

9.3 Negative and Zero Exponents

ALGEBRA

Write your questions here!

$2^1 =$

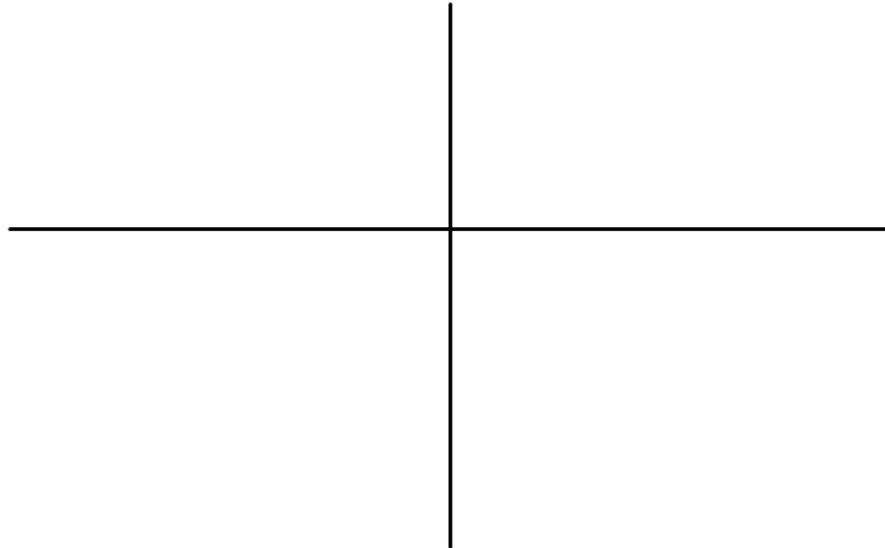
$2^2 =$

$2^3 =$

$2^4 =$

$2^5 =$

Rewrite using positive exponents!



Simplify. Then rewrite using positive exponents!

$2x^2y^{-3}z^2$

$\frac{1}{4}a^{-2}b^5c^{-3}$

$(3x^{-3}y^0)^2$

$2m^4n \cdot 3m^{-3}n^{-5}$

Simplify. Then rewrite using positive exponents!

$$\frac{4x^2y^{-3}}{2x^5y^2z^4}$$

BRING THE PAIN!

$$\frac{(2xy^4)^3(3x^{-3}y^2)}{4x^{-3}y^0}$$

Summarize your notes:

9.3 PRACTICE

Simplify. Your answer should contain only positive exponents.

1. 4^{-3}	2. 7^{-3}	3. $(-2)^{-6}$	4. 2^0
5. $(-4)^0$	6. $\left(\frac{3}{4}\right)^0$	7. $(2^{-3})^5$	8. $(3^{-2})^2$
9. $3^2 \cdot 5^0$	10. $4^{-5} \cdot 4^{-2}$	11. $\frac{3^4}{3^7}$	12. $\frac{7^{-4}}{7^5}$

Error Analysis

13. Describe and correct the error in evaluating $\frac{5^4}{5^{-7}}$

$$\frac{5^4}{5^{-7}} = 5^{-3} = \frac{1}{5^3}$$



Rewrite using only positive exponents.

14. x^{-4}	15. $2y^{-3}$	16. $4^{-3}g^2$	17. $x^2y^{-3}z$
18. $5m^{-3}n^{-4}$	19. $\frac{2}{3}a^4b^{-5}c^{-2}$	20. $4m^{-2}n$	21. $2^{-3}x^0y^4$

Simplify. Your answer should contain only positive exponents.

22. $5x^3y^{-4} \cdot 4xy^2$	23. $2a^{-5}b^7 \cdot 7a^0b^{-3}$	24. $(3x^{-5})^2$	25. $(4d^2h^{-5})^3$
------------------------------	-----------------------------------	-------------------	----------------------

26. $\frac{12x^8y^{-5}}{4x^{10}y^2}$	27. $\frac{r^6t}{4r^0t^4}$	28. $\frac{3x^8y^{-5} \cdot 2xy^2}{5x^8y^{-5}}$	29. $\frac{12x^8y^{-5}}{(2x^4y)^2}$
--------------------------------------	----------------------------	---	-------------------------------------

30.

★ **MULTIPLE CHOICE** Which expression is equivalent to $(-4 \cdot 2^0 \cdot 3)^{-2}$?

- (A) -12
 (B) $-\frac{1}{144}$
 (C) 0
 (D) $\frac{1}{144}$

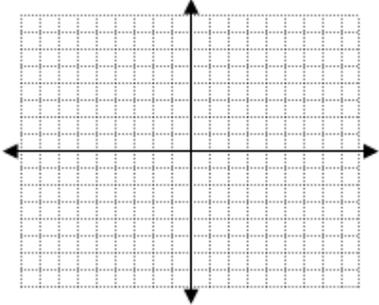
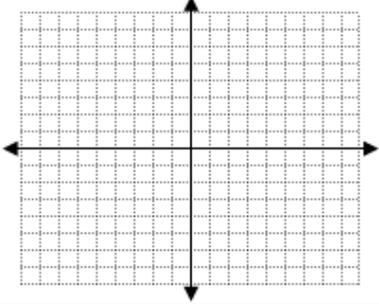
Fill in the missing exponents

31. $4^? = \frac{1}{4^5}$	32. $\frac{7^{-3}}{7^{-5}} = 7^?$	33. $(2x^2y^4)^{-3} = \frac{1x^6}{8y^{12}}$	34. $(a^3b^{-2})^? = \frac{a^{12}}{b^8}$
---------------------------	-----------------------------------	---	--

Simplify. Your answer should contain only positive exponents.

32. $\left(\frac{(2xy)(3xy^4)^3}{4x^{-2}y^5}\right)^0$

SKILLZ REVIEW

GRAPH	EVALUATE	SOLVE
1. $y = -2x - 3$ 	2. $b^2 - 4a$, when $a = -3$ and $b = -2$	3. $2(2x - 5) = 10$
4. $x = -2$ 	5. $2dt - t$, when $d = 2$ and $t = 5$	6. $4(x - 5) = 2(3x - 5)$

9.3 APPLICATION

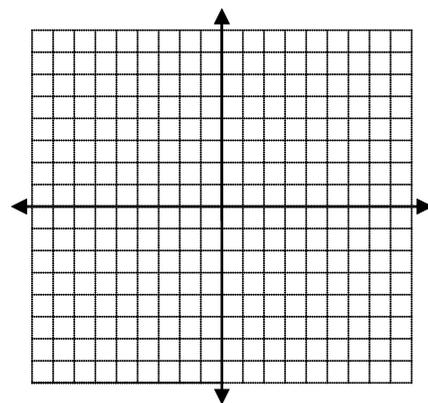
Simplify the expression. Write your answer using only positive exponents.

1. $x^9x^{-4} =$

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

3. Given $y = 8x^{-2}$, fill in the table and plot the points.
(HINT: Rewrite using positive exponents!)

x	y
-3	
-2	
-1	
1	
2	
3	



-
4. Given $f(x) = 2^x$, fill in the table and plot the points. (decimals are okay for some!)

x	$f(x)$
-2	
-1	
0	
1	
2	
3	

