Do all problems. Show all work to problems with given answers.

Name _____   Date _____

LESSON 7.2
Simplify the expression. Write your answer using exponents.

1. $\dfrac{6^{14}}{6^8}$

2. $\dfrac{14^5}{14^4}$

3. $\dfrac{(-5)^7}{(-5)^2}$

4. $\dfrac{12^5 \bullet 12^3}{12^4}$

5. $\dfrac{8^{17}}{8^3 \cdot 8^7}$

6. $\left(\dfrac{3}{4}\right)^5$

7. $-\left(\dfrac{1}{5}\right)^6$

8. $3^8 \bullet \dfrac{1}{3^1}$

4^8 9. $\left(\dfrac{1}{4}\right)^5 \bullet 4^{13}$

Simplify the expression.

10. $\dfrac{1}{y^9} \cdot y^{15}$

11. $\left(\dfrac{a}{b}\right)^8$

13. $-\left(\dfrac{6}{z}\right)^{3}$

$\dfrac{a^{12}}{16b^{20}}$ **14.** $\left(\dfrac{a^{3}}{2b^{5}}\right)^{4}$

$\dfrac{243x^{20}}{y^{30}}$ **15.** $\left(\dfrac{3x^{4}}{y^{6}}\right)^{5}$

$\dfrac{m^{12}}{125n^{27}}$ **16.** $\left(\dfrac{m^{4}}{5n^{9}}\right)^{3}$

$\dfrac{81x^{28}}{16y^{48}}$ **17.** $\left(\dfrac{3x^{7}}{2y^{12}}\right)^{4}$

$\dfrac{32m^{25}}{243n^{45}}$ **18.** $\left(\dfrac{2m^{5}}{3n^{9}}\right)^{5}$

10^{3} **19. Area** The area of New Zealand is 104,454 square miles and the area of Saint Kitts and Nevis, islands in the Caribbean Sea, is 104 square miles. Use order of magnitude to estimate how many times greater New Zealand's area is than Saint Kitts and Nevis' area.

20. Cell Phone Subscribers The table below shows the approximate number of cell phone subscribers in selected countries in 2001.

Country	Algeria	Dominican Republic	Poland	Solomon Islands
Number of subscribers	10^{5}	10^{6}	10^{7}	10^{3}

10^{4} **a.** How many times greater is the number of cell phone subscribers in Poland than in the Solomon Islands?

10^{3} **b.** How many times greater is the number of cell phone subscribers in the Dominican Republic than in the Solomon Islands?