Honors Math II
Unit 1 day 1: Exponents

Name_____
Period_____Date_____

Simplify the expression. Write your answer using positive exponents.

1. $4^2 \cdot 4^6$

2. $9 \cdot 9^5$

3. $(-3)^2 \cdot (-3)^{11} \cdot (-3)^{-4}$

4. $(7^4)^3$

5. $[(-8)^9]^2$

6. $\left((-14) \cdot 22\right)^5$

7. $\frac{5^6}{5^2}$

8. $\frac{2^{11}}{2^{-6}}$

9. $\frac{3^9}{3^{-5}}$

10. $\frac{(-6)^8}{(-6)^5}$

11. $\frac{10^5 \cdot 10^5}{10^4}$

12. $\frac{6^7 \cdot 6^4}{6^6}$

Simplify the expression.

13. $x^4 \cdot x^2$

14. $[(m-2)^2]^6$

15. $[(y+9)^7]^3$

16. $(-5x)^2$

17. $-(5x)^2$

18. $(-8m^4)^2 \cdot m^3$

19. $-(2x^4)^3(-1.5x^7)$

20. $(3x^5)^3(2x^7)^2$

21. $z^8 \cdot \frac{1}{z^7}$

22. $\left(-\frac{1}{x}\right)^5$

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

24. $\frac{3}{8m^5} \cdot \left(\frac{m^4}{n^2}\right)^3$

25. Which expression is equivalent to $(-9)^6$?

A) $(-9)^2(-9)^3$ B) $(-9)(-9)^5$ C) $[(-9)^4]^2$ D) $[(-9)^3]^3$

26. Which expression is equivalent to $36x^{12}$?

A) $(6x^3)^4$ B) $12x^4 \cdot 3x^3$ C) $3x^3 \cdot (4x^3)^3$ D) $(6x^5)^2 \cdot x^2$

Find the missing exponent.

27. $(2z^?)^3 = 8z^{15}$

28. $(3a^3)^? \cdot 2a^3 = 18a^9$

29. $\frac{(-8)^7}{(-8)^?} = (-8)^{10}$

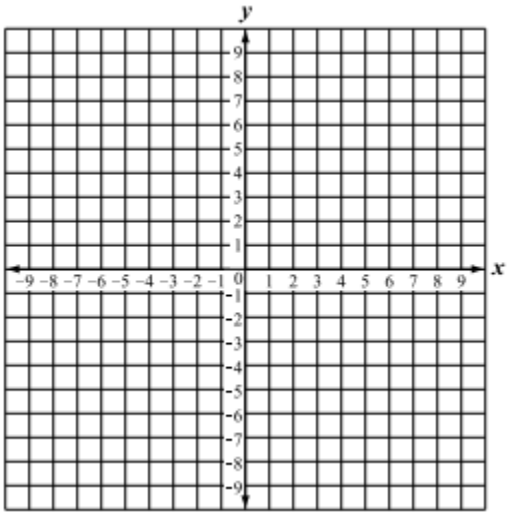
30. $\frac{7^? \cdot 7^2}{7^4} = 7^6$

31. $\frac{1}{x^5} \cdot x^? = x^9$

32. $\left(\frac{2c^3}{d^2}\right)^? = \frac{16c^{12}}{d^8}$

33. Complete the table and graph the function $f(x) = 2^x$.
Name the type of graph _____

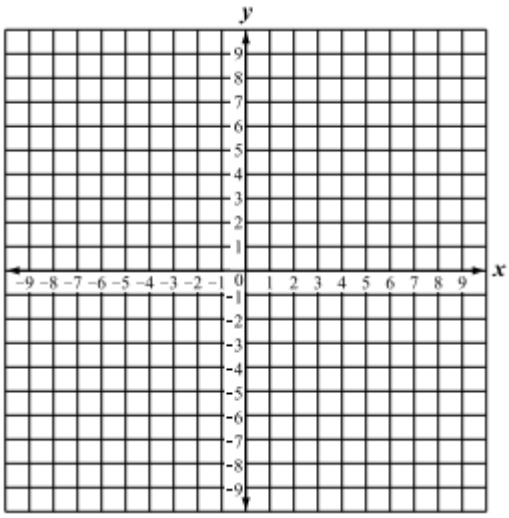
Input, x	Output, $f(x)$
6	64
5	32
4	16
3	8
2	
1	
0	
-1	
-2	
-3	



34. Complete the table and graph the function $g(x) = \left(\frac{1}{3}\right)^x$.

Name the type of graph _____

Input, x	Output, $g(x)$
4	1/81
3	1/27
2	
1	
0	
-1	
-2	
-3	



35. Solve each equation.

A) $3^x = 81$

B) $3^{2x} = 81$

C) $3^{4x-1} = 81$

D) $3^{x^2} = 81$

36. Find the values of x and y if you know that $\frac{b^x}{b^y} = b^9$ and $\frac{b^x \cdot b^2}{b^{3y}} = b^{13}$.

Explain your answer.