

Unit 5 Day 8: Mixed Practice

Focus Question: How do I keep all of these rules straight????????

Show all work to answer each question. Your answer should match a letter. Write the letter in the blank for each problem on the back of the page. It will answer the riddle

“Why didn’t the elephant like to play cards in the jungle?”

1. Complete the power rule $(a^m)^n = a^{m \cdot n}$

2. A microscope is set so it makes an object appear 4×10^2 times larger than its actual size. A virus has a diameter of 2×10^{-7} meters. How large will the diameter of the virus appear when it is viewed under the microscope?

$$4 \times 10^2 \cdot 2 \times 10^{-7} = 4 \cdot 2 \times 10^{2+(-7)} = 8 \times 10^{-5}$$

3. Simplify $(b^7)^2$

$$b^{7 \cdot 2} = b^{14}$$

4. Simplify $\frac{x^5}{x^2} \times x^{5-2} = x^3$

5. Complete the product rule $a^m \cdot a^n = a^{m+n}$

6. A box contains $5 \cdot 10^3$ paper clips. The mass of each paper clip in the box is $8 \cdot 10^{-4}$ kilograms. What is the combined mass of the paper clips in the box?

$$5 \cdot 10^3 \cdot 8 \cdot 10^{-4} = 40 \times 10^{-1} = 4$$

7. Simplify $b^4 \cdot b^{-4}$

$$b^{4+(-4)} = b^0 = 1$$

8. Simplify $\frac{c^4}{c^8}$

$$c^{4-8} = c^{-4} = \frac{1}{c^4}$$

9. What is the zero exponent rule?

$$a^0 = 1$$

10. A blue whale can eat 3×10^8 krill in a day. All of that krill weighs approximately 6.3×10^9 milligrams. About how much does each krill weigh? (hint: find “weight per krill”)

$$\frac{6.3 \times 10^9}{3 \times 10^8} = 2.1 \times 10^1$$

T	$a^{m \cdot n}$
H	a^{m+n}
C	a^{m-n}
H	$a^0 = 1$
A	$\frac{1}{a^m}$
O	x^3
A	x^{10}
N	b^{14}
V	b^9
E	4
space	40
Y	1
U	c^4
O	$\frac{1}{c^4}$
Space	$2.1 \cdot 10^1$
Z	$1.89 \cdot 10^2$
?	p^{20}
I	p^{12}
S	5
space	0
A	$2.25 \cdot 10^1$
I	$2.304 \cdot 10^{16}$
A	x^{10}
E	x^7
T	z^{25}
H	z^{10}
M	$9.28 \cdot 10^8$
space	$6.1 \cdot 10^4$
M	$8 \cdot 10^{-5}$
K	$2 \cdot 10^9$

11. Complete the negative exponent rule $a^{-m} = \frac{1}{a^m}$

12. Simplify $p^2 \cdot (p^5)^2 = p^{12}$

$$p^2 \cdot p^{5 \cdot 2}$$
$$p^2 \cdot p^{10} = p^{2+10}$$

13. Simplify $5x^0 = 5$

14. The population of the United States is 3.2×10^8 . The population of the world is 7.2×10^9 . How many times bigger is the population of the world than the United States? (hint: $\frac{\text{US}}{\text{US}} \text{ times "what"} = \frac{\text{world}}{\text{US}}$)

$$\frac{(7.2 \times 10^9)}{(3.2 \times 10^8)} = 22.5$$

OR

$$2.25 \times 10^1$$

15. Complete the quotient rule $\frac{a^m}{a^n} = a^{m-n}$

16. Simplify $x^5 \cdot x^2$

$$x^{5+2} = \boxed{x^7}$$

17. Simplify $(z^5)^5$

$$z^{5 \cdot 5} = \boxed{z^{25}}$$

18. Margaret made $3.2 \cdot 10^4$ dollars last year. This year she made $2.9 \cdot 10^4$ dollars. How much money did she make in the two years combined? (hint: what operation should you do?)

$$3.2 \cdot 10^4 + 2.9 \cdot 10^4 = 61000$$

OR 6.1×10^4

TOO-MANY-CHEETAHS!

1 4 8 10 2 14 3 7 18 15 5 16 6 17 11 9 13 12