

Integer Bases and Zero Exponents  
Answers

1. For example:

Power	Standard Form
$2^4$	16
$2^3$	8
$2^2$	4
$2^1$	2
$2^0$	1

2.

Power	Base	Exponent	Expanded Form	Standard Form
$2^3$	2	3	$2 \times 2 \times 2$	8
$(-2)^3$	-2	3	$(-2) \times (-2) \times (-2)$	-8
$-(2^3)$	2	3	$-(2 \times 2 \times 2)$	-8
$-2^3$	2	3	$-(2 \times 2 \times 2)$	-8
$-(-2)^3$	-2	3	$-((-2) \times (-2) \times (-2))$	8

3.

Positive	Negative
$1^{10}$ $(-1)^{100} - (-1^6)$	$-(1^{10})$ $-1^2$ $(-1)^3$ $-(1^9)$

4. a) 14 cm  
b) 4 cm

5. For example: I determined the value of the powers of 3 with exponents 1 to 8:

$$3^1 = 3$$

$$3^2 = 9$$

$$3^3 = 27$$

$$3^4 = 81$$

$$3^5 = 243$$

$$3^6 = 729$$

$$3^7 = 2187$$

$$3^8 = 6561$$

There is a repeating pattern in the ones digits (3, 9, 7, 1). Every 4th number ends in 1. 1992 is divisible by 4, so I know the ones digit of the value of  $3^{1992}$  will be 1.