Math worksheet on *'Exponents - Power Law - Variable Exponent Base with Known Power to Unknown Exponent Base with Known Power (Level 1)'*. Part of a broader unit on *'Exponents - Negative, Fractional, and Power Law'*

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1 Solve for the missing exponent (?) in reduced form

$$(3^n)^8 = (3^?)^6$$

a	b	c	d	e	f
$? = \frac{3}{4n}$	$? = 6n$	$? = \frac{3n}{4}$	$? = \frac{4n}{3}$	$? = \frac{6n}{4}$	$? = \frac{8n}{3}$

2 Solve for the missing exponent (?) in reduced form

$$(2^n)^{10} = (2^?)^6$$

a	b	c	d	e	f
$? = 3n$	$? = 15n$	$? = \frac{5n}{3}$	$? = 10n$	$? = 5n$	$? = \frac{2n}{5}$

3 Solve for the missing exponent (?) in reduced form

$$(4^n)^6 = (4^?)^9$$

a	b	c	d	e	f
$? = 6n$	$? = \frac{6n}{3}$	$? = \frac{6}{3n}$	$? = \frac{2n}{3}$	$? = \frac{3n}{9}$	$? = 8n$

4 Solve for the missing exponent (?) in reduced form

$$(4^n)^6 = (4^?)^4$$

a	b	c	d	e	f
$? = \frac{3n}{2}$	$? = 3n$	$? = \frac{2}{4n}$	$? = \frac{6n}{2}$	$? = 6n$	$? = \frac{4n}{3}$

5 Solve for the missing exponent (?) in reduced form

$$(2^n)^{15} = (2^?)^{12}$$

a	b	c	d	e	f
$? = \frac{12n}{5}$	$? = \frac{5n}{4}$	$? = 4n$	$? = \frac{2n}{5}$	$? = 20n$	$? = \frac{15n}{4}$

6 Solve for the missing exponent (?) in reduced form

$$(2^n)^{12} = (2^?)^6$$

a	b	c	d	e	f
$? = 4n$	$? = \frac{6n}{4}$	$? = \frac{12}{2n}$	$? = 2n$	$? = \frac{2}{6n}$	$? = 16n$

7 Solve for the missing exponent (?) in reduced form

$$(3^n)^{12} = (3^?)^6$$

a	b	c	d	e	f
$? = 5n$	$? = 4n$	$? = \frac{12n}{2}$	$? = 2n$	$? = \frac{12}{2n}$	$? = \frac{3}{4n}$