

MATH 9 - Final Review - Unit 2

1. Write the base and the exponent of this power:
 $(-5)^6$
2. Write $5 \times 5 \times 5 \times 5$ as a power, then evaluate the power.
3. Write $-(-4) \times (-4) \times (-4) \times (-4) \times (-4)$ as a power, then evaluate the power.

4. Which answers are positive?
 - i) $(5)^3$
 - ii) $(-7)^6$
 - iii) $(-3)^7$
 - iv) $-(6)^3$
5. Which power is greater, 6^7 or 7^6 ?

6. Complete this table.

Power	Base	Exponent	Repeated Multiplication
5^3			
3^4			
	7	3	
			$6 \times 6 \times 6 \times 6 \times 6$

7. Evaluate: 7^0
8. Write 3×10^6 in standard form.
9. Write 805 076 using powers of 10.
10. Write $(9 \times 10^7) + (6 \times 10^2) + (8 \times 10^0) + (7 \times 10^5)$ in standard form.
11. Evaluate: $6^2 - [12 \div (-2)]^3$
12. Evaluate: $70 \times 2^2 + 80 \times 3^2 \times 0.75$

13. Identify, then correct, any errors in the work below.

$$(5+3)^2 \times 4+5$$

$$= 8^2 \times 9$$

$$= 64 \times 9$$

$$= 576$$

14. Insert brackets to make each statement true.

a) $3^2 + 4 \times 5 - 2^2 = 13$

b) $3^2 + 4 \times 5 - 2^2 = 61$

15. Evaluate: $\frac{5^3 \times (2+4)^2 \times 6(-9)^0}{-(4)^0 \times 6^3 \times (7-2)^2}$

16. Write the product of $(-6)^6 \times (-6)^7$ as a single power.

17. Write the quotient of $\frac{(-7)^9}{(-7)^5}$ as a single power.

18. Evaluate: $3^3 \times 3^4 - 3^5 \times 3$

19. Simplify, then evaluate.

$$(-2)^4 \times (-2)^6 \div (-2)^6$$

20. Simplify, then evaluate.

$$\frac{(-2)^6 \times (-2)^2}{(-2)^3 \times (-2)^0}$$

21. Write $(8 \times 3)^7$ as a product of powers.

22. Write $(8 \div 9)^5$ as a quotient of powers.

23. Simplify, then evaluate.

$$\left(\frac{2^2}{5^0}\right)^4$$

24. Evaluate: $\left[-(-4)^0\right]^7$

25. Simplify, then evaluate.

$$\left[(-2)^4 \times (-2)^3\right] - \left[(-3)^4 \div (-3)^3\right]$$

26. Express $\left[\left(7^2\right)^4\right]^3$ as a single power of 7.

27. Identify, then correct, any errors in the work shown.

$$\begin{aligned} & \frac{5^2 + 3 \times 4^2 - 3^2}{3^2 - (5 \times 4^0)} \\ &= \frac{25 + 3 \times 16 - 9}{9 - 1} \\ &= \frac{28 \times 7}{8} \\ &= \frac{196}{8} \\ &= 24.5 \end{aligned}$$

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Answer Section

SHORT ANSWER

1. ANS:

Base: -5

Exponent: 6

DIF: Easy

2. ANS:

$$5 \times 5 \times 5 \times 5 = 5^4 = 625$$

DIF: Easy

3. ANS:

$$-(-4) \times (-4) \times (-4) \times (-4) \times (-4) = -(-4)^5 = 1024$$

DIF: Easy

4. ANS:

The answers for i and ii are positive.

DIF: Moderate

5. ANS:

The power 6^7 is greater.

DIF: Moderate

6. ANS:

Power	Base	Exponent	Repeated Multiplication
5^3	5	3	$5 \times 5 \times 5$
3^4	3	4	$3 \times 3 \times 3 \times 3$
7^3	7	3	$7 \times 7 \times 7$
6^5	6	5	$6 \times 6 \times 6 \times 6 \times 6$

DIF: Moderate

7. ANS:

$$7^0 = 1$$

DIF: Easy

8. ANS:

$$3 \times 10^6 = 3\,000\,000$$

DIF: Easy

9. ANS:

$$805\,076 = (8 \times 10^5) + (5 \times 10^3) + (7 \times 10^1) + (6 \times 10^0)$$

DIF: Moderate

10. ANS:

$$(9 \times 10^7) + (6 \times 10^2) + (8 \times 10^0) + (7 \times 10^5) = 90\,700\,608$$

DIF: Moderate

11. ANS:

252

DIF: Moderate

12. ANS:

820

DIF: Moderate

13. ANS:

Error: The solution does not follow the order of operations. Do not add $4 + 5$ before evaluating brackets, evaluating exponents, or multiplying.

Correction:

$$(5 + 3)^2 \times 4 + 5$$

$$= 8^2 \times 4 + 5$$

$$= 256 + 5$$

$$= 261$$

DIF: Moderate

14. ANS:

$$\text{a) } 3^2 + 4 \times (5 - 2^2) = 13$$

$$\text{b) } (3^2 + 4) \times 5 - 2^2 = 61$$

DIF: Moderate

15. ANS:

-5

DIF: Difficult

16. ANS:

$$(-6)^6 \times (-6)^7 = (-6)^{13}$$

DIF: Easy

17. ANS:

$$\frac{(-7)^9}{(-7)^5} = (-7)^4$$

DIF: Easy

18. ANS:

1458

DIF: Moderate

19. ANS:

$$(-2)^4 = 16$$

DIF: Moderate

20. ANS:

$$(-2)^5 = -32$$

DIF: Moderate

21. ANS:

$$8^7 \times 3^7$$

DIF: Easy

22. ANS:

$$8^5 \div 9^5, \text{ or } \frac{8^5}{9^5}$$

DIF: Easy

23. ANS:

$$\left(\frac{2^2}{5^0}\right)^4 = \left(\frac{2^2}{1}\right)^4 = 2^8 = 256$$

DIF: Moderate

24. ANS:

$$\left[-(-4)^0\right]^7 = -1$$

DIF: Moderate

25. ANS:

$$\left[(-2)^4 \times (-2)^3\right] - \left[(-3)^4 \div (-3)^3\right] = (-2)^7 - (-3)^1 = -125$$

DIF: Moderate

26. ANS:

$$\left[(7^2)^4 \right]^3 = 7^{2 \times 4 \times 3} = 7^{24}$$

DIF: Moderate

PROBLEM

27. ANS:

Errors:

In the numerator, follow the order of operations. Do the multiplication before the addition and subtraction.

In the denominator, the exponent 0 does not apply to everything in the brackets.

Correction:

$$\begin{aligned} & \frac{5^2 + 3 \times 4^2 - 3^2}{3^2 - (5 \times 4^0)} \\ &= \frac{25 + 3 \times 16 - 9}{9 - 5 \times 1} \\ &= \frac{25 + 48 - 9}{9 - 5} \\ &= \frac{64}{4} \\ &= 16 \end{aligned}$$

DIF: Difficult