Properties of Logarithms Notes

A few handy properties to know:

Properties of logarithms are closely related to properties of exponents:

	Exponents	Logarithms
Product Property:	$x^a \cdot x^b = x^{a+b}$	$\log_a xy = \log_a x + \log_a y$
Quotient Property:	$\dfrac{x^a}{x^b} = x^{a-b}$	$\log_a \dfrac{x}{y} = \log_a x - \log_a y$
Power Property:	$(x^a)^b = x^{ab}$	$\log_a x^y = y \cdot \log_a x$

Expand each logarithm.

$$) \ \log_8 \left(\frac{x^6}{y} \right)^4$$

$$\log \left(7 \sqrt[3]{3} \cdot 11 \right)$$

Condense each logarithm.

$$) \ 6 \log_4 x - 5 \log_4 y$$

$$6 \log_3 7 + \frac{\log_3 8}{2}$$