Name: _____ Block: ____

2.1 Practice – What Is a Power?

1. Identify the **base** of each power.

a) 6^3 **b)** 2^7 **c)** $(-5)^4$ **d)** -7^0

2. Use **repeated multiplication** to show why 3^5 is not the same as 5^3.

3. Complete this table.

Power	Base	Exponent	Repeated Multiplication	Standard Form
4^4				
$(-10)^3$				
	–6	2		
			1 × 1 × 1 × 1 × 1	

4. Write each product as a **power**, then **evaluate**.

a) 6 × 6

b) 3 × 3 × 3 × 3 × 3 × 3

c) 10 × 10 × 10 × 10

d) –(8 × 8 × 8)

e) (–8)(–8)(–8)

f) –(–8)(–8)(–8)

5. Write each power as **repeated multiplication**, then **evaluate.**

a) 7^5

b) 4^6

c) -9^3

d) $(-5)^5$

6. **Evaluate** each power. For each power:

- Are the brackets needed?
- If your answer is yes, what purpose do the brackets serve?

a) $(-6)^5$

b) $-(6)^5$

c) $-(-6)^5$

d) (-6^5)

7. **Predict** whether each answer is positive or negative, then **evaluate**.

a) $(-3)^2$

b) $(-3)^3$

c) -3^2

d) $-(-3)^3$

8. Is the value of -2^4 different from the value of $(-2)^4$? **Explain**.

9. Stamps are sold in a 10 by 10 sheet. The total value of a sheet of stamps is $60.00.

a) Express the number of stamps as a power and in standard form.

b) What is the value of one stamp?

2.1 Practice – Answers

1. **a)** 6 **b)** 2 **c)** –5 **d)** 7

2. $3^5 = 3 \times 3 \times 3 \times 3 \times 3 = 243$ and $5^3 = 5 \times 5 \times 5 = 125$

3.

Power	Base	Exponent	Repeated Multiplication	Standard Form
4^4	4	4	$4 \times 4 \times 4 \times 4$	256
$(-10)^3$	–10	3	$(-10)(-10)(-10)$	–1000
$(-6)^2$	–6	2	$(-6)(-6)$	36
1^5	1	5	$1 \times 1 \times 1 \times 1 \times 1$	1

4. **a)** $6^2 = 36$
b) $3^6 = 729$
c) $10^4 = 10\,000$
d) $-8^3 = -512$
e) $(-8)^3 = -512$
f) $-(-8)^3 = 512$

5. **a)** $7 \times 7 \times 7 \times 7 \times 7 = 16\,807$
b) $4 \times 4 \times 4 \times 4 \times 4 \times 4 = 4096$
c) $-9 \times 9 \times 9 = -729$
d) $(-5)(-5)(-5)(-5)(-5) = -3125$

6. **a)** $(-6)^5 = -7776$; the brackets are needed; they indicate that the base is –6.
b) $-(6)^5 = -7776$; the brackets are not needed; the base is 6 and the power is negative.
c) $-(-6)^5 = 7776$; the brackets are needed; they indicate that the base is –6 and the sign of the expression is opposite to the sign of the value of $(-6)^5$.
d) $(-6^5) = -7776$; the brackets are not needed.

7. **a)** $(-3)^2$ is positive because the answer is the product of an even number of negative integers: 9
b) $(-3)^3$ is negative because the answer is the product of an odd number of negative integers: –27
c) -3^2 is negative because the answer is the opposite of the product of an even number of positive integers: –9
d) $-(-3)^3$ is positive because the answer is the opposite of the product of an odd number of negative integers: 27

8. Yes, their values are different; $-2^4 = -2 \times 2 \times 2 \times 2 = -16$ and $(-2)^4 = (-2)(-2)(-2)(-2) = 16$

9. **a)** $10^2 = 100$
b) 60¢ or $0.60