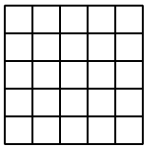
Name: _____ **Class:** _____ **Date:** _____ **ID: C**

Math 9: Powers Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Write the number of unit squares in this large square as a power.



a. 5×5 b. 5^5 c. 5×4 d. 5^2

2. Write 7^5 as repeated multiplication.
   a. 5×7
   b. $7 \times 7 \times 7 \times 7 \times 7 \times 7$
   c. $7 \times 7 \times 7 \times 7 \times 7$
   d. $7 + 7 + 7 + 7 + 7$

3. Evaluate: -3^8
   a. 6561 b. –24 c. 24 d. –6561

4. Write 1 000 000 as a power of 10.
   a. $(1 \times 10^6) + (1 \times 10^5) + (1 \times 10^4) + (1 \times 10^2) + (1 \times 10^1) + (1 \times 10^0)$
   b. 10^5
   c. $(10 \times 10^5) + (10 \times 10^4) + (10 \times 10^2) + (10 \times 10^1) + (10 \times 10^0)$
   d. 10^6

5. State which operation you would do first to evaluate $4 + 5 \times 2^2 - 1$.
   a. Subtract 1 from 2
   b. Square 2
   c. Add 4 and 5
   d. Multiply 5 and 2

6. Which is the correct value of $2^2 + 3 \times 5 - 3$?
   i) 14
   ii) 10
   iii) 16
   iv) 32
   a. ii b. iii c. i d. iv

7. Write the quotient of $\frac{6^{10}}{6^5}$ as a single power.
   a. 6^2 b. 2 c. 6^5 d. 6^{15}

8. Write the quotient of $(-8)^{15} \div (-8)^5$ as a single power.
   a. 3 b. $(-8)^3$ c. $(-8)^{10}$ d. $(-8)^{20}$

9. Evaluate: $\frac{(5)^6 \times (5)^4}{(5)^8}$
   a. 2 b. 10 c. 3 d. 25

10. Evaluate: $(-2)^2 \times (-2)^5 \div (-2)^0$
    a. 128 b. ï 128 c. 64 d. 1024

11. Write $\left(\frac{7}{5}\right)^3$ as a quotient of powers.
    a. $\frac{7^3}{5^1}$ b. $\frac{7^3}{5^3}$ c. 2^3 d. $7^3 - 5^3$

12. Write $\left(\frac{5}{3}\right)^6$ as a quotient of powers.

a. 2^6 b. $5^6 - 3^6$ c. $\frac{5^6}{3^6}$ d. $\frac{5^6}{3^1}$

13. Evaluate: $\left[(-5) \times (3)\right]^3$

a. 3375 b. –3375 c. 8 d. ï 8

14. Which expressions have negative values?

i) $\left[-(-3)^5\right]^5$

ii) $\left(-3^5\right)^5$

iii) $\left[(-3)^5\right]^5$

iv) $-\left[(-3)^5\right]^5$

a. iii and iv b. i and iv c. i and ii d. ii and iii

15. Write the base of $-(-4)^5$.

a. 4 b. 5 c. -4×5 d. –4

16. Write $(-2) \times (-2) \times (-2) \times (-2) \times (-2) \times (-2)$ as a power.

a. $(-2)^5$ b. $-(2)^6$ c. $6 \times (-2)$ d. $(-2)^6$

17. Write $(4)(4)(4)(4)(4)(4)(4)(4)$ as a power.

a. 8×4 c. 4^8

b. $(4)(4)(4)(4)(4)(4)(4)(4)$ d. 4^7

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18. Which answer is negative?
    i) $(-5)^4$
    ii) $-(5)^4$
    iii) $-(-5)^4$
    a. ii and iii b. i and iii c. i and ii d. i only

19. Evaluate: -3^0
    a. ï 1 b. 0 c. 3 d. 1

20. Evaluate: $(-11)^0$
    a. 0 b. ï 1 c. 1 d. ï 11

21. Evaluate: $(-10^7)^0$
    a. 70 b. –70 c. 1 d. –1

22. Evaluate: $2^3 - (-3)^3$
    a. ï 3 b. ï 19 c. 15 d. 35

23. Evaluate: $(5^3 - 4^2)^0 - (6^2 - 8^0)$
    a. 73 b. ï 34 c. ï 35 d. –36

24. Write the product of $5^2 \times 5^5$ as a single power.
    a. 25^7 b. 5^{10} c. 5^7 d. 10^7

25. Express $\dfrac{(-5)^6 \times (-5)^4}{(-5)^2}$ as a single power.
    a. $(-5)^{22}$ b. $(-5)^{12}$ c. $(-5)^5$ d. $(-5)^8$

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Short Answer

26. Evaluate: $\dfrac{4^3 \times (2+4)^2 \times 6(-13)^0}{-(4)^0 \times 6^3 \times (8-4)^2}$

27. Simplify, then evaluate.
$(-2)^3 \times (-2)^7 \div (-2)^6$

28. Express $\left[\left(5^4\right)^6\right]^5$ as a single power of 5.

29. Simplify, then evaluate.
$$\frac{\left(2^3\right)^4 \times \left(2^4\right)^2}{\left(2^3 \times 2^5\right)^2}$$

Problem

30. Evaluate: $5(3)^5 - 3(-5)^3$
Show your steps.

31. Evaluate: $\dfrac{(25)^2 - (10)^2}{(15)^2 - 2(5)^2}$
Show your calculations.

Math 9: Powers Test
Answer Section

MULTIPLE CHOICE

1. D
2. C
3. D
4. D
5. B
6. B
7. C
8. C
9. D
10. B
11. B
12. C
13. B
14. D
15. D
16. D
17. C
18. A
19. A
20. C
21. C
22. D
23. B
24. C
25. D

SHORT ANSWER

26. -4
27. $(-2)^4 = 16$
28. $\left[\left(5^4\right)^6\right]^5 = 5^{4\times 6\times 5} = 5^{120}$

29. $\dfrac{\left(2^3\right)^4 \times \left(2^4\right)^2}{\left(2^3 \times 2^5\right)^2} = \dfrac{2^{20}}{2^{16}} = 2^4 = 16$

PROBLEM

30. $5(3)^5 - 3(-5)^3 = 5 \times 243 - 3 \times (-125)$
$= 1215 + 375$
$= 1590$

31. $\dfrac{(25)^2 - (10)^2}{(15)^2 - 2(5)^2}$
$= \dfrac{625 - 100}{225 - 50}$
$= \dfrac{525}{175}$
$= 3$