

## Assignment #27: Application of Exponent Rules

If we have expressions raised to powers, we must do the outer exponents before we do any multiplying.

$$\begin{aligned}\text{Example: } 2(x^3y^7z)^3(3x^3y)^2z^4 &= 2 \cdot (x^3y^7z)^3 \cdot (3x^3y)^2 \cdot z^4 \\ &= 2 \cdot x^9y^{21}z^3 \cdot 9x^6y^2 \cdot z^4 \\ &= 18x^{15}y^{23}z^7\end{aligned}$$

### Problems

Simplify.

1.  $5x^3y^6z^3 \cdot -5x^3y^8z^7$

2.  $4x^2p \cdot -3p^3y^2z$

3.  $13x^7y^7z^2 \cdot 6x^3y^7z^8$

4.  $x^2y \cdot -8p^7yz$

5.  $2(x^2y)^2z^3(x^3y^6z)^3$

6.  $2x^2(yp)^3y^4$

7.  $(-2x^9y)^3z^7x^3(y^3z)^5$

8.  $5(x^2zp)^5y^3z$

9. When a two-digit number is divided by 2 plus the tens digit, the result is 8 with remainder 1. If the reverse is divided by the difference of the digits, the result is 9 with remainder 1. Find the number.

10. Raina bought a 27¢ item. In change she received the reverse of what she gave the clerk. What did she give the clerk?

(L): Sofia wraps a long string around the equator of the earth, pulling it snug. If the earth were a perfect sphere, the string would be touching the ground all along its length. Suddenly, Sofia stretches the string by  $2\pi$  inches. If the looser string were now pulled taut into a circle above the equator, how high above the ground would it be, on the average? (Would your answer differ if the planet in question were the moon?)