warm up:

HW page 72 #4 - 6

4. $\left(\dfrac{-6x^3m^{-3}p}{9x^2mp^4}\right)^5 =$

$x^{3-2} = x^1$

$\left(\dfrac{-2x^1}{3m^4p^3}\right)^5$

m^{-4}

$= \dfrac{(-2)^5x^5}{3^5m^{20}p^{15}}$

$= \dfrac{-32x^5}{243m^{20}p^{15}}$

4. $\left(\dfrac{-6x^5m^{-3}p}{9x^2mp^4}\right)^5 = \left(\dfrac{-2x}{3m^4p^3}\right)^5 = \dfrac{(-2)^5x^5}{3^5m^{20}p^{15}} = \boxed{\dfrac{-32x^5}{243m^{20}p^{15}}}$

warm up: $m^{-2} \cdot m^{3} = m^{1}$

HW page 72 #4 - 6

5. $\dfrac{8x^3m^{-2}p^0}{2xw} \bullet \dfrac{-4xm^3w^3}{m^5} = \dfrac{-32x^4mw^3}{12xwm^5}$

$= \dfrac{-16x^3w^2}{m^4}$

5. $\dfrac{8x^3m^{-2}p^0}{2xw} \cdot \dfrac{-4xm^3w^3}{m^5} = \dfrac{-32x^4mw^3}{2xm^5w} = \boxed{\dfrac{-16x^3w^2}{m^4}}$

warm up:

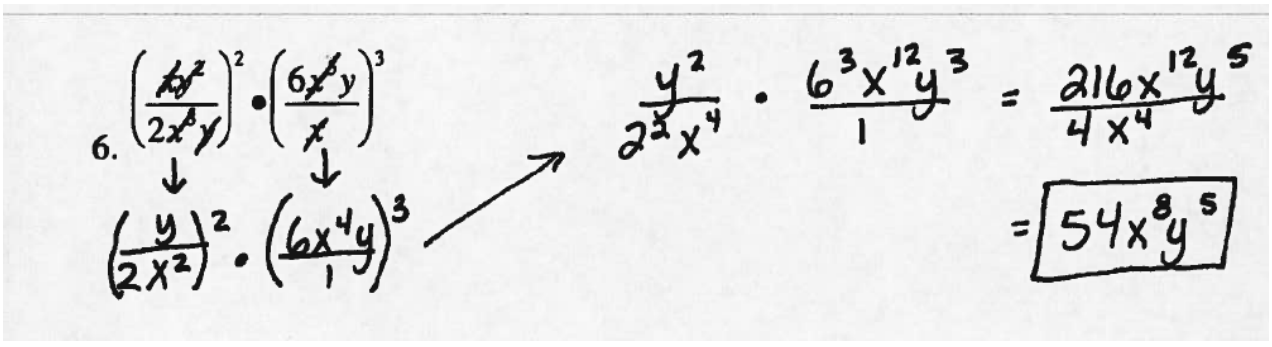
HW page 72 #4 - 6

6. $\left(\frac{xy^2}{2x^3y}\right)^2 \cdot \left(\frac{6x^5y}{x}\right)^3$

$= \left(\frac{1y}{2x^2}\right)^2 \cdot \left(6x^4y\right)^3$

$= \frac{y^2}{4x^4} \cdot 6^3x^{12}y^3$

$= \frac{216x^{12}y^5}{4x^4} = 54x^8y^5$



Check p130 in notes....
any questions?

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

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

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

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

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

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

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

m^{-1} p^{-3}

$= \left(\frac{3}{mp^3x^3}\right)^3$

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

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

$\frac{x}{x^7} = x^{-6}$

$\frac{p^5}{p^5} = 1$

$\frac{y^0}{y} = \frac{1}{y}$

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

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√ 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. $(4x^0y^3m^2)^2 \cdot (-3xm^5)^4$

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

$= 1296x^4y^6m^{24}$

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

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

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

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

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

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

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

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

$= 2x^4y^6$

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

$x^2(x^2y^6) + y^2(x^4y^4)$

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

$= \boxed{2x^4y^6}$ ←

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Combining Like Terms:
(Combine like terms …don't change exponents!)

1. $(5x^2 - 6x + 2) + (9x^2 + 10x - 7) =$

$14x^2 + 4x - 5$

2. $(3x^2y - 2xy + 4y) + (5x^2y - 3xy - 6y) =$

$8x^2y - 5xy - 2y$

4. $(10x^2 - 7x - 2) - (3x^2 - 4x + 6) =$

$7x^2 - 3x - 8$

$-7 - -4$

$-7 + 4$

Exponent Rule #1:
(To multiply same bases, you just add…exponents)

5. $2^3 \cdot 2^5 =$ 2^8 or 256

6. $5^2 \cdot x^3 \cdot 5^3 \cdot x^6 =$ $5^5 x^9$

7. $(6m^4p)(2m^3p^5) =$ $12m^7p^6$

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Exponent Rule #2:
(When dividing same bases, just subtract…exponents)

8. $\frac{m^4x^3w^8}{mx^2w^2} =$ $m^3 x w^6$

9. $\frac{12a^5x^6g^7}{4a^3x^6g^3} =$ $3a^2g^4$

10. $\frac{5x^7y^4z^3}{30x^5y^3} =$ $\frac{x^2yz^3}{6}$

Exponent Rule #3:
(Any base to a zero power equals one.)

11. $m^0 =$ 1

12. $-5x^2g^5w^0g^4 =$ $-5x^3g^9$

13. $x^3 \cdot x^{-2} \cdot x^6 \cdot x^{-7} =$ $x^0 =$ 1

$\frac{1}{6} = \frac{1}{6}$

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Exponent Rule #4:
(If a base has a negative power, send it down… as a positive.)

14. $x^{-3} =$ $\frac{1}{x^3}$

15. $-8x^4m^{-6}p^5g^{-2} =$ $-\frac{8x^4p^5}{m^6g^2}$

16. $\frac{18m^{-6}x^3w^5}{2mx^{-3}w^7} =$ $\frac{9x^6}{m^7w^2}$

Exponent Rule #5:
To raise a power to a power, multiply…exponents)

17. $(-3x^4p^5m^3)^3 =$ $-27x^{12}p^{15}m^9$

18. $(-2x^5y^3p^0k^{-2})^4 =$ $\frac{16x^{20}y^{12}}{k^8}$

19. $\left(\frac{-4a^3x^5}{m^4}\right)^2 =$ $\frac{16a^6x^{10}}{m^8}$

20. $\left(\frac{4m^3p^3g^5}{12m^{-2}x^0p^2g^9}\right)^2 = \left(\frac{m^5p}{3g^4}\right)^2 = \frac{m^{10}p^2}{9g^8}$