

See following pages below for work

Name: \_\_\_\_\_ Date: \_\_\_\_\_ HW #6 All rules of exponents

Simplify each expression below using exponent rules. Your final answer should not include any negative exponents. You MUST show work in order to receive credit.

1. $x^5 \cdot x^2$ $x^7$	2. $y^3 \cdot y \cdot y^4$ $y^8$	3. $b^4 \cdot b^{-4}$ 1
4. $7x^3y^2 \cdot 5xy^9$ $35x^4y^{11}$	5. $a^{10} \cdot a^2 \cdot a^{-6}$ $a^6$	6. $(z^5)^5$ $z^{25}$
7. $(b^7)^2$ $b^{14}$	8. $(m^{-8})^{-3}$ in notes $m^{24}$	9. $(x^2y^4m^3)^8$ $x^{16}y^{32}m^{24}$
10. $(3x^2)^4$ $81x^8$	11. $\frac{2x^6y}{(3x^2y^2)^3}$ in notes $\frac{2}{27y^5}$	12. $(2x^3y)^6$ in notes $64x^{18}y^6$
13. $(m^7)^4 \cdot m^3$ $m^{31}$	14. $p^2 \cdot (p^5)^2$ $p^{12}$	15. $\frac{x^5}{x^2}$ $x^3$
16. $\frac{c^4}{c^8}$ $\frac{1}{c^4}$	17. $\frac{5x^{-4}}{x^{-9}}$ $5x^5$	18. $\frac{x^3 \cdot x^4}{x^2}$ $x^5$

19.  $\left(\frac{6}{z^4}\right)^3$

$$\frac{216}{z^{12}}$$

20.  $\left(\frac{xy^2}{xy^3}\right)^{-2}$

in notes  
 $y^2$

21.  $\left(\frac{3x^4}{y^6}\right)^5$

$$\frac{243x^{20}}{y^{30}}$$

22.  $\left(\frac{m^4}{5n^9}\right)^3$

$$\frac{m^{12}}{125n^{27}}$$

23.  $\left(\frac{3x^7}{2y^{12}}\right)^4$

$$\frac{81x^{28}}{16y^{48}}$$

24.  $(8m)^0$

$$1$$

25.  $5x^0y^5$

$$5y^5$$

26.  $2x^{-2}$

$$\frac{2}{x^2}$$

27.  $5m^{-3}n^4$

$$\frac{5n^4}{m^3}$$

28.  $3x^{-2}y^{-5}$

$$\frac{3}{x^2y^5}$$

29.  $(x^{-2}y^2)^{-3}$

$$\frac{x^6}{y^6}$$

30.  $(4x^4y^{-3})^{-2}$

$$\frac{y^6}{16x^8}$$

31.  $(f^{-3}g^5h^8)^{-3}$

$$\frac{f^9}{g^{15}h^{24}}$$

32.  $(x^2)^4 \cdot 3x^5$

$$3x^{13}$$

33.  $(3x^3)^2 \cdot (2x)^3$

$$72x^9$$

$$\textcircled{1} \frac{x^{5+2}}{x^7}$$

$$\textcircled{2} \frac{y^{3+1+4}}{y^8}$$

$$\textcircled{3} \frac{b^{4+-4}}{b^0}$$

$$\textcircled{4} \frac{7 \cdot 5 \cdot x^{3+1} y^{2+9}}{35 x^4 y^{11}}$$

$$\textcircled{5} \frac{a^{10+2+-6}}{a^6}$$

$$\textcircled{6} \frac{z^{5 \cdot 5}}{z^{25}}$$

$$\textcircled{7} \frac{b^{7 \cdot 2}}{b^{14}}$$

$$\textcircled{9} \frac{x^{2 \cdot 8} y^{4 \cdot 8} m^{3 \cdot 8}}{x^{16} y^{32} m^{24}}$$

$$\textcircled{10} \frac{3^4 x^{2 \cdot 4}}{81 x^8}$$

$$\textcircled{13} \frac{m^{7 \cdot 4} \cdot m^3}{m^{28} \cdot m^3}$$
$$m^{28+3}$$
$$m^{31}$$

$$\textcircled{14} \frac{p^2 \cdot p^{5 \cdot 2}}{p^2 \cdot p^{10}}$$
$$p^2 \cdot p^{10}$$
$$p^{12}$$

$$\textcircled{15} \frac{x^{5-2}}{x^3}$$

$$\textcircled{16} \frac{c^{4-8}}{c^{-4}}$$
$$\frac{1}{c^4}$$

$$\textcircled{17} \frac{5x^{-4--9}}{5x^5}$$

$$\textcircled{18} \frac{x^{3+4}}{x^2}$$
$$\frac{x^7}{x^2}$$
$$x^{7-2}$$
$$x^5$$

$$\textcircled{19} \frac{6^3}{z^{4 \cdot 3}}$$

$$\frac{216}{z^{12}}$$

$$\textcircled{21} \frac{3^5 x^{4 \cdot 5}}{y^{6 \cdot 5}}$$

$$\frac{243x^{20}}{y^{30}}$$

$$\textcircled{22} \frac{m^{4 \cdot 3}}{5^3 n^{9 \cdot 3}}$$

$$\frac{m^{12}}{125n^{27}}$$

$$\textcircled{23} \frac{3^4 x^{7 \cdot 4}}{2^4 y^{12 \cdot 4}}$$

$$\frac{81x^{28}}{16y^{48}}$$

$$\textcircled{24} (8m)^0$$

↑ whole base to 1

$$\textcircled{25} \frac{5 \cdot 1 \cdot y^5}{5y^5}$$

$$\textcircled{26} \frac{2}{x^2}$$

$$\textcircled{27} \frac{5n^4}{m^3}$$

$$\textcircled{28} \frac{3}{x^2 y^5}$$

$$\textcircled{29} \frac{x^{-2 \cdot -3} y^{2 \cdot -3}}{x^4 y^{-6}}$$

$$\frac{x^6}{y^6}$$

$$\textcircled{30} \frac{4^{-2} x^{4 \cdot -2} y^{-3 \cdot -2}}{4^2 x^{-8} y^6}$$

$$\frac{y^6}{16x^8}$$

$$\textcircled{31} \frac{f^{-3 \cdot -3} g^{5 \cdot -3} h^{8 \cdot -3}}{f^9 g^{-15} h^{-24}}$$

$$\frac{f^9}{g^{15} h^{24}}$$

$$\textcircled{32} \frac{x^{2 \cdot 4} \cdot 3x^5}{x^8 \cdot 3x^5}$$

$$\frac{3x^{8+5}}{3x^{13}}$$

$$\textcircled{33} \frac{3^2 x^{3 \cdot 2} \cdot 2^3 x^3}{9x^6 \cdot 8x^3}$$

$$\frac{9 \cdot 8 \cdot x^{6+3}}{72x^9}$$