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| Year  10 | | Mathematics Test  Compound Interest and Depreciation | | | Calculator Allowed |
| Short Answer Section | | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper. | | | | |
|  | Formulae. | | | | |
|  | Simple Interest | | Compound Interest | | |
| *I* is the interest earned  *P* is the principal  *R* is the interest rate per period as a decimal  *N* is the number of periods | | *A* is the total amount of the investment  *P* is the principal  *R* is the interest rate per period as a decimal  *N* is the number of compounding periods | | |
| 1. | Latisha invests $1 200 in an account which pays 0.5% per month simple interest. How much interest does she earn after 9 months?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 2. | Julia borrows $6 000 to buy a car. She repays the loan after 3 years plus interest of $1 260. What rate of simple interest did she pay, per annum?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 3. | Xavier invests $3 000 in an account which pays 5% pa interest, compounded annually for 3 years. Complete the table below to find the value of the investment at the end of each year.   |  |  |  |  | | --- | --- | --- | --- | | Year | Principal at the Start of the Year | Interest Earned During the Year | Principal at the End of the Year | | 1 | $3 000 | $150 | $3 150 | | 2 | $3 150 |  |  | | 3 |  |  |  | | | | | |
| 4. | Zoe invests her tax cheque of $1 600 in a term deposit which pays 6% pa interest, compounded annually. Complete the table below to find the value of the investment after 4 years.   |  |  |  |  | | --- | --- | --- | --- | | Year | Principal at the Start of the Year | Interest Earned During the Year | Principal at the End of the Year | | 1 |  |  |  | | 2 |  |  |  | | 3 |  |  |  | | 4 |  |  |  | | | | | |
| 5. | A principal of $34 000 is invested at 8% pa interest compounded annually. Use the compound interest formula, given above to find the value of the investment after 3 years.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 6. | Pete borrows $16 000 from his dad to buy a car and repays the full amount plus interest after 4 years. His dad charges interest 2% pa, compounded quarterly. How much does he need to repay?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 7. | Mickie has $3 000 invested in an investment account and leaves it there for 3 years. The interest rate is 6% pa compounded half yearly. How much interest will Mickie be paid at the end of the 3 years?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 8. | Dane borrows $145 000 to buy a prime mover for his business. The interest rate is 6% pa compounded monthly. How much must Dane repay if he pays the loan off in full including all interest after 4 years?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 9. | Louisa bought a new car for $28 000 three years ago. If the car depreciated at 7% pa compounding annually, what is the value of the car today?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |
| 10. | Milltown Printers bought a new copier for $13 000. It depreciates at 12% pa compounded annually. It will be replaced when its value falls below $6 500. Will they replace the copier after 5 years? (Explain your answer, including calculations.)  ..........................................................................................................................................................    .......................................................................................................................................................... | | | | |

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| Year  10 | | Mathematics Test  Compound Interest and Depreciation | | Calculator Allowed |
| Multiple Choice Section | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
| 1. | Justine buys a motor scooter on terms in which she pays monthly repayments of $635 for 3 years. If the cash price of the motor scooter was $18 000, what rate of simple interest was she charged?  A. 2.8% B. 9% C. 27% D. 78.7% | | | |
| 2. | Abby invests $4 800 in a term deposit which pays 8% pa interest, compounded six monthly. Abby drew up the table below to keep track of the value of the investment over 18 months.   |  |  |  |  | | --- | --- | --- | --- | | Time | Principal at the Start of the Period | Interest Earned During the Period | Principal at the End of the Period | | 1st six months | $4 800.00 | $192.00 | $4 992.00 | | 2nd six months | $4 992.00 | $199.68 | $5 191.68 | | 3rd six months | $5 191.68 |  |  |   What is the value of the investment after 18 months?  A $207.67 B. $415.33 C. $5 607.01 D. $5 399.35 | | | |
| 3. | Marika invests $30 000 at 8% p.a. interest, compounding annually. What is her investment worth at the end of 3 years?    A. $7 791.36 B. $37 200.00 C. $37 791.36 D. $40 814.67 | | | |
| 4. | Which calculation would you use to find the interest on $11 000 invested at 8% p.a. interest compounding quarterly for two years.  A.  B.  C.  D. | | | |
| 5. | Richard borrows $32 000 at 6% p.a. interest, compounding monthly. What does he owe at the end of 2 years if he has made no repayments?    A. $32 320.80 B. $35 955.20 C. $36 069.11 D. $129 565.91 | | | |
| 6. | Scott deposits $12 000 into a term deposit account. The account earns interest at the rate of 9% pa compounding monthly. If he leaves his money in the account for 8 months, how much interest will he have earned when he withdraws his money from the account?  A. $709.61 B. $11 910.75 C. $1 090.00 D. $739.19 | | | |
| 7. | Marta buys a laptop for $3 200.00 It depreciates at a rate of 12% pa compounding annually. What is the value of the laptop after four years?  A. $1 536.00 B. $1 919.03 C. $2 180.71 D. $2 816.00 | | | |
| 8. | A smart phone is bought for $880.00, and depreciates at 2% per month compounded monthly. What is its value after 3 months?  A. $386.30 B. $633.60 C. $862.40 D. $828.25 | | | |
| 9. | A credit card charges interest on outstanding balances at a rate of 0.05% per day. Lesley has an outstanding balance on her credit card of $360.00 for 21 days. How much interest will she be charged on the card?  A. $3.78 B. $12.60 C. $31.50 D. $378.00 | | | |
| 10. | Marta invests $4 000 into an account which pays 8% pa compounded annually. How long will it take for her investment to approximately double in value?  A. 8 years B. 9 years C. 10 years D. 11 years | | | |

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| Year  10 | | | | Mathematics Test  Compound Interest and Depreciation | | Calculator Allowed |
| Longer Questions | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | | Write all working and answers in the spaces provided on this test paper.  Calculators are allowed for this section. | | | | |
| 1. | |  | The table below gives the value of $1.00 after being invested at different rates of compound interest for varying terms.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  | Compound interest rate pa | | | | | | | | Years  Invested | 2% | 3% | 4% | 5% | 6% | 7% | 8% | | 1 | $1.0200 | $1.0300 | $1.0400 | $1.0500 | $1.0600 | $1.0700 | $1.0800 | | 2 | $1.0404 | $1.0609 | $1.0816 | $1.1025 | $1.1236 | $1.1449 | $1.1664 | | 3 | $1.0612 | $1.0927 | $1.1249 | $1.1576 | $1.1910 | $1.2250 | $1.2597 | | 4 | $1.0824 | $1.1255 | $1.1699 | $1.2155 | $1.2625 | $1.3108 | $1.3605 | | 5 | $1.1041 | $1.1593 | $1.2167 | $1.2763 | $1.3382 | $1.4026 | $1.4693 | | 6 | $1.1262 | $1.1941 | $1.2653 | $1.3401 | $1.4185 | $1.5007 | $1.5869 | | 7 | $1.1487 | $1.2299 | $1.3159 | $1.4071 | $1.5036 | $1.6058 | $1.7138 | | 8 | $1.1717 | $1.2668 | $1.3686 | $1.4775 | $1.5938 | $1.7182 | $1.8509 | | 9 | $1.1951 | $1.3048 | $1.4233 | $1.5513 | $1.6895 | $1.8385 | $1.9990 | | 10 | $1.2190 | $1.3439 | $1.4802 | $1.6289 | $1.7908 | $1.9672 | $2.1589 | | | | |
|  | (a)  1 mark | | What would be the value of an investment of $2 000.00 after 7 years invested at 6% pa compound interest?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| (b)  1 mark | | At what interest rate would you need to invest $2 000.00 to grow to $3 001.40 after 6 years?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| (c)  1 mark | | How long would you need to leave $2 000.00 in an account paying 4% pa compound interest for it to grow to $2 530.60?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |

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| 2. | Nick bought a television priced at $2400. He paid a $400 deposit, no payments for 12 months and then monthly payments of $140 for 2 years. | |
|  | a)  1 mark | How much did he still owe after the deposit was paid (the balance)?  ..........................................................................................................................................................    .......................................................................................................................................................... |
| b)  1 mark | How much did he pay for the television altogether?  ..........................................................................................................................................................    .......................................................................................................................................................... |
| (c)  1 mark | How much interest did he pay?  ..........................................................................................................................................................    .......................................................................................................................................................... |
|  | (d)  1 mark | What annual flat interest rate was charged over the 3 years?  ..........................................................................................................................................................    .......................................................................................................................................................... |

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| Year  10 | Mathematics Test  Compound Interest and Depreciation | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Multiple Choice Answer Sheet | |

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

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| Year  10 | Mathematics Test  Compound Interest and Depreciation |
| Answer Sheet |

|  |  |
| --- | --- |
| Short Answer | |
| 1 | $54 |
| 2 | 7% pa |
| 3 | $3 307.50  $3 472.88 |
| 4 | $1696.00  $1 797.76  $1 905.63  $2 019.96 |
| 5 | $42 830.21 |
| 6 | $17 329.14 |
| 7 | $582.16 |
| 8 | $184 220.93 |
| 9 | $22 522.00 |
| 10 | Value is $6 860.51 so wouldn’t be replaced. |

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| Multiple Choice | |
| 1 | B |
| 2 | D |
| 3 | C |
| 4 | A |
| 5 | C |
| 6 | D |
| 7 | B |
| 8 | D |
| 9 | A |
| 10 | B |

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| Longer Answer | | |
| 1 | a | $3 007.20 |
|  | b | 7% |
|  | c | 6 years |
|  |  |  |
| 2 | a | $2 000 |
|  | b | $3 760 |
|  | c | $1 360 |
|  | d | 18.9% |