

## Algebra 1 Chapter 7 REVIEW

**T 7-1:** I can multiply monomials using the properties of exponents and simplify expressions.Simplify the following expressions. *No Negative Exponents!!*

1.  $11x^7 \cdot 9x^{12} = 99x^{19}$

2.  $(-7x^4)(-9x^8) = 63x^{12}$

3.  $(5x^7y^9)^3 = 5^3x^{21}y^{27}$   
 $125x^{21}y^{27}$

4.  $-a^4x^4z \cdot a(-x)^4z^{23} =$   
 $-a^5x^8z^{24}$

5.  $(2gh^4)^3((-2g^4h)^3)^2 =$   
 $2^3g^3h^{12}((-2)^3g^{12}h^3)^2$   
 $8g^3h^{12}(-8)^2g^{24}h^6$   
 $512g^{27}h^{18}$

6.  $3(7d^2)^4 = 3 \cdot 7^4d^8$   
 $3 \cdot 2401d^8$   
 $7203d^8$

7.  $\left(\frac{a^2}{b^4}\right)^3 = \frac{a^6}{b^{12}}$

8.  $\left(\frac{5}{7}\right)^3 = \frac{5^3}{7^3} = \frac{125}{343}$

9. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.

$(5x^7y^9)^3 = 125x^{10}y^{12}$

$5^3x^{21}y^{27} = 125x^{21}y^{27}$

They added the exponents when they should multiply.

10. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.

$(6k^7)^3 = 18k^{21}$

$6^3k^{21} = \underline{216}k^{21}$

 $6^3 = 216$  They multiplied the base by power. Should multiply base by itself three times.

**Target 7-2:** I can divide monomials using the properties of exponents and simplify expressions.

Simplify the following expressions. *No Negative Exponents!!*

1.  $\frac{h^5}{h^{11}} = \frac{1}{h^6}$

2.  $\frac{x^7}{x^2} = x^5$

3.  $\frac{35m^{15}}{5m} = 7m^{14}$

4.  $\frac{4y^2}{12y^3} = \frac{1}{3y}$

5.  $\frac{8a^5b^8}{40a^7b^3} = \frac{b^5}{5a^2}$

6.  $\frac{-8x^{12}y^3}{10y^{10}x^6} = \frac{-4x^6}{5y^7}$

7.  $\left(\frac{3x^9y^5}{2y^{11}x^{12}}\right)^2 = \frac{3^2x^{18}y^{10}}{2^2y^{22}x^{24}} = \frac{9}{4x^6y^{12}}$

8.  $\left(\frac{4x^2y^7}{3xy^5}\right)^3 = \frac{4^3x^6y^{21}}{3^3x^3y^{15}} = \frac{64x^3y^6}{27}$

9. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.

$$\frac{24xy^4}{9x^8y^2} = \frac{15y^2}{x^7} = \frac{8y^2}{3x^7}$$

$$\frac{24}{9} = \frac{8}{3}$$

They subtracted the 9 from 24 rather than dividing (simplifying fraction)

10. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.

$$\frac{15x^6y^3}{3x^2y^9} = \frac{5x^3}{y^3}$$

$$\frac{15x^6y^3}{3x^2y^9} = \frac{5x^4}{y^6}$$

They divided the exponent on the y's instead of subtracting.

**T7-3:** I can use all properties of exponents to solve exponents.

Simplify the following expressions. *No Negative Exponents!!*

$$\left(\frac{6x^{-9}y^3}{7x^3y^5}\right)^2$$

<p>1. <math>\left(\frac{2x^{-4}}{3y^3}\right)^4 = \left(\frac{2}{3x^4y^3}\right)^4 = \frac{2^4}{3^4x^{16}y^{12}}</math></p> <p><math>\frac{2^4x^{-16}}{3^4y^{12}}</math></p> <p><math>\frac{16}{81x^{16}y^{12}}</math></p>	<p>2. <math>\left(\frac{7x^3y^5}{6x^{-9}y^{-3}}\right)^{-2} =</math></p> <p><math>\frac{7^{-2}x^{-6}y^{-10}}{6^{-2}x^{18}y^6} = \frac{6^2}{7^2x^6y^{10}x^{18}y^6} = \frac{36}{49x^{24}y^{16}}</math></p>
<p>3. <math>\left(\frac{1}{z}\right)^{-3} = \left(\frac{z}{1}\right)^3 = z^3</math></p>	<p>4. <math>(5235x^6y^{88}z^{-32})^0 = 1</math></p>
<p>5. <math>17x^0 = 17</math></p>	<p>6. <math>-6x^{-7} = \frac{-6}{x^7}</math></p>
<p>7. <math>\frac{(2pm^{-1}q^0)^{-4}2m^{-1}p^3}{2pq^{21}} = \frac{m^3}{2^4p^2q^{21}}</math></p> <p><math>\frac{2p^3}{(2pm^{-1})^4 2pq^{21}} = \frac{2p^3m^4}{2^4 \cdot 2p^4p^4q^{21}m}</math></p>	<p>8. <math>\frac{(4c^3d^8)^{-2}(6c^7d^4)}{4^2c^6d^{16}12c^{12}d^{11}} =</math></p> <p><math>\frac{c^7d^4}{16 \cdot 2c^{18}d^{27}} = \frac{1}{32c^{11}d^{23}}</math></p>
<p>9. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.</p> <p><math>7(3x^2)^{-1} = -21x^2</math></p> <p><math>7 \cdot 3^{-1}x^{-2}</math></p> <p><math>\frac{7}{3x^2}</math></p>	<p>10. Is this equation true or false? If false, change the RIGHT side to make it true. Explain the mistake that was made.</p> <p><math>\left(\frac{2x^3}{-3y^5}\right)^{-2} = \frac{-4y^{10}}{6x^6}</math></p> <p>They multiplied the base by exponent!</p>

They multiplied 3 times 7 but need to do exponent first!

$$\left(\frac{-3y^5}{2x^3}\right)^2$$

$$\frac{(-3)^2y^{10}}{2^2x^6} = \frac{9y^{10}}{4x^6}$$

**T 7-4:** I can evaluate, rewrite and solve expressions involving rational exponents

Write the following in radical form.

1.  $21z^{\frac{1}{2}} = \underline{21\sqrt{z}}$

2.  $(7ab)^{\frac{1}{3}} = \underline{\sqrt[3]{7ab}}$

3.  $13(ab)^{\frac{5}{2}} = \underline{13(\sqrt{ab})^5}$

Write the following in exponential form.

4.  $\sqrt[5]{13} = \underline{13^{\frac{1}{5}}}$

5.  $(\sqrt[5]{17x})^3 = \underline{(17x)^{\frac{3}{5}}}$

6.  $3\sqrt{x} = \underline{3x^{\frac{1}{2}}}$

Evaluate the following rational exponents.

7.  $(\frac{1}{81})^{\frac{1}{4}} = \underline{\frac{1}{3}}$

8.  $\sqrt[5]{1024} = \underline{4}$

9.  $512^{\frac{2}{3}} = \underline{\hspace{2cm}}$

$\sqrt[3]{512}^2 = 8^2 = 64$

10.  $(\frac{32}{1024})^{\frac{1}{5}} = \underline{\frac{1}{2}}$

11.  $3125^{\frac{4}{5}} = \underline{\hspace{2cm}}$

$\sqrt[5]{3125}^4 = 5^4 = 625$

12.  $\sqrt[4]{1296} = \underline{6}$

13.  $5^{3-2x} = 5^{-x}$

$3-2x = -x$   
 $+2x \quad +2x$

$\boxed{3=x}$

14.  $3^{2a} = 3^{-a}$

$2a = -a$   
 $+a \quad +a \quad a=0$

$\frac{3a}{3} = \frac{0}{3}$

15.  $4^{x-1} = 1024$

$1024 = 4^5$

$4^{x-1} = 4^5$

$x-1 = 5$

$\boxed{x=6}$

16.  $6^{x-1} = 1296$

$6^{x-1} = 6^4$

$x-1 = 4$

$\boxed{x=5}$