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First Name: \_\_\_\_\_

Date: \_\_\_\_\_  
Grade 9  
Term 1 Practice Test 2

### Exponents

1) Simplify the following using the laws of exponents

a)  $x^3 \cdot x^4 =$

b)  $x^3 \div x^2 =$

c)  $a^3 \cdot a^2 =$

d)  $30x^9 \div 5x =$

e)  $2x^{12} \cdot 3x^4 =$

f)  $20x^7 \div 5x^8 =$

g)  $13x + 20x =$

h)  $9x^3 - 6x^3 =$

i)  $\frac{40x^9}{2x^4} =$

j)  $\frac{49x^5}{7x^3} =$

k)  $(5x)^2 =$

l)  $(6x^3)^3 =$

m)  $(3x^3)^3 =$

n)  $(4x^7)^2 =$

o)  $\left(\frac{4x}{7}\right)^2 =$

p)  $\left(\frac{9x^5}{b}\right)^2 =$

q)  $(6x^{-1}y^8)^2 =$

r)  $(2x^7y^5)^3 =$

s)  $(6x^{-1}y^8)^2 =$

t)  $(8x^{10}y^{13})^2 =$

2) Write the following using exponents then give the standard form.

Example:  $\sqrt{25} = 25^{\frac{1}{2}} = 5$

a)  $\sqrt[2]{196} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b)  $\sqrt[2]{81} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

c)  $\sqrt[3]{27} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d)  $\sqrt[3]{729} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

3) Write the following in standard form.

a)  $2^3 =$

b)  $13^2 =$

c)  $4^3 =$

d)  $8^2 =$

4) Solve for the unknown variable.

a)  $-2x + 15 = -11$

b)  $7x - 23 = -36 - 15$

c)  $5x + 3x = 30$

d)  $13x + x = 7 - 119$

5) Write three irrational numbers without using decimals.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

6) Simplify.

a)  $(12x^2)^2 =$

b)  $(7x^{13})^3 =$

c)  $\left(\frac{6x^5}{13y}\right)^2 =$

d)  $\left(\frac{8x^7b}{y^4z^9}\right)^4 =$

7) Complete the following chart (do not use decimals)

Exponential Expression	Base	Exponent	Factored Form	Standard Form
		3	$(2x)(2x)(2x)$	
$7^{-2}$		-2	$\left(\frac{1}{7}\right)\left(\frac{1}{7}\right)$	
	6	4		1296

8) Determine if the following statements are **true** or **false**. The entire word must be written.

a. $\mathbb{N} \subseteq \mathbb{Q}'$	b. $-5 \in \mathbb{Q}'$
c. $\mathbb{Q}' \subseteq \mathbb{N}$	d. $\sqrt[3]{729} \in \mathbb{Q}'$

9) Complete the following chart.

(c)	$-1 < x \leq 0$		
(d)			
(e)			$[-2, +\infty[$