gross profit
    c. Product and period costs
    d. Different product lines or segments of the company

1.9 In multi-product CVP analysis, focusing on target net income rather than operating income: **(1)**

    a. Will increase the break-even point.
    b. Will decrease the break-even point.
    c. Will not change the break-even point.
    d. Does not allow the calculation of the break-even point.

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1.10 Siphiwe sells handbags and shoes made from ostrich leather. Siphiwe's normal monthly sales are 200 handbags and 300 pairs of shoes. Handbags earn a contribution of R150, and each pair of shoes earns a contribution of R120. During December, Siphiwe sold 250 handbags and 250 pairs of shoes. Siphiwe asked you if the break-even volume for his business would change if the sales trend of December continues in the future. What is your answer? **(1)**

    a.    You need more information, such as the total fixed cost, to answer Siphiwe.
    b.    The break-even volume will increase.
    c.    The break-even volume will decrease.
    d.    The break-even volume will remain the same.

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| QUESTION 2 | [35 MARKS] |
|---|---|
| **PART A: Multi-product CVP** | **27 minutes** |
| **PART B: Limiting factors** | **36 minutes** |

**This question consists of two parts.**

**PART A**

Sjoe-Sjoe Ltd manufactures wooden chopping and serving boards. Raw vegetables and meat are cut on chopping boards while the serving boards are used for serving snacks and braai meat to guests. Both boards are sealed with a mixture of mineral oil and beeswax to ensure that it is liquid and stain proof. The serving boards have dipping trays, grooves and grabbing slots to ensure optimum use and is larger than the chopping boards. The demand for serving boards recently increased after a photo of a well-known soccer player, using the serving board at a braai, was posted on social media.

Total sales revenue for chopping boards amounts to R240 000 and equals the total sales revenue of serving boards. Selling price per chopping board is R600 and R750 per serving board. It is expected that the sales volume of the serving board will increase by 200% in the next month. The following information is available:

|  | Chopping | Serving | Total |
|---|---|---|---|
| Direct material: |  |  |  |
|    Wood per meter | R90 | R90 |  |
|    Wood required per unit | One-third of a meter | Two-thirds of a meter |  |
|    Mineral oil per unit | R0.20 | R0.25 |  |
|    Beeswax per kg | R20 | R20 |  |
|    Beeswax required per unit | 5 g | 5 g |  |
| Direct labour: |  |  |  |
|    Rate per labour hour | R50 | R50 |  |
|    Time required per unit | 45 min | 15 min longer than chopping |  |
| Variable manufacturing overheads per unit | R10.50 (18 min) | R14 (24 min) |  |
| Fixed overheads per month |  |  | ? |
| Contribution |  |  | R402 624 |
| Operating income |  |  | R337 624 |

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**REQUIRED**

2.1    Calculate the monthly break-even for Sjoe-Sjoe Ltd. Show the break-even units for both cutting and serving boards. You must use the increased sales volume of the serving board where applicable.    **(10.5)**

2.2    Calculate the number of cutting and serving boards that Sjoe-Sjoe Ltd must sell to make a monthly net profit (after tax) of R300 000. Assume a tax rate of 28%.    **(4.5)**

2.3    State whether the break-even units will increase or decrease if the fixed cost increased to R75 000.    **(1)**

2.4    State whether the break-even units will increase or decrease if the selling price increased by 10% for both cutting and serving boards.    **(1)**

**PART B**

Due to forest fires in the area, there is a shortage of wood. Sjoe-Sjoe Ltd will only be able to purchase 500 meters of wood. Six of the workers also lost their homes in the fires and need a month's leave to get back on their feet. This will result in a loss of 260 hours. Machine hours are limited to 700 hours per month.

Sjoe-Sjoe Ltd is bound in a fixed contract of 100 units of serving boards per month. Assume that sales equal demand.

**REQUIRED**

2.5    Calculate the optimum product mix for Sjoe-Sjoe Ltd for the month. You must use the increased sales volume of the serving board where applicable.    **(20)**

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## QUESTION 3 [10 MARKS]
## Capital budgeting 18 Minutes

Glow (Pty) Ltd ("Glow") operates in the entertainment industry and provides wrestling shows across the country. Lucky Casino's owners offered Glow a contract to host shows at Lucky Casino. The following information is available:

|  | Year 0 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|
| Cost of investment | R1 000 000 |  |  |  |
| Expected income |  | R400 000 | R450 000 | R500 000 |
| Depreciation |  | (R50 000) | (R50 000) | (R50 000) |
| Other expenses |  | (R100 000) | (R90 000) | (R110 000) |

**Performance indicators:**

- Glow uses a payback period of two and a half years to evaluate potential investments.
- Glow uses an accounting rate of return (ARR) of 72% (based on average investment) to evaluate potential investments.
- Glow uses a weighted average cost of capital of 11% to decide whether to take up a potential project.

You may ignore income tax implications.

**REQUIRED:**

3.1 Determine the payback period and advise whether Glow (Pty) Ltd should accept the offer or not. **(3½)**

3.2 Determine the discounted payback period and comment on your answer. Compare your answer to 3.1 and provide your comments. **(3½)**

3.3 Calculate the accounting rate of return (ARR) and comment on your answer. **(3)**

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## QUESTION 4 [35 MARKS]
## Capital budgeting 63 Minutes

Moo Ltd ("Moo") is one of the leading farming companies in the North West province. The company normally invest in the farming of crops that are sold for a profit to the market. The board of the company is considering whether to invest in milk cows. If the investment is undertaken, revenue will be obtained from the sale of milk, and it is expected that the investment will be for five years. The following information is available:

- Moo will make an initial investment of R15 000 000. Moo purchased a milk machine (included in the initial investment) for R3 500 000 that should have a salvage value of R500 000 at the end of the investment period. The milk machine is depreciated at 20% per annum. Moo estimates that the machine could be sold to a start-up for R200 000 at the end of year five.

- An initial investment in inventory (working capital) of R300 000 will be required at the beginning of the project. It is expected that 60% of the working capital will be recovered at the end of the third year and the balance at the end of the investment.

- Moo expects to sell two million litres of milk per year. Each litre of milk will be sold for R6 in the first year, and the price is expected to increase by 8% year on year.

- Cow feed will initially cost R5 500 000 per annum, with the cost increasing by 5% **every second year** (in other words will increase by 5% in year three and again in year five).

- **Monthly** wages of the farmworkers are R310 000. The workers' salaries will increase by 6% annually.

- A farming expert's services will be sourced at the end of the project to determine whether the investment in the milk cows should continue. The expert will be paid a once-off fee of R250 000.

- Moo uses a weighted average cost of capital of 16% to evaluate whether to invest in a potential investment project.

- You may assume an income tax rate of 28%. Tax is paid in the year of assessment.

**REQUIRED:**

4.1     Calculate the net present value to determine whether Moo Ltd should invest in the milk cows. Show all calculations and where applicable round your calculations to the nearest Rand. **(35)**

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## QUESTION 5 [10 MARKS]
## Special order 18 Minutes

John manufactures high-quality diaries. Doe wants to order 50 personalised diaries for his staff. Designing and printing of a name will cost John R9 per diary. John does not have the necessary equipment or expertise to design or print the name on a diary and will have to outsource these functions to Mr Soap. John provided you with the following information:

| | **Special order** | **Current sales** |
|---|---|---|
| Selling price | At a 30% discount | R90.00 |
| Direct material | R32.50 | R32.50 |
| Direct labour | R12.50 | R12.50 |
| Variable manufacturing overheads | R5.00 | R5.00 |

Maximum capacity and current production are 400 units per month. Fixed manufacturing overheads are R5 000 per month.

**REQUIRED**

5.1 Should John accept the one-time special order? Show your calculations. **(8)**

5.2 At what price will John be indifferent between accepting the special order and continuing to sell the diaries to his current customers? **(2)**

**Paper total [100]**

## PRESENT VALUE TABLES

### Present value of R1 due at the end of n periods

| Period | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% | 21% | 22% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9901 | 0.9804 | 0.9709 | 0.9615 | 0.9524 | 0.9434 | 0.9346 | 0.9259 | 0.9174 | 0.9091 | 0.9009 | 0.8929 | 0.8850 | 0.8772 | 0.8696 | 0.8621 | 0.8547 | 0.8475 | 0.8403 | 0.8333 | 0.8264 | 0.8197 |
| 2 | 0.9803 | 0.9612 | 0.9426 | 0.9246 | 0.9070 | 0.8900 | 0.8734 | 0.8573 | 0.8417 | 0.8264 | 0.8116 | 0.7972 | 0.7831 | 0.7695 | 0.7561 | 0.7432 | 0.7305 | 0.7182 | 0.7062 | 0.6944 | 0.6830 | 0.6719 |
| 3 | 0.9706 | 0.9423 | 0.9151 | 0.8890 | 0.8638 | 0.8396 | 0.8163 | 0.7938 | 0.7722 | 0.7513 | 0.7312 | 0.7118 | 0.6931 | 0.6750 | 0.6575 | 0.6407 | 0.6244 | 0.6086 | 0.5934 | 0.5787 | 0.5645 | 0.5507 |
| 4 | 0.9610 | 0.9238 | 0.8885 | 0.8548 | 0.8227 | 0.7921 | 0.7629 | 0.7350 | 0.7084 | 0.6830 | 0.6587 | 0.6355 | 0.6133 | 0.5921 | 0.5718 | 0.5523 | 0.5337 | 0.5158 | 0.4987 | 0.4823 | 0.4665 | 0.4514 |
| 5 | 0.9515 | 0.9057 | 0.8626 | 0.8219 | 0.7835 | 0.7473 | 0.7130 | 0.6806 | 0.6499 | 0.6209 | 0.5935 | 0.5674 | 0.5428 | 0.5194 | 0.4972 | 0.4761 | 0.4561 | 0.4371 | 0.4190 | 0.4019 | 0.3855 | 0.3700 |
| 6 | 0.9420 | 0.8880 | 0.8375 | 0.7903 | 0.7462 | 0.7050 | 0.6663 | 0.6302 | 0.5963 | 0.5645 | 0.5346 | 0.5066 | 0.4803 | 0.4556 | 0.4323 | 0.4104 | 0.3898 | 0.3704 | 0.3521 | 0.3349 | 0.3186 | 0.3033 |
| 7 | 0.9327 | 0.8706 | 0.8131 | 0.7599 | 0.7107 | 0.6651 | 0.6227 | 0.5835 | 0.5470 | 0.5132 | 0.4817 | 0.4523 | 0.4251 | 0.3996 | 0.3759 | 0.3538 | 0.3332 | 0.3139 | 0.2959 | 0.2791 | 0.2633 | 0.2486 |
| 8 | 0.9235 | 0.8535 | 0.7894 | 0.7307 | 0.6768 | 0.6274 | 0.5820 | 0.5403 | 0.5019 | 0.4665 | 0.4339 | 0.4039 | 0.3762 | 0.3506 | 0.3269 | 0.3050 | 0.2848 | 0.2660 | 0.2487 | 0.2326 | 0.2176 | 0.2038 |
| 9 | 0.9143 | 0.8368 | 0.7664 | 0.7026 | 0.6446 | 0.5919 | 0.5439 | 0.5002 | 0.4604 | 0.4241 | 0.3909 | 0.3606 | 0.3329 | 0.3075 | 0.2843 | 0.2630 | 0.2434 | 0.2255 | 0.2090 | 0.1938 | 0.1799 | 0.1670 |
| 10 | 0.9053 | 0.8203 | 0.7441 | 0.6756 | 0.6139 | 0.5584 | 0.5083 | 0.4632 | 0.4224 | 0.3855 | 0.3522 | 0.3220 | 0.2946 | 0.2697 | 0.2472 | 0.2267 | 0.2080 | 0.1911 | 0.1756 | 0.1615 | 0.1486 | 0.1369 |
| 11 | 0.8963 | 0.8043 | 0.7224 | 0.6496 | 0.5847 | 0.5268 | 0.4751 | 0.4289 | 0.3875 | 0.3505 | 0.3173 | 0.2875 | 0.2607 | 0.2366 | 0.2149 | 0.1954 | 0.1778 | 0.1619 | 0.1476 | 0.1346 | 0.1228 | 0.1122 |
| 12 | 0.8874 | 0.7885 | 0.7014 | 0.6246 | 0.5568 | 0.4970 | 0.4440 | 0.3971 | 0.3555 | 0.3186 | 0.2858 | 0.2567 | 0.2307 | 0.2076 | 0.1869 | 0.1685 | 0.1520 | 0.1372 | 0.1240 | 0.1122 | 0.1015 | 0.0920 |
| 13 | 0.8787 | 0.7730 | 0.6810 | 0.6006 | 0.5303 | 0.4688 | 0.4150 | 0.3677 | 0.3262 | 0.2897 | 0.2575 | 0.2292 | 0.2042 | 0.1821 | 0.1625 | 0.1452 | 0.1299 | 0.1163 | 0.1042 | 0.0935 | 0.0839 | 0.0754 |
| 14 | 0.8700 | 0.7579 | 0.6611 | 0.5775 | 0.5051 | 0.4423 | 0.3878 | 0.3405 | 0.2992 | 0.2633 | 0.2320 | 0.2046 | 0.1807 | 0.1597 | 0.1413 | 0.1252 | 0.1110 | 0.0985 | 0.0876 | 0.0779 | 0.0693 | 0.0618 |
| 15 | 0.8613 | 0.7430 | 0.6419 | 0.5553 | 0.4810 | 0.4173 | 0.3624 | 0.3152 | 0.2745 | 0.2394 | 0.2090 | 0.1827 | 0.1599 | 0.1401 | 0.1229 | 0.1079 | 0.0949 | 0.0835 | 0.0736 | 0.0649 | 0.0573 | 0.0507 |

### Present value an **annuity** of R1 per period for n periods

| Period | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% | 21% | 22% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9901 | 0.9804 | 0.9709 | 0.9615 | 0.9524 | 0.9434 | 0.9346 | 0.9259 | 0.9174 | 0.9091 | 0.9009 | 0.8929 | 0.8850 | 0.8772 | 0.8696 | 0.8621 | 0.8547 | 0.8475 | 0.8403 | 0.8333 | 0.8264 | 0.8197 |
| 2 | 1.9704 | 1.9416 | 1.9135 | 1.8861 | 1.8594 | 1.8334 | 1.8080 | 1.7833 | 1.7591 | 1.7355 | 1.7125 | 1.6901 | 1.6681 | 1.6467 | 1.6257 | 1.6052 | 1.5852 | 1.5656 | 1.5465 | 1.5278 | 1.5095 | 1.4915 |
| 3 | 2.9410 | 2.8839 | 2.8286 | 2.7751 | 2.7232 | 2.6730 | 2.6243 | 2.5771 | 2.5313 | 2.4869 | 2.4437 | 2.4018 | 2.3612 | 2.3216 | 2.2832 | 2.2459 | 2.2096 | 2.1743 | 2.1399 | 2.1065 | 2.0739 | 2.0422 |
| 4 | 3.9020 | 3.8077 | 3.7171 | 3.6299 | 3.5460 | 3.4651 | 3.3872 | 3.3121 | 3.2397 | 3.1699 | 3.1024 | 3.0373 | 2.9745 | 2.9137 | 2.8550 | 2.7982 | 2.7432 | 2.6901 | 2.6386 | 2.5887 | 2.5404 | 2.4936 |
| 5 | 4.8534 | 4.7135 | 4.5797 | 4.4518 | 4.3295 | 4.2124 | 4.1002 | 3.9927 | 3.8897 | 3.7908 | 3.6959 | 3.6048 | 3.5172 | 3.4331 | 3.3522 | 3.2743 | 3.1993 | 3.1272 | 3.0576 | 2.9906 | 2.9260 | 2.8636 |
| 6 | 5.7955 | 5.6014 | 5.4172 | 5.2421 | 5.0757 | 4.9173 | 4.7665 | 4.6229 | 4.4859 | 4.3553 | 4.2305 | 4.1114 | 3.9975 | 3.8887 | 3.7845 | 3.6847 | 3.5892 | 3.4976 | 3.4098 | 3.3255 | 3.2446 | 3.1669 |
| 7 | 6.7282 | 6.4720 | 6.2303 | 6.0021 | 5.7864 | 5.5824 | 5.3893 | 5.2064 | 5.0330 | 4.8684 | 4.7122 | 4.5638 | 4.4226 | 4.2883 | 4.1604 | 4.0386 | 3.9224 | 3.8115 | 3.7057 | 3.6046 | 3.5079 | 3.4155 |
| 8 | 7.6517 | 7.3255 | 7.0197 | 6.7327 | 6.4632 | 6.2098 | 5.9713 | 5.7466 | 5.5348 | 5.3349 | 5.1461 | 4.9676 | 4.7988 | 4.6389 | 4.4873 | 4.3436 | 4.2072 | 4.0776 | 3.9544 | 3.8372 | 3.7256 | 3.6193 |
| 9 | 8.5660 | 8.1622 | 7.7861 | 7.4353 | 7.1078 | 6.8017 | 6.5152 | 6.2469 | 5.9952 | 5.7590 | 5.5370 | 5.3282 | 5.1317 | 4.9464 | 4.7716 | 4.6065 | 4.4506 | 4.3030 | 4.1633 | 4.0310 | 3.9054 | 3.7863 |
| 10 | 9.4713 | 8.9826 | 8.5302 | 8.1109 | 7.7217 | 7.3601 | 7.0236 | 6.7101 | 6.4177 | 6.1446 | 5.8892 | 5.6502 | 5.4262 | 5.2161 | 5.0188 | 4.8332 | 4.6586 | 4.4941 | 4.3389 | 4.1925 | 4.0541 | 3.9232 |
| 11 | 10.3676 | 9.7868 | 9.2526 | 8.7605 | 8.3064 | 7.8869 | 7.4987 | 7.1390 | 6.8052 | 6.4951 | 6.2065 | 5.9377 | 5.6869 | 5.4527 | 5.2337 | 5.0286 | 4.8364 | 4.6560 | 4.4865 | 4.3271 | 4.1769 | 4.0354 |
| 12 | 11.2551 | 10.5753 | 9.9540 | 9.3851 | 8.8633 | 8.3838 | 7.9427 | 7.5361 | 7.1607 | 6.8137 | 6.4924 | 6.1944 | 5.9176 | 5.6603 | 5.4206 | 5.1971 | 4.9884 | 4.7932 | 4.6105 | 4.4392 | 4.2784 | 4.1274 |
| 13 | 12.1337 | 11.3484 | 10.6350 | 9.9856 | 9.3936 | 8.8527 | 8.3577 | 7.9038 | 7.4869 | 7.1034 | 6.7499 | 6.4235 | 6.1218 | 5.8424 | 5.5831 | 5.3423 | 5.1183 | 4.9095 | 4.7147 | 4.5327 | 4.3624 | 4.2028 |
| 14 | 13.0037 | 12.1062 | 11.2961 | 10.5631 | 9.8986 | 9.2950 | 8.7455 | 8.2442 | 7.7862 | 7.3667 | 6.9819 | 6.6282 | 6.3025 | 6.0021 | 5.7245 | 5.4675 | 5.2293 | 5.0081 | 4.8023 | 4.6106 | 4.4317 | 4.2646 |
| 15 | 13.8651 | 12.8493 | 11.9379 | 11.1184 | 10.3797 | 9.7122 | 9.1079 | 8.5595 | 8.0607 | 7.6061 | 7.1909 | 6.8109 | 6.4624 | 6.1422 | 5.8474 | 5.5755 | 5.3242 | 5.0916 | 4.8759 | 4.6755 | 4.4890 | 4.3152 |

## FUTURE VALUE TABLES

### Future value of R1 due at the end of n periods

| Period | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0100 | 1.0200 | 1.0300 | 1.0400 | 1.0500 | 1.0600 | 1.0700 | 1.0800 | 1.0900 | 1.1000 | 1.1100 | 1.1200 | 1.1300 | 1.1400 | 1.1500 | 1.1600 | 1.1700 | 1.1800 | 1.1900 | 1.2000 |
| 2 | 1.0201 | 1.0404 | 1.0609 | 1.0816 | 1.1025 | 1.1236 | 1.1449 | 1.1664 | 1.1881 | 1.2100 | 1.2321 | 1.2544 | 1.2769 | 1.2996 | 1.3225 | 1.3456 | 1.3689 | 1.3924 | 1.4161 | 1.4400 |
| 3 | 1.0303 | 1.0612 | 1.0927 | 1.1249 | 1.1576 | 1.1910 | 1.2250 | 1.2597 | 1.2950 | 1.3310 | 1.3676 | 1.4049 | 1.4429 | 1.4815 | 1.5209 | 1.5609 | 1.6016 | 1.6430 | 1.6852 | 1.7280 |
| 4 | 1.0406 | 1.0824 | 1.1255 | 1.1699 | 1.2155 | 1.2625 | 1.3108 | 1.3605 | 1.4116 | 1.4641 | 1.5181 | 1.5735 | 1.6305 | 1.6890 | 1.7490 | 1.8106 | 1.8739 | 1.9388 | 2.0053 | 2.0736 |
| 5 | 1.0510 | 1.1041 | 1.1593 | 1.2167 | 1.2763 | 1.3382 | 1.4026 | 1.4693 | 1.5386 | 1.6105 | 1.6851 | 1.7623 | 1.8424 | 1.9254 | 2.0114 | 2.1003 | 2.1924 | 2.2878 | 2.3864 | 2.4883 |
| 6 | 1.0615 | 1.1262 | 1.1941 | 1.2653 | 1.3401 | 1.4185 | 1.5007 | 1.5869 | 1.6771 | 1.7716 | 1.8704 | 1.9738 | 2.0820 | 2.1950 | 2.3131 | 2.4364 | 2.5652 | 2.6996 | 2.8398 | 2.9860 |
| 7 | 1.0721 | 1.1487 | 1.2299 | 1.3159 | 1.4071 | 1.5036 | 1.6058 | 1.7138 | 1.8280 | 1.9487 | 2.0762 | 2.2107 | 2.3526 | 2.5023 | 2.6600 | 2.8262 | 3.0012 | 3.1855 | 3.3793 | 3.5832 |
| 8 | 1.0829 | 1.1717 | 1.2668 | 1.3686 | 1.4775 | 1.5938 | 1.7182 | 1.8509 | 1.9926 | 2.1436 | 2.3045 | 2.4760 | 2.6584 | 2.8526 | 3.0590 | 3.2784 | 3.5115 | 3.7589 | 4.0214 | 4.2998 |
| 9 | 1.0937 | 1.1951 | 1.3048 | 1.4233 | 1.5513 | 1.6895 | 1.8385 | 1.9990 | 2.1719 | 2.3579 | 2.5580 | 2.7731 | 3.0040 | 3.2519 | 3.5179 | 3.8030 | 4.1084 | 4.4355 | 4.7854 | 5.1598 |
| 10 | 1.1046 | 1.2190 | 1.3439 | 1.4802 | 1.6289 | 1.7908 | 1.9672 | 2.1589 | 2.3674 | 2.5937 | 2.8394 | 3.1058 | 3.3946 | 3.7072 | 4.0456 | 4.4114 | 4.8068 | 5.2338 | 5.6947 | 6.1917 |
| 11 | 1.1157 | 1.2434 | 1.3842 | 1.5395 | 1.7103 | 1.8983 | 2.1049 | 2.3316 | 2.5804 | 2.8531 | 3.1518 | 3.4785 | 3.8359 | 4.2262 | 4.6524 | 5.1173 | 5.6240 | 6.1759 | 6.7767 | 7.4301 |
| 12 | 1.1268 | 1.2682 | 1.4258 | 1.6010 | 1.7959 | 2.0122 | 2.2522 | 2.5182 | 2.8127 | 3.1384 | 3.4985 | 3.8960 | 4.3345 | 4.8179 | 5.3503 | 5.9360 | 6.5801 | 7.2876 | 8.0642 | 8.9161 |
| 13 | 1.1381 | 1.2936 | 1.4685 | 1.6651 | 1.8856 | 2.1329 | 2.4098 | 2.7196 | 3.0658 | 3.4523 | 3.8833 | 4.3635 | 4.8980 | 5.4924 | 6.1528 | 6.8858 | 7.6987 | 8.5994 | 9.5964 | 10.6993 |
| 14 | 1.1495 | 1.3195 | 1.5126 | 1.7317 | 1.9799 | 2.2609 | 2.5785 | 2.9372 | 3.3417 | 3.7975 | 4.3104 | 4.8871 | 5.5348 | 6.2613 | 7.0757 | 7.9875 | 9.0075 | 10.1472 | 11.4198 | 12.8392 |
| 15 | 1.1610 | 1.3459 | 1.5580 | 1.8009 | 2.0789 | 2.3966 | 2.7590 | 3.1722 | 3.6425 | 4.1772 | 4.7846 | 5.4736 | 6.2543 | 7.1379 | 8.1371 | 9.2655 | 10.5387 | 11.9737 | 13.5895 | 15.4070 |

### Future value an **annuity** of R1 per period for n periods

| Period | 1% | 2% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 2 | 2.0100 | 2.0200 | 2.0400 | 2.0500 | 2.0600 | 2.0700 | 2.0800 | 2.0900 | 2.1000 |
| 3 | 3.0300 | 3.0600 | 3.1220 | 3.1530 | 3.1840 | 3.2150 | 3.2460 | 3.2780 | 3.3100 |
| 4 | 4.0600 | 4.1220 | 4.2460 | 4.3100 | 4.3750 | 4.4400 | 4.5060 | 4.5730 | 4.6410 |
| 5 | 5.1010 | 5.2040 | 5.4160 | 5.5260 | 5.6370 | 5.7510 | 5.8670 | 5.9850 | 6.1050 |
| 6 | 6.1520 | 6.3080 | 6.6330 | 6.8020 | 6.9750 | 7.1530 | 7.3360 | 7.5230 | 7.7160 |
| 7 | 7.2140 | 7.4340 | 7.8980 | 8.1420 | 8.3940 | 8.6540 | 8.9230 | 9.2000 | 9.4870 |
| 8 | 8.2860 | 8.5830 | 9.2140 | 9.5490 | 9.8970 | 10.2600 | 10.6370 | 11.0280 | 11.4360 |
| 9 | 9.3690 | 9.7550 | 10.5830 | 11.0270 | 11.4910 | 11.9780 | 12.4880 | 13.0210 | 13.5790 |
| 10 | 10.4620 | 10.9500 | 12.0060 | 12.5780 | 13.1810 | 13.8160 | 14.4870 | 15.1930 | 15.9370 |
| 11 | 11.5670 | 12.1690 | 13.4860 | 14.2070 | 14.9720 | 15.7840 | 16.6450 | 17.5600 | 18.5310 |
| 12 | 12.6830 | 13.4120 | 15.0260 | 15.9170 | 16.8700 | 17.8880 | 18.9770 | 20.1410 | 21.3840 |
| 13 | 13.8090 | 14.6800 | 16.6270 | 17.7130 | 18.8820 | 20.1410 | 21.4950 | 22.9530 | 24.5230 |
| 14 | 14.9470 | 15.9740 | 18.2920 | 19.5990 | 21.0150 | 22.5500 | 24.2150 | 26.0190 | 27.9750 |
| 15 | 16.0970 | 17.2930 | 20.0240 | 21.5790 | 23.2760 | 25.1290 | 27.1520 | 29.3610 | 31.7720 |