

# Compound Interest

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 18

## Quick Review and Helpful Hints

Compound interest earns interest on the interest already earned. For yearly compounding, the amount is  $A = P(1 + r)^t$ , where  $P$  is the principal,  $r$  is the rate (as a decimal), and  $t$  is the number of years. The interest earned is  $A - P$ .

▶ **Example:** Find the amount on \$100 at 10% for 2 years (compounded yearly). **Work:**  $A = 100(1.10)^2 = 100(1.21)$ .

★ **Answer:** \$121



Interest grows on interest.

### Practice Problems

Find the amount (or interest, where asked).

- |                        |       |                                      |       |
|------------------------|-------|--------------------------------------|-------|
| 1. \$100 at 10%, 1 yr  | _____ | 8. \$1000 at 10%, 1 yr               | _____ |
| 2. \$100 at 10%, 2 yr  | _____ | 9. \$100 at 10%, 2 yr: interest only | _____ |
| 3. \$200 at 10%, 1 yr  | _____ | 10. \$200 at 10%, 2 yr               | _____ |
| 4. \$100 at 20%, 1 yr  | _____ | 11. \$100 at 5%, 1 yr                | _____ |
| 5. \$100 at 100%, 1 yr | _____ | 12. \$400 at 25%, 1 yr               | _____ |
| 6. \$500 at 10%, 1 yr  | _____ | 13. \$100 at 10%, 3 yr               | _____ |
| 7. \$100 at 50%, 1 yr  | _____ | 14. \$1000 at 100%, 1 yr             | _____ |

### Word Problems

15. \$1000 grows at 10% for 2 years (yearly). Find the final amount. \_\_\_\_\_
16. \$100 grows at 10% for 2 years. How much interest is earned? \_\_\_\_\_
17. \$500 grows at 20% for 1 year. Find the amount. \_\_\_\_\_
18. \$200 grows at 50% for 1 year. Find the amount. \_\_\_\_\_



## Answer Keys

- |                                       |  |   |
|---------------------------------------|--|---|
| 1. <input type="text" value="\$110"/> | 7. <input type="text" value="\$150"/>  | 13. <input type="text" value="\$133.10"/> |
| 2. <input type="text" value="\$121"/> | 8. <input type="text" value="\$1100"/> | 14. <input type="text" value="\$2000"/>   |
| 3. <input type="text" value="\$220"/> | 9. <input type="text" value="\$21"/>   | 15. <input type="text" value="\$1210"/>   |
| 4. <input type="text" value="\$120"/> | 10. <input type="text" value="\$242"/> | 16. <input type="text" value="\$21"/>     |
| 5. <input type="text" value="\$200"/> | 11. <input type="text" value="\$105"/> | 17. <input type="text" value="\$600"/>    |
| 6. <input type="text" value="\$550"/> | 12. <input type="text" value="\$500"/> | 18. <input type="text" value="\$300"/>    |

### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.10) = \$110$ . So the final answer is \$110.
2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.10)^2 = 100(1.21) = \$121$ . So the final answer is \$121.
3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $200(1.10) = \$220$ . So the final answer is \$220.
4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.20) = \$120$ . So the final answer is \$120.
5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(2.00) = \$200$ . So the final answer is \$200.
6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $500(1.10) = \$550$ . So the final answer is \$550.
7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.50) = \$150$ . So the final answer is \$150.
8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $1000(1.10) = \$1100$ . So the final answer is \$1100.
9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $121 - 100 = \$21$ . So the final answer is \$21.
10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $200(1.21) = \$242$ . So the final answer is \$242.
11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.05) = \$105$ . So the final answer is \$105.
12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $400(1.25) = \$500$ . So the final answer is \$500.
13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $100(1.10)^3 = 100(1.331) = \$133.10$ . So the final answer is \$133.10.
14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $1000(2.00) = \$2000$ . So the final answer is \$2000.
15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $1000(1.10)^2 = 1000(1.21) = \$1210$ . So the final answer is \$1210.
16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $121 - 100 = \$21$ . So the final answer is \$21.
17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $500(1.20) = \$600$ . So the final answer is \$600.
18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $200(1.50) = \$300$ . So the final answer is \$300.



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