

MATH 9 - CHAPTER 3 - PRETEST

parent/guardian signature _____

Multiple Choice - PART 1 - NON-CALCULATOR - 10 MINUTES

Circle the choice that best completes the statement or answers the question.

1. Which of the following repeated multiplication forms represents the area of a square with a side length of 2?
 a. 2×4 **b.** 2×2 c. $2 \times 2 \times 2 \times 2$ d. $2 \times 2 \times 2 \times 4$

2. Which of the following represents $1 \times 1 \times 1 \times 1$ in exponential form?
 a. 1 **b.** 1^4 c. 4 d. 4^1

3. In the expression 7^4 , what does the number 4 represent?
 a. base **b.** exponent c. multiple d. power

4. What is the value of $\frac{(-5)^6}{(-5)^3}$? $(-5)^3 = (25)(-5)$
 a. -5 b. -25 **c.** -125 d. -625

5. Simplify $(3^2)^{-3}$. $\frac{1}{(3^2)^3} = \frac{1}{3^6}$
 a. -3^6 b. $\frac{1}{3^6}$ **c.** $\frac{1}{3^6}$ d. 3^6

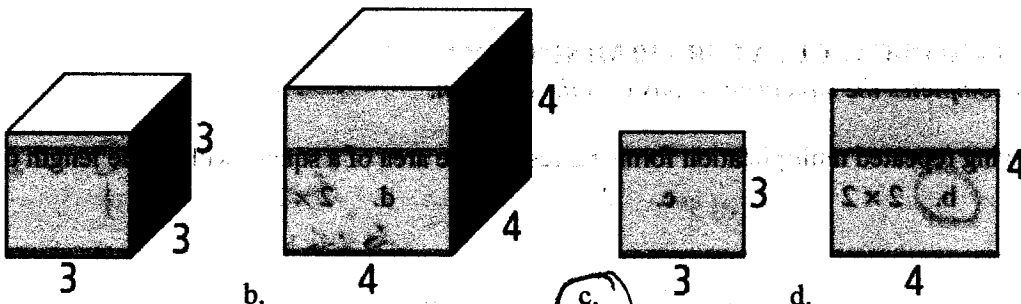
6. Evaluate $(\frac{2}{3})^3 \times (\frac{2}{3})^2$. $(\frac{2}{3})^5 = \frac{2^5}{3^5}$ OR $\frac{8}{27} \times \frac{4}{9}$
 a. $\frac{4}{9}$ b. $\frac{8}{27}$ **c.** $\frac{32}{243}$ d. $\frac{1024}{59049}$

Multiple Choice - PART 2 - CALCULATOR may be used after 10 minutes

7. Express 2187 as a power of 3.
 a. 3×729 **b.** 3^7 c. 7^3 d. 729^3

8. Which power has the greatest value? -32^2 , 4^6 , $(-5)^4$, 2^{10}
 a. 2^{10} **b.** 4^6 c. $(-5)^4$ d. -32^2

9. Which diagram represents the power 3^2 ?



10. Express $7^2 \times 7^6$ as a single power.

- a. 7^2 b. 7^4 c. 7^8 d. 7^{12}

11. Evaluate 7^0 .

- a. 0 b. 1 c. 7 d. 70

12. What is $(8^2 - 2^4) \div 2^3 - 4$?

- a. 0 b. 2 c. 12 d. 24
- $(64 - 16) \div 8 - 4$
 $= 48 \div 8 - 4$
 $= 6 - 4$

13. What is the value of $\frac{4^3 + 2^4}{2^3 \times 5}$?

- a. 50 b. 10 c. 2 d. 1
- $\frac{64 + 16}{8 \times 5} = \frac{80}{40}$

14. If a colony of 1000 bacteria doubles in size every 2 h, what is the size of the colony after 6 h?

- a. 2000 b. 6000 c. 8000 d. 64 000
- 0 → 1000
 2 → 2000
 4 → 4000
 6 → 8000

Short Answer - Show your work.

15. Write each expression as a power.

- a) $9 \times 9 \times 9 \times 9$ 9⁴
- b) $4 \times 4 \times 4 \times 4 \times 4$ 4⁵
- c) $-1 \times -1 \times -1$ (-1)³
- d) $6 \times 6 \times 6 \times 6 \times 6 \times 6$ 6⁶

16. Write each power as repeated multiplication, and evaluate.

a) 7^4

$$7 \times 7 \times 7 \times 7 \\ = 2401$$

c) 12^3

$$12 \times 12 \times 12 \\ = 1728$$

b) 11^3

$$11 \times 11 \times 11 \\ = 1331$$

d) 5^5

$$5 \times 5 \times 5 \times 5 \times 5 \\ = 3125$$

17. Evaluate. Show your work

a) $10 \times 4 + 6^3$

$$40 + 216$$

$$= 256$$

c) $8^2 \div 4 + 2^2$

$$64 \div 4 + 4$$

$$16 + 4$$

$$= 20$$

b) $5 \times 2^5 - 6^2 \times 2$

$$5 \times 32 - 36 \times 2$$

$$160 - 72$$

$$= 88$$

d) $2 \times 5^3 \div (35 - 5^2)$

$$2 \times 125 \div (35 - 25)$$

$$250 \div (10)$$

$$= 25$$

Problem - Show your work.

18. The number of insects in a colony doubles every month. There are currently 1000 insects in the colony. How many insects will there be after one year?

work

$$\begin{aligned} 0 &\Rightarrow 1000 \\ 1 &\Rightarrow 1000 \times 2 \\ 2 &\Rightarrow 1000 \times 2 \times 2 \\ &\vdots \\ 12 &\Rightarrow 1000 \times 2^{12} = 1000 \times 4096 \end{aligned}$$

answer

4,096,000

19. Very large numbers, such as the mass of a planet, can be expressed as the nearest power of 10. This is known as the order of magnitude. To the nearest order of magnitude, the mass of Earth is 10^{25} kg and the mass of the Sun is 10^{30} kg. How many times greater is the mass of the Sun than the mass of Earth?

work

$$\begin{aligned} ? \times 10^{25} &= 10^{30} \\ ? &= \frac{10^{30}}{10^{25}} = 10^5 \text{ OR } 100,000 \end{aligned}$$

answer