M9 - 3.1 - Multiplication-Exponential Form (+/-) WS

Write the following in exponential form, then evaluate.

$2 \times 2 \times 2 \times 2 \times 2 = 2^5 = 32$

$4 \times 4 \times 4 =$

$(-2) \times (-2) \times (-2) = (-2)^3 = -8$

$(3)(3)(3) =$

$1 \times 1 \times 1 \times 1 =$

$9 \times 9 =$

$-4 \times 4 \times 4 =$

$x \times x =$

$a \times a \times a =$

$5 \times 5 =$

$3 \times 3 \times 3 \times 3 =$

$(-2) \times (-2) \times (-2) \times (-2) =$

$(4)(4) =$

$5 =$

$6 \times 6 \times 6 =$

$-2 \times -2 \times -2 =$

$-5 \times 5 =$

$(-m) \times (-m) \times (-m) =$

Write as a repeated multiplication, then evaluate.

$4^2 = 4 \times 4 = 16$

$2^5 =$

$3^3 =$

$2^4 =$

$(-2)^4 =$

$(-5)^3 =$

$-6^2 =$

$-(2)^3 =$

$(-2)^3 =$

$(-1)^3 =$

$2^2 =$

$5^4 =$

$4^4 =$

$3^4 =$

$-3^4 =$

$-1^3 =$

$-(-2)^4 =$

$-(2)^2 =$

$(-2)^2 =$

$(-1)^4 =$

Write if the answer is positive $(+)$ or negative $(-)$.

$-4^2 = -$

$(-4)^2 = +$

$-2^3 =$

$-3^3 =$

$(-2)^3 =$

$(-5)^5 =$

$(-3)^2 =$

$3^2 =$

$-a^{odd} =$

$-a^{even} =$

$4^5 =$

$6^3 =$

$-(5)^2 =$

$-(3)^3 =$

$-(-4)^3 =$

$-(-2)^2 =$

$-(-3^2) =$

$-4^{even} =$

$(-3)^{odd} =$

$(-6)^{even} =$

$-3^{odd} =$

$(-a)^{odd} =$

$(-a)^{even} =$

M9 - 3.1 - Repeated Multiplication - Exp Form WS

Write as a repeated multiplication then in exponential form.

$4 = 2 \times 2 = 2^2$ $36 =$ $49 =$ $169 =$

$100 =$ $9 =$ $121 =$ $144 =$

$25 =$ $196 =$ $225 =$

Write as a repeated multiplication then in exponential form.

$243 =$

$27 =$ $8 =$ $32 =$

$125 =$ $343 =$ $216 =$ $128 =$

$1000 =$

Write as a repeated multiplication then in exponential form. Answers may vary.

$512 =$ $64 =$ $16 =$ $81 =$

$256 =$ $625 =$ $1 =$ $1024 =$

$729 =$

M9 - 3.1 - Find the exponent WS

Find the exponent

$4 = 2^{-}$	$25 = 5^{-}$	$9 = 3^{-}$	$16 = 4^{-}$	$49 = 7^{-}$
$64 = 8^{-}$	$8 = 2^{-}$	$9^{-} = 81$	$3^{-} = 27$	$64 = 2^{-}$
$125 = 5^{-}$	$32 = 2^{-}$	$36 = 6^{-}$	$16 = 2^{-}$	$81 = 3^{-}$
$100 = 10^{-}$	$196 = 14^{-}$	$64 = 4^{-}$	$169 = 13^{-}$	$144 = 12^{-}$
$121 = 11^{-}$	$512 = 8^{-}$	$343 = 7^{-}$	$243 = 3^{-}$	$225 = 15^{-}$
$729 = 9^{-}$	$1024 = 2^{-}$	$216 = 6^{-}$	$729 = 3^{-}$	$1000 = 10^{-}$
$2^{-} = 512$	$256 = 4^{-}$	$32 = 2^{-}$	$625 = 5^{-}$	$1024 = 4^{-}$
$256 = 2^{-}$	$128 = 2^{-}$	$256 = 8^{-}$	$625 = 25^{-}$	
$1 = 1^{-}$	$1 = 999^{-}$	$1 = 5^{-}$	$1 = 8^{-}$	$1 = 1^{-}$

Find the base.

$25 = \underline{}^2$	$9 = \underline{}^2$	$4 = \underline{}^2$	$36 = \underline{}^2$	$49 = \underline{}^2$
$100 = \underline{}^2$	$64 = \underline{}^2$	$625 = \underline{}^2$	$81 = \underline{}^2$	$16 = \underline{}^2$
$121 = \underline{}^2$	$144 = \underline{}^2$	$169 = \underline{}^2$	$1 = \underline{}^2$	

Find the base.

$216 = \underline{}^3$	$343 = \underline{}^3$	$64 = \underline{}^3$	$1000 = \underline{}^3$	$125 = \underline{}^3$
$27 = \underline{}^3$	$512 = \underline{}^3$	$8 = \underline{}^3$	$729 = \underline{}^3$	$1 = \underline{}^3$

Find the base.

$16 = \underline{}^4$	$625 = \underline{}^4$	$81 = \underline{}^4$	$256 = \underline{}^4$

Find the base.

$1024 = \underline{}^5$	$32 = \underline{}^5$	$243 = \underline{}^5$	$729 = \underline{}^6$	$64 = \underline{}^6$

M9 - 3.1 - Change of Base Exponents WS

Write in exponential form with a base of 2.

$4 = 2^2$ $\quad\quad$ $16 =$ $\quad\quad\quad$ $64 =$ $\quad\quad\quad$ $8 =$

$32 =$ $\quad\quad\quad$ $1024 =$ $\quad\quad\quad$ $128 =$ $\quad\quad\quad$ $512 =$

$4^2 =$ $\quad\quad\quad$ $8^2 =$ $\quad\quad\quad$ $4^3 =$ $\quad\quad\quad$ $16^2 =$

Write in exponential form with a base of 3.

$9 = 3^2$ $\quad\quad\quad$ $81 =$ $\quad\quad\quad$ $27 =$ $\quad\quad\quad$ $729 =$

Write in exponential form with any base you'd like.

$16 =$ $\quad\quad\quad$ $\dfrac{1}{4} =$ $\quad\quad\quad$ $\dfrac{1}{25} =$ $\quad\quad\quad$ $625 =$

$81 =$ $\quad\quad\quad$ $\dfrac{1}{81} =$ $\quad\quad\quad$ $64 =$ $\quad\quad\quad$ $\dfrac{1}{64} =$

$\dfrac{1}{100} =$ $\quad\quad\quad$ $1000 =$ $\quad\quad\quad$ $25 =$ $\quad\quad\quad$ $\dfrac{1}{256} =$

$512 =$ $\quad\quad\quad$ $256 =$ $\quad\quad\quad$ $100 =$ $\quad\quad\quad$ $729 =$

M9 - 3.1 - Mult Div Exponent Laws HW

Write each product of powers as a single power.

$2^2 \times 2^2 = 2^{2+2} = 2^4$

$2^3 \times 2^2 =$

$3^2 \times 3^2 =$

$3^2 \times 3^3 =$

$7^3 \times 7^4 =$

$5^3 \times 5^4 =$

$9^4 \times 9^2 =$

$3^2 \times 3^3 =$

$(-3)^2 \times (-3)^3 =$

$(-3)^2 \times (-3)^2 =$

Write each quotient of repeated multiplication division statement in faction form then simplify as a single power.

$3^4 \div 3^2 = \dfrac{\cancel{3 \times 3} \times 3 \times 3}{\cancel{3 \times 3}} = 3^2$

$4^7 \div 4^4 =$

$2^4 \div 2^2 =$

$8^6 \div 8^4 =$

$2^3 \div 2^2 =$

$3^2 \div 3^2 =$

$3^5 \div 3^3 =$

$6^2 \div 6^2 =$

$(-4)^8 \div (-4)^7 =$

$(-3)^6 \div (-3)^3 =$

$(-2)^5 \div (-2)^3 =$

Write each quotient of powers as a single power.

$3^4 \div 3^2 = 3^{4-2} = 3^2$

$4^7 \div 4^4 =$

$2^3 \div 2^2 =$

$8^6 \div 8^4 =$

$2^4 \div 2^2 =$

$3^2 \div 3^2 =$

$6^2 \div 6^2 =$

$3^5 \div 3^3 =$

$(-3)^4 \div (-3)^2 = (-3)^{4-2} = (-3)^2 = 3^2$

$(-2)^5 \div (-2)^3 =$

$(-4)^8 \div (-4)^7 =$

$(-3)^6 \div (-3)^3 =$

Write each quotient of powers as a single power.

$\dfrac{3^5}{3^2} =$

$\dfrac{6^5}{6^2} =$

$\dfrac{8^4}{8^2} =$

$\dfrac{4^2}{4} =$

$\dfrac{5^3}{5^2} =$

$\dfrac{6^7}{6^2} =$

$\dfrac{(-3)^4}{(-3)^2} =$

$\dfrac{(-7)^5}{(-7)^2} =$

M9 - 3.1 - Distribution Exponent Laws HW

Write the following as a single power.

$(4^3)^2 = 4^{3×2} = 4^6$ $\qquad\qquad$ $(2^2)^3 =$ $\qquad\qquad$ $(3^3)^2 =$

$(8^2)^5 =$ $\qquad\qquad$ $(7^3)^4 =$ $\qquad\qquad$ $(2^{-1})^2 =$

Write the following as a single power.

$[7 × 2]^2 = 14^2$ $\qquad\qquad$ $[5 × 3]^2 =$ $\qquad\qquad$ $[3 × 2]^2$

Write as a multiplication of two powers.

$[7 × 2]^2 = 7^2 2^2$ $\qquad\qquad$ $[5 × 3]^2 =$ $\qquad\qquad$ $[3 × 2]^2$

Write as a multiplication of two powers.

$[7x]^2 = 7^2 x^2$ $\qquad\qquad$ $[3x]^2$ $\qquad\qquad$ $[5x^3]^2 =$

Distribute the power.

$\left(\dfrac{1}{2}\right)^2 =$ $\qquad\qquad$ $\left(\dfrac{3}{5}\right)^2$ $\qquad\qquad$ $\left(\dfrac{2}{6}\right)^2 =$

$\left(\dfrac{1}{3}\right)^2 =$ $\qquad\qquad$ $\left(\dfrac{5}{7}\right)^2 =$ $\qquad\qquad$ $\left(\dfrac{9}{4}\right)^2 =$

M9 - 3.2 - Negative Exponents HW

Write with positive exponents

$2^{-3} = \dfrac{1}{2^3}$

$3^{-4} =$

$\dfrac{1}{2^{-3}} =$

$\dfrac{1}{3^{-4}} =$

$5^{-2} =$

$3^{-3} =$

$6^{-2} =$

$9^{-2} =$

$2x^{-2} =$

$2^{-3}x =$

$2^{-3}x^{-2} =$

$\dfrac{1}{2x^{-2}} =$

$\dfrac{1}{2^{-3}x} =$

$\dfrac{1}{2^{-3}x^{-2}} =$

$\dfrac{5}{2x^{-2}} =$

$\dfrac{5}{2^{-3}x^{-2}} =$

$\dfrac{x^2}{y^{-3}} =$

$\dfrac{x^{-2}}{y^{-3}} =$

$\dfrac{4}{2x^{-2}} =$

$\dfrac{2}{4x^{-2}} =$

Write with negative exponents

$2^3 =$

$\dfrac{1}{2^{-3}} =$

$\dfrac{1}{2x^3} =$

$\dfrac{2}{x^3} =$