

Cost of Credit and Loans

Name: _____

Date: _____

Score: _____ / 24

Q Quick Review

Borrowing money is convenient, but it is not free — you pay it back with **interest**, the cost of using someone else's money. With an **installment loan** you make equal monthly payments, so the **total cost** is (monthly payment) \times (number of months), and the **interest you pay** is total cost – amount borrowed. A **credit card** charges interest each month on any unpaid balance; the **APR** (annual percentage rate) divided by 12 gives the monthly rate. The lesson is simple: the longer you take to pay, the more interest piles up, so paying sooner saves money.

◇ **Example:** A \$1,200 loan is repaid in 12 monthly payments of \$110. Find the total cost and the interest paid.
 \Rightarrow Start with the total cost — that's every payment added up: $\$110 \times 12 = \$1,320$. That is what leaves your pocket. The *interest* is the extra you paid beyond what you borrowed, so subtract the loan amount: $\$1,320 - \$1,200 = \$120$. So this loan cost \$120 in interest — the price of spreading the payments over a year.

Answer: Total \$1,320; interest \$120

PRACTICE

Find the total cost, interest paid, or monthly charge as asked.

- | | | | |
|---------------------------------------------------|-------|-----------------------------------------------------|-------|
| 1. \$2,000 loan, \$180/mo \times 12; total cost | _____ | 12. \$800 loan, \$75/mo \times 12; interest | _____ |
| 2. \$2,000 loan, \$180/mo \times 12; interest | _____ | 13. \$5,000 loan, \$230/mo \times 24; total cost | _____ |
| 3. \$500 loan, \$90/mo \times 6; total cost | _____ | 14. \$5,000 loan, \$230/mo \times 24; interest | _____ |
| 4. \$500 loan, \$90/mo \times 6; interest | _____ | 15. \$2,400 loan, \$220/mo \times 12; interest | _____ |
| 5. \$3,000 loan, \$280/mo \times 12; total cost | _____ | 16. \$10,000 loan, \$320/mo \times 36; interest | _____ |
| 6. \$3,000 loan, \$280/mo \times 12; interest | _____ | 17. Min. payment: 2% of a \$400 balance | _____ |
| 7. \$1,000 loan, \$95/mo \times 12; total cost | _____ | 18. One month interest: \$1,000 balance, 18% APR | _____ |
| 8. \$1,000 loan, \$95/mo \times 12; interest | _____ | 19. One month interest: \$600 balance, 24% APR | _____ |
| 9. \$1,500 loan, \$140/mo \times 12; total cost | _____ | 20. One month interest: \$300 balance, 1.5% monthly | _____ |
| 10. \$1,500 loan, \$140/mo \times 12; interest | _____ | | |
| 11. \$800 loan, \$75/mo \times 12; total cost | _____ | | |

◆ Word Problems

21. Sofia borrows \$1,800 for a used scooter and repays it in 15 monthly payments of \$150. How much interest does she pay in all?

22. Jordan has a \$1,000 credit card balance at 18% APR. If he makes no new charges and pays nothing for one month, how much interest is added?

23. A \$3,000 loan can be repaid as \$280/month for 12 months, or \$160/month for 24 months. How much more interest does the longer plan cost?

24. Aisha's credit card charges 24% APR. She carries a \$600 balance for 3 months without paying it down. About how much interest does she owe, ignoring compounding?



Answer Keys

- | | |
|------------|----------------|
| 1. \$2,160 | 13. \$5,520 |
| 2. \$160 | 14. \$520 |
| 3. \$540 | 15. \$240 |
| 4. \$40 | 16. \$1,520 |
| 5. \$3,360 | 17. \$8.00 |
| 6. \$360 | 18. \$15.00 |
| 7. \$1,140 | 19. \$12.00 |
| 8. \$140 | 20. \$4.50 |
| 9. \$1,680 | 21. \$450 |
| 10. \$180 | 22. \$15 |
| 11. \$900 | 23. \$480 more |
| 12. \$100 | 24. \$36 |

Step-by-Step Explanations

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| <p>1. Total cost is all the payments: $180 \times 12 = 2160$.</p> <p>2. Interest is total minus borrowed: $2160 - 2000 = 160$.</p> <p>3. $90 \times 6 = 540$ paid in all.</p> <p>4. $540 - 500 = 40$ in interest.</p> <p>5. $280 \times 12 = 3360$.</p> <p>6. $3360 - 3000 = 360$.</p> <p>7. $95 \times 12 = 1140$.</p> <p>8. $1140 - 1000 = 140$.</p> <p>9. $140 \times 12 = 1680$.</p> <p>10. $1680 - 1500 = 180$.</p> <p>11. $75 \times 12 = 900$.</p> <p>12. $900 - 800 = 100$.</p> <p>13. $230 \times 24 = 5520$.</p> <p>14. $5520 - 5000 = 520$.</p> | <p>15. Total $220 \times 12 = 2640$, so interest = $2640 - 2400 = 240$.</p> <p>16. Total $320 \times 36 = 11520$, so interest = $11520 - 10000 = 1520$.</p> <p>17. 2% of 400 is $400 \times 0.02 = 8$.</p> <p>18. Monthly rate is $\frac{18\%}{12} = 1.5\%$, so $1000 \times 0.015 = 15$.</p> <p>19. Monthly rate is $\frac{24\%}{12} = 2\%$, so $600 \times 0.02 = 12$.</p> <p>20. The monthly rate is already given: $300 \times 0.015 = 4.50$.</p> <p>21. Total paid is $150 \times 15 = \\$2,250$. The interest is the extra above the loan: $2250 - 1800 = \\$450$.</p> <p>22. The monthly rate is $\frac{18\%}{12} = 1.5\%$. One month of interest is $1000 \times 0.015 = \\$15$.</p> <p>23. Short plan total: $280 \times 12 = \\$3,360$, interest \$360. Long plan total: $160 \times 24 = \\$3,840$, interest \$840. The difference is $840 - 360 = \\$480$.</p> <p>24. The monthly rate is $\frac{24\%}{12} = 2\%$, so each month adds $600 \times 0.02 = \\$12$. Over 3 months that is $12 \times 3 = \\$36$.</p> |
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