$A = P(1 \pm r)^t$

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Algebra II

Creating and Solving Simple Exponential Functions

1. A certain car depreciates at a rate of 15% each year. If the car was initially worth \$8125, what is the value of the car, rounded to the nearest cent, 11 years later?

$A = A$
$P = 8125$
$r = .15$
$t = 11$

$A = 8125(1 - .15)^{11}$
$A = 8125(.85)^{11}$
$A = 1359.66$

2. The value of a truck bought new for \$28,000 decreases 9.5% each year. Write an exponential function to represent this function and predict the value of the truck to the nearest cent after 10 years.

$A = A$
$P = 28000$
$r = .095$
$t = 10$

$A = 28000(1 - .095)^{10}$
$A = 28000(.905)^{10}$
$A = 10319.15$

3. Cassandra bought an antique dresser for \$500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the *nearest dollar*?

1) \$415
2) \$590
~~3)~~ \$596
4). \$770

$A = A$
$P = 500$
$r = .06$
$t = 3$

$A = 500(1 + .06)^3$
$A = 500(1.06)^3$
$A = 596$

4. Daniel's Print Shop purchased a new printer for \$35,000. Each year it depreciates (loses value) at a rate of 5%. What will its approximate value be at the end of the fourth year?

1) \$33,250.00
2) \$30,008.13
~~3)~~ \$28,507.72
4) \$27,082.33

$A = A$
$P = 35000$
$r = .05$
$t = 4$

$A = 35000(1 - .05)^4$
$A = 35000(.95)^4$
$A = 28507.72$

5. Kathy plans to purchase a car that depreciates (loses value) at a rate of 14% per year. The initial cost of the car is \$21,000. What is the value, *v*, of the car after 3 years rounded to the nearest cent?

$A = V$
$P = 21{,}000$
$r = .14$
$t = 3$

$V = 21{,}000(1 - .14)^3$
$V = 21{,}000(.86)^3$
$V = 13357.18$

3.75%

6. A bank is advertising that new customers can open a savings account with a $3\frac{3}{4}\%$ interest rate compounded annually. Robert invests $5,000 in an account at this rate. If he makes no additional deposits or withdrawals on his account, find the amount of money he will have, to the *nearest cent*, after three years.

$A = A$
$P = 5000$
$r = .0375$
$t = 3$

$A = 5000(1+.0375)^3$
$A = 5000(1.0375)^3$
$A = 5583.86$

7. A car worth $20,000 depreciates at a rate of 8.75% each year. Find the value of the car after 11 years to the nearest cent?

$A = A$
$P = 20{,}000$
$r = .0875$
$t = 11$

$A = 20{,}000(1-.0875)^{11}$
$A = 20{,}000(.9125)^{11}$
$A = 7304.52$

8. Marissa deposits $2000 into a bank account with pays an annual interest rate of 4.6%. How much money, to the nearest cent, will she have in the account after 8 years?

$A = A$
$P = 2000$
$r = .046$
$t = 8$

$A = 2000(1+.046)^8$
$A = 2000(1.046)^8$
$A = 2866.05$

9. Jeff deposits $8750 into a bank account with pays an annual interest rate of 1.5%. How much money, to the nearest cent, will he have in the account after 12 years?

$A = A$
$P = 8750$
$r = .015$
$t = 12$

$A = 8750(1+.015)^{12}$
$A = 8750(1.015)^{12}$
$A = 10461.66$

10. A car worth $41,235 depreciates at a rate of 11.5% each year. Find the value of the car after 7 years to the nearest cent?

$A = A$
$P = 41235$
$r = .115$
$t = 7$

$A = 41235(1-.115)^7$
$A = 41235(.885)^7$
$A = 17533.51$