HS Algebra 1-2 Unit 7 REVIEW: Exponents Assessment

Show your work when appropriate. Use complete sentences for all written responses.

**Level 2:**
Evaluate the following expressions.

1.) $-6^3$ 
2.) $2^{-8}$ 
3.) $\left(\frac{1}{3}\right)^{-4}$ 
4.) $(526)^0$

Simplify the following expressions. Write your answers with positive exponents only.

5.) $(x^2)(x^3)$ 
6.) $\frac{d^5}{d^2}$

7.) $(2x)^3$ 
8.) $\frac{1}{b^{-6}}$

9.) $\left(\frac{x}{y}\right)^{-2}$

**Level 3:**
Simplify the following expressions. Write your answers with positive exponents only.

10.) $-(10a)^{-3}b^0$ 
11.) $(12mn)(-m^3n^2p^5)(2m)$

12.) $\left(\frac{12p^3}{15p}\right)^4$
13.) $(6a)^4$

14.) $\left(\frac{4m^2}{2m^{-3}}\right)\left(\frac{3n^5}{-mn}\right)$ 
15.) $\left(-\frac{3x^4}{2y^5}\right)^3$

16.) $\frac{-3k^{-3}(mn)^3}{p^{-8}}$ 
17.) $(v^2)^3(w^4)^\frac{1}{3}$

Write in simplified exponential form. Write in simplified radical form.

18.) $\sqrt[4]{3x}$ 
19.) $\frac{2}{81x^3}$
Level 4 (choose 2 of 3):

19.) Henry simplified the following expression: \( \left( \frac{(4x)^2y}{xy^4} \right)^2 \). His work is shown below, but there are three errors. **Circle each mistake. Describe what he did incorrect. Then show the correct solution.**

- **Step 1:** \( \left( \frac{(4x)^2y}{xy^4} \right)^2 \)
- **Step 2:** \( \frac{4^2x^2y^2}{x^2(y^4)^2} \)
- **Step 3:** \( \frac{16x^2y^2}{x^2y^6} \)
- **Step 4:** \( 16y^4 \)

20.) In 2009, there were 104 operating nuclear power plants in the United States. These plants generated a total of \( 7.99 \times 10^{11} \text{ kWh} \) of electricity in 2009. How much energy was generated per plant, if each plant produced the same amount of energy? **(Round to the nearest million and write your answer in scientific notation)**

21.) Write in exponential form and simplify.

\( 21.) \sqrt[3]{(27x)^2} + \sqrt[2]{256x^2} \)