1.

$a^3 b^{-5} c^{-2}$

2.

$d^{\frac{1}{2}} e^{\frac{2}{3}} f^4$

3.

$\frac{w^{\frac{1}{4}} x^8 y^2}{2^3 z^3}$

The term 2^3 can also be written as 8.

4.

$\frac{z^5}{x^2 y^6}$

5.

$\frac{3^{-1} x^2}{y^3 z^{-1}}$

$\frac{x^2 z}{3y^3}$

6.

$\frac{z^{15-11}}{x^{-9+12} y^{0+3}}$

$\frac{z^4}{x^3 y^3}$

7.

$\frac{1}{7}$

The numerator will equal 1 because the entire expression is raised to the zero power. In the denominator, only x is raised to the zero power, so the 7 remains part of the simplified answer.

8.

$a^{14} b^{-6} \left(\frac{b^2}{a^{10} c^5}\right)^2 = \frac{a^{14}}{b^6} \cdot \frac{b^4}{a^{20} c^{10}} = \frac{1}{a^{20-14} b^{6-4} c^{10}}$

$\frac{1}{a^6 b^2 c^{10}}$

9.

Sample: Any term divided by itself is equal to 1. Using the exponent rule $\frac{a^b}{c^c} = a^{b-c}$ with the expression $\frac{x^3}{x^3}$ results in $x^{3-3} = x^0$. Since $\frac{x^3}{x^3} = 1$, then x^0 must also equal 1.

10.

Gio distributed the exponent first and then simplified the expression so that there were no negative exponents. From the formula sheet, Gio used rule 6 and then rule 7. Leo simplified inside the parentheses first and then distributed. Leo used rule 7 and then rule 6. Because the terms are being multiplied together, you can simplify in either order.

Recall that division is the reciprocal of multiplication so the terms are really being multiplied.