

Class/Homework

# SHOW WORK

Mid Unit Review

Page 69

Questions

1,2ade, 4,5,6,8,9,10

# Page 69

**2.1**

1. Write each power in standard form.

$$\begin{array}{l} \text{a) } 14^2 \\ = 196 \end{array}$$

$$\begin{array}{l} \text{b) } 5^1 \\ = 5 \end{array}$$

$$\begin{array}{l} \text{c) } -8^3 \\ = -512 \end{array}$$

$$\begin{array}{l} \text{d) } -(-4)^4 \\ = -256 \end{array}$$

$$\begin{array}{l} \text{e) } (-6)^3 \\ = -216 \end{array}$$

$$\begin{array}{l} \text{f) } (-2)^8 \\ = 256 \end{array}$$

2. Copy and complete this table.

	Power	Base	Exponent	Repeated Multiplication	Standard Form
a)	$4^3$	4	3	(4) (4) (4) (4)	256
b)	$2^5$	2	5	(2) (2) (2) (2) (2)	32
c)	$8^6$	8	6	(8) (8) (8)(8) (8) (8)	262 144
d)	$7^2$	7	2	(7)(7)	49
e)	$3^4$	3	4	$3 \times 3 \times 3 \times 3$	81

3. a) Evaluate the first 8 powers of 7.  
Copy and complete this table.

Power of 7	Standard Form
$7^1$	7
$7^2$	49
$7^3$	343
$7^4$	2401
$7^5$	16 807
$7^6$	117 649
$7^7$	823 543
$7^8$	5 764 801

- b) What pattern do you see in the ones digits of the numbers in the second column?

**Pattern in the ones digit  
(7,9,3,1,7,9,3,1)**

- c) Verify that the pattern continues by extending the table for as many powers of 7 as your calculator displays.

- d) Use the pattern. Predict the ones digit of each power of 7. Explain your strategy.

i)  $7^{12} \rightarrow 1$       ii)  $7^{14} \rightarrow 9$

iii)  $7^{17} \rightarrow 7$       iv)  $7^{22} \rightarrow 9$

4. Write in standard form.

a) $10^6$	b) $10^0$	c) $10^8$	d) $10^4$
1 000 000	1	100 000 000	10 000

5. Write as a power of 10.

a) one billion	b) one	c) 100	d) 100 000
$10^9$	$10^0$	$10^2$	$10^5$

**6. Evaluate.**

a)  $(-5)^0$

$= 1$

b)  $25^0$

$= 1$

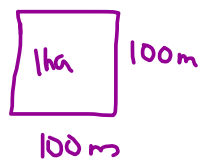
c)  $-6^0$

$= -1$

d)  $9^0$

$= 1$

7. The area of land is measured in hectares (ha). One hectare is the area of a square with side length 100 m. Write the number of square metres in 1 ha as a power.



$1\text{ha} = 100 \times 100$

$= 10000$

$= 10^4$

8. Evaluate. State which operation you do first.

a)  $(-21 - 6)^2 + 14$

$$(-27)^2 + 14$$

$$729 + 14$$

$$= 743$$

b)  $6 \div (-2) + (2 \times 3)^2$

$$6 \div (-2) + (6)^2$$

$$6 \div (-2) + 36$$

$$-3 + 36$$

$$= 33$$

c)  $[5 + (+4)]^3 - (21 \div 7)^4$

$$[9]^3 - (3)^4$$

$$729 - 81$$

$$= 648$$

d)  $[(6 - 21)^3 \times (2 + 2)^6]^0$

$$= 1$$

$$\begin{aligned} \text{e) } (3 - 5)^5 &\div (-4) \\ (-2)^5 &\div (-4) \\ -32 &\div (-4) \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{f) } -30 - (7 - 4)^3 \\ -30 - (3)^3 \\ -30 - 27 \\ &= -57 \end{aligned}$$

9. Both Sophia and Victor evaluated this expression:  $-2^4 \times 5 + 16 \div (-2)^3$   
Sophia's answer was  $-82$  and Victor's answer was  $78$ . Who is correct? Find the likely error made by the other student.

$$\begin{aligned} -2^4 \times 5 + 16 \div (-2)^3 \\ -16 \times 5 + 16 \div (-8) \\ -80 + -2 \\ &= -82 \end{aligned}$$



10. Identify, then correct, any errors in the student work below. How do you think the errors occurred?

$$\begin{aligned} & (-2)^4 - (-3)^3 \div (-9)^0 \times 2^3 \\ & = 16 - 27 \div (-1) \times 8 \\ & = -11 \div (-1) \times 8 \\ & = 11 \times 8 \\ & = 88 \end{aligned}$$

$$\begin{aligned} & (-2)^4 - (-3)^3 \div (-9)^0 \times 2^3 \\ & 16 - (-27) \div 1 \times 8 \\ & 16 - (-27) \times 8 \\ & 16 - (-216) \\ & = 232 \end{aligned}$$