NAME Key DATE _____ PERIOD _____

SCORE _____

Test, Form 3A

1. Evaluate the given expression if $a = 4$ and $b = -3$.

$a^2 - b^3$

$(4)^2 - (-3)^3$

$16 - (-27) = 43$

- Put parentheses where the variables are
- plug given values for variables

1. 43

Simplify using the Laws of Exponents. Write each expression using a positive exponent.

also $n \cdot n \cdot n \cdot n \cdot n \cdot n \cdot n$ → n^4

2. $\frac{n^7}{n^3}$ = Division; so we subtract exponents $7-3=4$ n^4

2. n^4

3. $-4x^2y(-3xy^3)$

↳ Group coefficients & Variables together

$(-4 \cdot -3)(x^2 \cdot x)(y \cdot y^3)$

$12 \quad x^3 \quad y^4$

3. $12x^3y^4$

Exponents brought to a Power; we multiply exponents

4. $[(t^3)^2]^4$

$t^{3 \cdot 2 \cdot 4} = t^{24}$

4. t^{24}

5. $\frac{42c^4}{-6c^{12}}$

5. $\frac{-7}{c^8}$

6. Marta is making a quilt in the shape of a square. The length of one edge of the quilt is $2g^2h^3$. What is the area of the quilt?

- It's a square so we multiply it by itself

$[2g^2h^3]^2$ "distribute" the exponent to all terms

$2^2 \cdot (g^2)^2 \cdot (h^3)^2 \rightarrow 4g^4h^6$

6. $4g^4h^6$

7. Write 2.18 as a mixed number in simplest form.

"Read" as two and eighteen hundredth.

translate as fraction and reduce → $2\frac{18}{100}$

$2\frac{9}{50}$

7. $2\frac{9}{50}$

8. Write 7^{-5} using a positive exponent.

$\frac{1}{7^5}$; $x^{-n} = \frac{1}{x^n}$

8. $\frac{1}{7^5}$

9. Find the missing exponent in the equation $3y^5 \cdot y^{\square} = 3y^{10}$

Property of exponents w/ multiplication.

Add the exponents. $5 + \text{"what"} = 10$?

9. 5

10. The volume of a drop of water is 0.00005 liter. Write this number in scientific notation.

5×10^{-5} How many spots did it move? Is it a large or small #?

10. 5×10^{-5}

11. Write 3.07×10^{-4} in standard form.

negative exponent tells us to move left

3.07

4 3 2 1

11. .000307

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Test, Form 3A *(continued)*

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12. Evaluate the expression. Express the result in scientific notation.

$(1.2 \times 10^4)(3.2 \times 10^{-6})$

Break up groups

$(1.2 \times 3.2)(10^4 \times 10^{-6}) = 4.16 \times 10^{-2}$

12. 4.16×10^{-2}

13. The closest distance from Venus to Earth is about 40,000,000 → 4.0×10^7 kilometers. The closest distance from Saturn to Earth is about 1.2×10^9 kilometers. How many times closer to Earth is Venus than Saturn? Write your answer in standard notation.

$\frac{1.2 \times 10^9}{4.0 \times 10^7} \Rightarrow .3 \times 10^2 = 30$

13. 30

14. Evaluate $(2.1 \times 10^4) + (5.68 \times 10^{-2})$. Express the result in standard form.

14. _____

15. Find $\sqrt[3]{729}$.

15. 9

16. The area of a square carpet tile is 900 square centimeters. What is the length of one edge of the tile?

900 = area

area = $l \times w$ $\sqrt{900} = 30$

16. 30cm

17. Without using a calculator, which is greater, 8 or $\sqrt[3]{510}$? Explain your reasoning.

$8^3 = 512$ so $\sqrt[3]{510}$ is less than 8

17. 8

18. Which number(s) in the set listed below are not rational numbers?

$\left\{-\frac{2}{5}, 0.005, 3.2 \times 10^{-4}, \pi, \sqrt{13}\right\}$

Convert all #'s to s

rational #s can be written as $\frac{a}{b}$

18. π, $\sqrt{13}$

19. Order the set of numbers from least to greatest.

$\left\{4.509, \frac{229}{50}, 4.09, \sqrt{21}\right\}$ — Convert all to same form

4.09, 4.509

19. $\frac{229}{50}$, $\sqrt{21}$

20. Estimate and graph $\sqrt{32}$ on the number line.

$\sqrt{32}$ is between 5 & 6.

$5.5^2 = 30.25$ so $\sqrt{32} \approx 5.7$

20. _____