Topic/Skill	Definition/Tips	Example
1. Square	The number you get when you multiply a	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121,
Number	number by itself.	144, 169, 196, 225
		$9^2 = 9 \times 9 = 81$ $\sqrt{36} = 6$
2. Square Root	The number you multiply by itself to get	$\sqrt{36} = 6$
	another number.	
		because $6 \times 6 = 36$
2 6 1	The reverse process of squaring a number.	~ 1 2 2
3. Solutions to	Equations involving squares have two	Solve $x^2 = 25$
$x^2 =$	solutions, one positive and one negative.	x = 5 or x = -5
		x = 5 or x = -5
		This can also be written as $x = \pm 5$
4. Cube	The number you get when you multiply a	1, 8, 27, 64, 125
Number	number by itself and itself again.	
5. Cube Root	The number you multiply by itself and	$2^{3} = 2 \times 2 \times 2 = 8$ $\sqrt[3]{125} = 5$
	itself again to get another number.	V 123 — 3
		because $5 \times 5 \times 5 = 125$
	The reverse process of cubing a number.	
6. Powers of	The powers of a number are that number	The powers of 3 are:
	raised to various powers.	
		$3^1 = 3$
		$3^2 = 9$
		$3^3 = 27$
_		$3^4 = 81 \text{ etc.}$
7.	When multiplying with the same base	$7^5 \times 7^3 = 7^8$
Multiplication Index Law	(number or letter), add the powers.	$a^{12} \times a = a^{13}$
Illuex Law	$a^m \times a^n = a^{m+n}$	$4x^5 \times 2x^8 = 8x^{13}$
8. Division	When dividing with the same base (number	$15^7 \div 15^4 = 15^3$
Index Law	or letter), subtract the powers .	$x^9 \div x^2 = x^7$
	P	$20a^{11} \div 5a^3 = 4a^8$
	$a^m \div a^n = a^{m-n}$	
9. Brackets	When raising a power to another power,	$(y^2)^5 = y^{10}$
Index Laws	multiply the powers together.	$(6^3)^4 = 6^{12}$ $(5x^6)^3 = 125x^{18}$
		$(5x^6)^3 = 125x^{18}$
10.37	$(a^m)^n = a^{mn}$	
10. Notable	$p = p^1$	$99999^0 = 1$
Powers	$p^0 = 1$	4 4
11. Negative	A negative power performs the reciprocal.	$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$
Powers	$a^{-m} = \frac{1}{a^m}$	32 9
12. Fractional	a^m The denominator of a fractional power acts	2 2
Powers	as a 'root'.	$27^{\frac{2}{3}} = \left(\sqrt[3]{27}\right)^2 = 3^2 = 9$
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	The numerator of a fractional power acts as	$(25)^{\frac{3}{2}} (\sqrt{25})^3 (5)^3 125$
	a normal power.	$\left(\frac{25}{16}\right)^{\frac{3}{2}} = \left(\frac{\sqrt{25}}{\sqrt{16}}\right)^3 = \left(\frac{5}{4}\right)^3 = \frac{125}{64}$
	1	(10) (10) (4) 04
	$a^{\frac{m}{n}} = (\sqrt[n]{a})^m$	
	$u^{n} - (vu)$	

