1) $y(x+2)$

$xy+2y$

2) $xy(3x+4yz)$

$3x^2y+4xy^2z$

3) $breakfast(taco+sandwich)$

$breakfast\ taco+breakfast\ sandwich$

4) $2(x-4)$

$2x - 8$

5) $-x(-x - 3y)$

$x^2 + 3xy$

6) $y(-2 + 11xyz)$

$-2y + 11xy^2z$

7) $(x-3)(3x+7)$

$3x^2+7x-9x-21$

$3x^2-2x-21$

8) $(3z+5a)(2z+9a)$

$6z^2+27az+10az+45a^2$

$6z^2+37az+45a^2$

9) $(x+2)(4x-7)$

$4x^2-7x+8x-14$

$4x^2+x-14$

10) $(x-3)(2x+5) - (x-13)(x-3)$

$-1(9) - (-11)(-1)$

$-9 + 11 = -20$

$(x-3)(2x+5-x+13)$

$(x-3)(x+18)$

$-1(20) = -20$

11) $\frac{-9x+18}{12} = \frac{-9x}{12} + \frac{18}{12}$

$\frac{-3}{4}x + \frac{3}{2}$

$0.75x \quad 1\frac{1}{2}$

$\frac{4.5}{6} \quad 1.5$

12) $\frac{3(4x+8)}{2\cancel{6}}$

$\frac{4x+8}{2}$

$\frac{4x}{2}+\frac{8}{2}$

$2x+4$

$\frac{12x+24}{6}$

$\frac{12x}{6}+\frac{24}{6}$

$2x+4$

13) $\frac{2x-16}{4}$

$\frac{2x}{4} - \frac{16}{4}$

$\frac{1}{2}x - 4$

13) $y^3 \cdot y^6$

$y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$

y^9

15) $x^3y^2 \cdot x^5y^2$

$\frac{x \cdot x \cdot x}{y \cdot y} \cdot x^8y^4$

$\frac{x \cdot x \cdot x \cdot x \cdot x}{y \cdot y}$

17) $8x^2y^5$

$8 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y$

14) $(9x^2)^2$

$9x^2 \quad 9x^2$

$8|x^4$

$x \cdot x \cdot 9$

$x \cdot x \cdot 9$

16) $(-x^2)(3x^{10})$

$-1 \cdot x \cdot x \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$

$-1 \cdot 3x^{2+10}$

$-3x^{12}$

$2x^{12}$

$2x^8$

$3x^8$

18) $4x^3 \cdot 7x^6$

$11x^9$

$4 \cdot x \cdot x \cdot x \cdot 7 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$

$4 \cdot 7 \cdot x^{3+6}$

$28x^9$

10) $2x(x+4)+3(x+4)$

$(x+4)(2x+3)$

20) $-2x(x+12)+3(x+12)$

$(x+12)(-2x+3)$

22) ASSOCIATIVE
23) COMMUTATIVE
24) ASSOCIATIVE

PROPERTY

***Exercise* #1:** It is important to be able to recognize addition and subtraction in phrases. First, let's begin with some numerical work and then transition to expressions that contain variables.

(a) Write a calculation and a result that represents a number that is 5 greater than 3.

$8 = 3 + 5$

$3 + 5 = 8$

(b) Write a calculation and a result that represents a number that is 2 less than 9.

$7 = 9 - 2$

$9 - 2 = 7$

(c) Write a calculation and a result that represents the sum of −3 and 8.

$-3 + 8 = 5$

(d) Write a calculation and a result that represents the difference of 20 and 12.

$20 - 12 = 8$

(e) If x represents a number, write an expression that represents a number 10 greater than x.

$x + 10$

(f) If n represents a number, write an expression that represents a number that is 5 less than n.

$n - 5$

(g) If y represents a number, write an expression that represents the sum of y and a number one greater than y.

$y + (y + 1)$

$2y + 1$

(h) If n represents a number, write an expression that represents the difference between a number one larger than n and one smaller than n. Be careful.

$(n + 1) - (n - 1)$