Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**10.3B NOTES – Quotient of Powers Property**

*Objective: divide powers with the same base; simiplify expressions involving the quotient of powers. CC.SS.EE.1*

*HW: (10.3B) p. 426 #16 – 21, 23 – 28.*

**Warm Up.** SIMPLIFY EACH EXPRESSION. WRITE YOUR ANSWER AS A POWER.

|  |  |  |
| --- | --- | --- |
| $$1. \frac{4^{5}}{4^{2}}$$ | 2. $\frac{\left(-2\right)^{10}}{\left(-2\right)^{3}}$  | 3. $\frac{P^{7}}{P^{6}}$ |

**STEPS:**

1. Simplify the numerator (use the Power Rule)
2. Simplify the denominator (use the Power Rule)
3. Simplify the top and bottom (use the Quotient Rule)
4. Make sure to simplify the coefficient if needed.

EXAMPLE 2 (P. 424) AND ONE ADDITIONAL EXAMPLE.

SIMPLIFY THE EXPRESSION. WRITE YOUR ANSWER AS A POWER

|  |  |
| --- | --- |
| 1) $ \frac{3^{4}∙ 3^{2}}{3^{3}}$ | 2) $ \frac{7x^{5}}{x^{3}}$ |

SIMPLIFY THE EXPRESSION. WRITE YOUR ANSWER AS A POWER

|  |  |
| --- | --- |
| 5a. $\frac{2^{15}}{2^{3} ∙ 2^{5}}$  | 5b. $\frac{π^{10}}{π^{5} ∙ π^{4}}$ |
| 5c. $\frac{k ∙ 3^{9}}{3^{5}}$ | 5d. $\frac{x^{4} ∙ y^{10} ∙ 2^{11}}{y^{8} ∙2^{7}}$ |

**BACK 🡪**

**READ EXAMPLE 3 (p. 425)**



**Simplify the expression. Write your answer as a power.**

|  |
| --- |
| 1. $\frac{35x^{11}}{15x^{4}}$
 |
| 1. $\frac{12x^{5}}{2x}$
 |

**ON YOUR OWN:** Simplify the expression. Write your answer as a power.

|  |  |  |
| --- | --- | --- |
| 6.$$\frac{d^{5}}{d}∙\frac{d^{6}}{d^{8}}$$ | 7.$$\frac{5^{9}}{5^{4}}∙\frac{5^{5}}{5^{2}}$$ | 8.$$\frac{9x^{3}}{6}∙\frac{2y^{8}}{2y^{6}}$$ |

|  |  |
| --- | --- |
| EXAMPLE 3 (p. 425). SIMPLIFY EACH EXPRESSION. WRITE YOUR ANSWER AS A POWER WITH POSITIVE EXPONENTS1. $\frac{a^{10}}{a^{6}} ∙ \frac{a^{7}}{a^{4}}$
 | ADDITIONAL EXAMPLE1. $-\frac{10x^{9}}{18x^{5}} ∙ \frac{y^{4}}{y^{2}}$
 |

**PRACTICE PROBLEMS**

SIMPLIFY EACH EXPRESSION. WRITE YOUR ANSWER AS A POWER WITH POSITIVE EXPONENTS

|  |  |  |
| --- | --- | --- |
| 1.$$\frac{7^{5}∙7^{6}}{7}$$ | 2.$$\frac{π^{15}}{π^{3}∙π^{9}}$$ | 3.$$\frac{5^{12}}{5^{6}∙5^{3}}$$ |