Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 2B.1 – Expressions Containing Exponents

#1-19, Simplify each expression.

1. $3^2 = 3 \cdot 3$ $= \boxed{9}$

2. $-3^2 = -3 \cdot 3$ $= \boxed{-9}$

3. $(-3^2) = (-3 \cdot 3)$ $= \boxed{-9}$

4. $(-3)^2 = (-3)(-3)$ $= \boxed{9}$

5. $-(-3)^2 = -(-3)(-3)$ $= \boxed{-9}$

6. $3^3 = 3 \cdot 3 \cdot 3$ $= \boxed{27}$

7. -3^3 $= -3 \cdot 3 \cdot 3$ $= \boxed{-27}$

8. (-3^3) $= (-3 \cdot 3 \cdot 3)$ $= \boxed{-27}$

9. $(-3)^3$ $= (-3)(-3)(-3)$ $= \boxed{-27}$

10. $-(-3)^3$ $= -(-3)(-3)(-3)$ $= \boxed{27}$

11. $\left(\frac{1}{2}\right)^4$ $= \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \boxed{\frac{1}{16}}$

12. $\left(-\frac{1}{5}\right)^2$ $= \left(-\frac{1}{5}\right)\left(-\frac{1}{5}\right) = \boxed{\frac{1}{25}}$

13. $-\left(\frac{1}{5}\right)^2$ $= -\frac{1}{5} \cdot \frac{1}{5} = \boxed{-\frac{1}{25}}$

14. $\left(-\frac{1}{5}\right)^3$ $= \left(-\frac{1}{5}\right)\left(-\frac{1}{5}\right)\left(-\frac{1}{5}\right) = \boxed{-\frac{1}{125}}$

15. $-\left(-\frac{2}{3}\right)^2$ $= -\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = \boxed{-\frac{4}{9}}$

16. $(10-12)^6$ $= (-2)^6 = \boxed{64}$

17. $-(4-5)^{235}$ $= -(-1)^{235}$ $= -(-1) = \boxed{1}$

18. $5 \cdot a \cdot a \cdot a \cdot b \cdot b$ $= \boxed{5a^4b^2}$

19. $2 \cdot n \cdot n \cdot m \cdot m \cdot 4 \cdot n$ $= \boxed{8m^2n^3}$

#20-23 Evaluate each expression for the given values of the variables.

20. $2x^2 - 3x + 4$, for $x = -3$.

$= 2(-3)^2 - 3(-3) + 4$

$= 2(9) + 9 + 4$

$= 18 + 9 + 4$

$= \boxed{31}$

21. $-15m^{11}p^{20}q^{12}$, for $m = 1$, $p = -1$, $q = 0$.

$= -15(1)^{11}(-1)^{20}(0)^{12}$

$= -15(1)(1)(0)$

$= \boxed{0}$

22. $w^4 + 2w^3 - 7w^2 - 3w$, for $w = -1$.

$= (-1)^4 + 2(-1)^3 - 7(-1)^2 - 3(-1)$

$= 1 + 2(-1) - 7(1) + 3$

$= 1 - 2 - 7 + 3$

$= \boxed{-5}$

23. $\frac{10h^2}{k^3} + 2h$, for $h = -4$, $k = -2$.

$= \frac{10(-4)^2}{(-2)^3} + 2(-4) = \frac{10(16)}{-8} - 8$

$= \frac{160}{-8} - 8 = -20 - 8 = \boxed{-28}$