

<p>9. Determine the growth/decay factor and percent.</p>	<p>$(1+r)$ and $(1-r)$ represent the growth and decay factors</p> <p>Percent is just the r value</p>	<p>a. $y = 3(1.25)^x$</p> <p>Determine if the function is growth or decay: Growth</p> <p>Factor: 1.25</p> <p>Percent Change: 25%</p> <p>$100\% + \underline{\quad} = 125\%$</p>	<p>b. $y = 2(.84)^x$</p> <p>Determine if the function is growth or decay: Decay</p> <p>Factor: .84</p> <p>Percent Change: 16%</p> <p>$100\% - \underline{\quad} = 84\%$</p>
<p>10. Applications of exponential functions.</p>	<p>$y = a(1+r)^t$</p> <p>$y = a(1-r)^t$</p> <p>$A = P\left(1 + \frac{r}{n}\right)^{nt}$</p>	<p>a. Duke deposits \$2000 into a bank account that pays 5% interest compounded monthly. Find the balance in the account after 4 years.</p> <p>Model: $A = 2000\left(1 + \frac{.05}{12}\right)^{12 \cdot 4}$</p> <p>$A = 2000\left(1 + \frac{.05}{12}\right)^{12 \cdot 4}$</p> <p>Solution: <u>\$2441.79</u></p>	<p>b. The value of the Barbie Dream House is \$125,000. This house is in a prime location and appreciates (increases in value) at a rate of 7% per year. How much will the Barbie Dream House be worth in 5 years?</p> <p>Model: $y = 125,000(1.07)^t$</p> <p>$y = 125,000(1.07)^5$</p> <p>Solution: <u>\$175,319</u></p>
<p>11. Solve an exponential equation.</p>	<p>*Rewrite the bases using exponents.</p>	<p>c. $4^{x+2} = 4^{4x-1}$</p> <p>$\frac{x+2}{-x+1} = \frac{4x-1}{-x+1}$</p> <p>$\frac{3}{3} = \frac{3x}{3}$</p> <p>$1 = x$</p>	<p>d. Michael is offered two jobs - Job A, which offers him a starting salary of \$20,000 a year with a 5% raise each year he works there and Job B, which offers him a starting salary of \$25,000, but only a 3% raise each year. Michael plans to work to work at the job for <u>7</u> years. Which job should he pick and why?</p> <p>Job A: $y = 20,000(1.05)^t$</p> <p>$y = 20,000(1.05)^7$</p> <p>$y = \\$28,142$</p> <p>Job B: $y = 25,000(1.03)^t$</p> <p>$y = 25,000(1.03)^7$</p> <p>$y = \\$30,747$</p> <p>Job B pays more after 7 years.</p>
		<p>c. $9^{3x+16} = 81^{x+5}$</p> <p>$\frac{3x+16}{-2x-16} = \frac{2x+10}{-2x-16}$</p> <p>$\frac{1}{1} = \frac{-6}{-6}$</p> <p>$x = -6$</p>	<p>b. $5^{3x-3} = 125$</p> <p>$\frac{3x-3}{+3} = \frac{3}{+3}$</p> <p>$\frac{3x-6}{3} = \frac{6}{3}$</p> <p>$x = 2$</p>
			<p>d. $4^{2x} = 64$</p> <p>$\frac{2x}{\frac{1}{2}} = \frac{3}{\frac{1}{2}}$</p> <p>$x = \frac{3}{2}$</p>