### Lesson 11 Practice Problems

1. Select **all** expressions that are equal to $log\_{2}8$.
	1. $log\_{5}20$
	2. $log\_{5}125$
	3. $log\_{10}100$
	4. $log\_{10}1,​000$
	5. $log\_{3}27$
	6. $log\_{10}0.001$
2. Which expression has a greater value: $log\_{10}\frac{1}{100}$ or $log\_{2}\frac{1}{8}$? Explain how you know.
3. Andre says that $log\_{10}\left(55\right)=1.5$ because 55 is halfway between 10 and 100. Do you agree with Andre? Explain your reasoning.
4. An exponential function is defined by $k\left(x\right)=15⋅2^{x}$.
	1. Show that when $x$ increases from 1 to 1.25 and when it increases from 2.75 to 3, the value of $k$ grows by the same factor.
	2. Show that when $x$ increases from $t$ to $t+0.25$, $k\left(t\right)$ also grows by this same factor.
* (From Unit 4, Lesson 5.)
1. How many times does $1 need to double in value to become $1,000,000? Explain how you know.
* (From Unit 4, Lesson 8.)
1. What values could replace the “?” in these equations to make them true?
	1. $log\_{10}10,​000=?$
	2. $log\_{10}10,​000,​000=?$
	3. $log\_{10}?=5$
	4. $log\_{10}?=1$
* (From Unit 4, Lesson 9.)
	1. What value of $t$ would make the equation $2^{t}=6$ true?
	2. Between which two whole numbers is the value of $log\_{2}6$? Explain how you know.
* (From Unit 4, Lesson 10.)
1. For each exponential equation, write an equivalent equation in logarithmic form.
	1. $3^{4}=81$
	2. $10^{0}=1$
	3. $4^{\frac{1}{2}}=2$
	4. $2^{t}=5$
	5. $m^{n}=C$
* (From Unit 4, Lesson 10.)



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