

warm up:

Simplify each expression using only positive exponents.

HW page 72 #2-3

$$-2m^4n^5 \cdot -2m^4n^5$$

$$10x^{-5}m^6w^{-4} \cdot 10x^{-5}m^6w^{-4}$$

$$2. (-2m^4n^5)^2 \cdot (3m^2n^3)^4 =$$

$$= 4m^8n^{10} \cdot 81n^{12}$$

$$= 324m^8n^{22}$$

$$3^4 = 3 \cdot 3 \cdot 3 \cdot 3$$

$$= 9 \cdot 9$$

$$= 81$$

$$2^3 = 8$$

$$3. (10x^{-5}m^6w^{-4})^2 \cdot (2xm^{-3}w^{-2})^3 =$$

$$= 100x^{-10}m^{12}w^{-8} \cdot 8x^3m^{-9}w^{-6}$$

$$= \frac{100m^{12}}{x^{10}w^8} \cdot \frac{8x^3}{m^9w^6}$$

$$= \frac{800m^{12}x^3}{x^{10}w^{14}m^9}$$

$$= \frac{800m^3}{x^7w^{14}}$$

warm up:

HW page 72 #1-3

Simplify each expression using only positive exponents.

$$2. (-2m^4n^5)^2 \cdot (3m^0n^3)^4 =$$

$$= 4m^8n^{10} \cdot 81\cancel{m^0}n^{12}$$

$$= 324m^8n^{22}$$

$$3. (10x^{-5}m^6w^{-4})^2 \cdot (2xm^{-3}w^{-2})^3 =$$

$$= 100x^{-10}m^{12}w^{-8} \cdot 8x^3m^{-9}w^{-6}$$

$$= 800x^{-7}m^3w^{-14}$$

$$= \frac{800m^3}{x^7w^{14}}$$

HW page 71

Simplify completely using only positive exponents.

$$1. (4)^2 = 16$$

$$13. \left(\frac{x}{y^3}\right)^2 = \frac{x^2}{y^6}$$

$$2. (-2)^3 = -8$$

$$3. (-5)^2 = 25$$

$$14. \left(\frac{2x^4}{3y^3}\right)^5 = \frac{2^5 x^{20}}{3^5 y^{15}} = \frac{32x^{20}}{243y^{15}}$$

$$4. (3^2)^3 = 3^6 = 729$$

$$5. (x^2)^5 = x^{10}$$

$$\begin{matrix} 10 & 8 & 8 \\ x & y & w \end{matrix}$$

$$15. \left(\frac{\cancel{x^2 y^2}^2}{\cancel{x^2 y^2}^2} \right)^2 = \left(\frac{x^2 w^3}{y^2} \right)^2 = \frac{x^4 w^6}{y^4}$$

$$6. (w^6 y^7)^3 = w^{18} y^{21}$$

$$7. (5m^4)^2 = 5^2 m^8 = 25m^8$$

$$16. \left(\frac{\cancel{8x^3}^3}{\cancel{4x^2}^2} \right)^3 = \left(\frac{2w^3}{x^4} \right)^3 = \frac{8w^9}{x^{12}}$$

$$8. (3x^3 p^2)^4 = 3^4 x^{12} p^8 = 81x^{12} p^8$$

$$9. (7xy^6)^2 = 7^2 x^2 y^{12} = 49x^2 y^{12}$$

$$17. \left(\frac{\cancel{8x^2 m^2 p}^5}{\cancel{18x^2 m^2 p}^5} \right)^5 = \left(\frac{-1xm^2}{3p^3} \right)^5 = \frac{-x^5 m^{10}}{243p^{15}}$$

$$10. (-4w^0 n^3 a^5)^3 = (-4)^3 n^9 a^{15} = -64n^9 a^{15}$$

$$11. (3x^4m^{-3}p)^2 = 3^2x^8m^{-6}p^2 = \frac{9x^8p^2}{m^6}$$

$$12. (2x^2y)^3 \cdot (3xy^3)^2 =$$

$$\cancel{2^3}^8x^6y^3 \cdot \cancel{3^2}^9x^2y^6 = 72x^8y^9$$

$$18. \left(\frac{\cancel{x^2}}{\cancel{x^2}}\right)^2 \cdot \left(\frac{\cancel{x^4}y}{\cancel{x}}\right)^3 =$$

$$\downarrow \quad \downarrow$$

$$\left(\frac{y}{x^2}\right)^2 \cdot \left(\frac{x^4y}{1}\right)^3$$

$$\downarrow \quad \downarrow$$

$$\frac{y^2}{x^4} \cdot \frac{x^{12}y^3}{1}$$

$$\rightarrow = \frac{x^{12}y^5}{x^4}$$

$$\downarrow$$

$$= \boxed{x^8y^5}$$

page 130

Putting the Rules Together:

Simplify all of the following expressions with only positive exponents:

$$1. (4x^2y) \cdot (x^3y)^2$$

$$= 4x^2y \cdot x^6y^2$$

$$= 4x^8y^3$$

$$2. (5x^2y^3)^2 \cdot (-2xy^4)^3$$

$$= 25x^4y^6 \cdot -8x^3y^{12}$$

$$= -200x^7y^{18}$$

$$3. (-2x^4y^5m^0)^2 \cdot (3xm^3)^2$$

$$= 4x^8y^{10} \cdot 9x^2m^6$$

$$= 36x^{10}y^{10}m^6$$

$$4. \left(\frac{2x^4p^{-5}m^3}{3m^3} \right)^2$$

$$= \left(\frac{x^4}{3p^5m^4} \right)^2$$

$$= \frac{x^8}{9p^{10}m^8}$$

* Challenge 5. $\frac{5x^{-5}y^3p}{2p^5} \cdot \frac{4p^5}{x^3y} =$

$$= \frac{10y^2p}{x^5x^3}$$

$$= \frac{10y^2p}{x^8}$$

✓ Understanding Check:

a. $(5m^6g^2) \cdot (mg^7)^2$

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

c. $(4x^0y^3m^2)^2 \cdot (-3xm^5)^4$

d.
$$\left(\frac{12m^4p^{-2}x^{-3}}{4m^5p} \right)^3$$

$$= \left(\frac{3}{m^1 p^3 x^3} \right)^3$$

$$= \frac{27}{m^3 p^9 x^9}$$

e.
$$\frac{-6xy^{-2}p}{x^3p^5} \cdot \frac{2p^4y^2}{3x^4y} =$$

$$= \frac{-4}{x^6 y}$$

✓ Understanding Check:

a. $(5m^6g^2) \cdot (mg^7)^2$

$$5m^6g^2m^2g^{14}$$

$$5m^8g^{16}$$

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

$$8x^3y^{12} \cdot 9x^8y^4$$

$$72x^{11}y^{16}$$

c. $(4x^3y^3m^2)^2 \cdot (-3xm^5)^4$

$$16x^6y^6m^4 \cdot 81x^4m^{20}$$

$$= 1296x^{10}y^6m^{24}$$

d. $\left(\frac{12m^4p^{-2}x^{-3}}{4m^5p}\right)^3$

$$= 3m^{-1}p^{-3}x^{-3}$$

$$= \left(\frac{3}{mp^3x^3}\right)^3 = \left(\frac{27}{m^3p^9x^9}\right)$$

e. $\frac{-6xy^{-2}p}{x^3p^5} \cdot \frac{2p^4y^2}{3x^4y} =$

$$\frac{-12xy^0p^5}{3x^7p^5y} = -4x^{-6}y^{-1} = \left(\frac{-4}{x^6y}\right)$$

Super Challenge! $x^2(xy^3)^2 + y^2(x^2y^2)^2 =$

$$= x^2 (x^2 y^6) + y^2 \cdot x^4 y^4$$

$$= x^4 y^6 + x^4 y^6$$

$$= 2x^4 y^6$$

Just for fun! $x^2(xy^3)^2 + y^2(x^2y^2)^2 =$

$$x^2(x^2y^6) + y^2(x^4y^4)$$
$$x^4y^6 + x^4y^6$$
$$= \boxed{2x^4y^6} \leftarrow$$

Homework:

HW page 73

Unit 7 Test FRIDAY!

Warmup (reheat):

Solve:

$$3x - 1 < x + 2$$

$$\begin{array}{rcl} & -x & \\ 2x - 1 & < & 2 \\ & +1 & +1 \\ 2x & < & 3 \\ x & < & \frac{3}{2} \end{array}$$

CREATE AN INEQUALITY, GIVEN A SOLUTION SET

Directions: Write an inequality whose solution set is $x < -1/2$ by filling in the boxes with whole numbers 0 through 9, using each number at most once.

$$\boxed{1}x + \boxed{2} > \boxed{3}x + \boxed{4}$$

Handwritten work below the inequality:

$$-3x$$

$$-2x + 2$$

$$-2x > 4$$

$$x < -1$$

The solution set $x < -1$ is circled in blue.

CREATE AN INEQUALITY, GIVEN A SOLUTION SET

Directions: Write an inequality whose solution set is $x < -1/2$ by filling in the boxes with whole numbers 0 through 9, using each number at most once.

$$\boxed{}x + \boxed{} > \boxed{}x + \boxed{}$$

First attempt:

Points: ____/2 attempt ____/2 explanation

$$\begin{aligned} 1x + 2 &> 3x + 4 \\ x &> 3x + 2 \\ -2x &> 2 \\ x &< -1 \end{aligned}$$

Why did you learn from this attempt? How will your strategy change on your next attempt?

~~4~~ This is not correct. I'll change the numbers by guessing again.



