Feb.29th, 2016

Unit 3 Day 2
3-2 Exponent Laws: Products + Quotients

1) $2^3 \cdot 2^2$
$= (2 \cdot 2 \cdot 2)(2 \cdot 2)$
$= 2^{3+2}$
$= 2^5$

2) $5 \cdot 5^3$
$= 5(5 \cdot 5 \cdot 5)$
$= 5^{1+3}$
$= 5^4$

3) $3^5 \cdot 3^6$
$= 3^{5+6}$
$= 3^{11}$

$x^a \cdot x^b = x^{a+b}$ Exponent Product Law

4) $8^9 \cdot 8^3$
$= 8^{12}$

5) $a^7 \cdot a^8 \cdot a$
$= a^{16}$

6) $5^3 x^2$
$= 5^3 x^2$ *

Quotients

7) $\frac{3^5}{3^2}$
$= \frac{3 \cdot 3 \cdot 3 \cdot \cancel{3} \cdot \cancel{3}}{\cancel{3} \cdot \cancel{3}}$
$= 3^{5-2}$
$= 3^3$

8) $\frac{x^6}{x}$
$= \frac{x \cdot x \cdot x \cdot x \cdot x \cancel{x}}{x}$
$= x^{6-1}$
$= x^5$

9) $x^{12} \div x^8$
$= x^{12-8}$
$= x^4$

$\frac{x^a}{x^b} = x^{a-b}$ Exponent Law for Quotients

10) $\frac{2^3 \cdot 2^5}{2^2 \cdot 2}$
$= \frac{2^8}{2^3}$
$= 2^5$

11) $\frac{3^5 \cdot 3^7 \cdot 3^2}{3^4 \cdot 3^3}$
$= \frac{3^{14}}{3^7}$
$= 3^7$

12) $\frac{64 \cdot 128 \cdot 1024}{512}$

$= \frac{2^6 \cdot 2^7 \cdot 2^{10}}{2^9}$

$= \frac{2^{23}}{2^9}$

$= 2^{14}$

13) $\frac{59049 \cdot 2187 \cdot 81}{6561}$

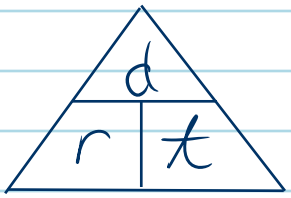
$= \frac{3^{10} \cdot 3^7 \cdot 3^4}{3^8}$

$= \frac{3^{21}}{3^8}$

$= 3^{13}$

Problem Solving

d = distance
r = rate
t = time



Mnemonic
- memory aid

$d = rt$

$r = \frac{d}{t}$

$t = \frac{d}{r}$

14) At a rate of 10^5 km/h, how long would it take to travel 10^{14} km?

$\rightarrow t = \frac{d}{r}$

$t = \frac{10^{14}\ \text{km}}{10^5\ \text{km/h}}$

$t = 10^9\ \text{h}$

Practice 3-2