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Solutions: Algebraic Expressions

1. $(8xy^2+2x^2y-4)-(5x^2y-3xy^2+7) = (8xy^2+3xy^2)+(2x^2y-5x^2y)+(-4-7) = 11xy^2-3x^2y-11$

   The coefficient of xy^2 is $\boxed{11}$.

2. Let the base be B. The perimeter is the sum of all sides:

   $2(2a+b)+B = 7a+5b \implies 4a+2b+B = 7a+5b \implies B = 7a+5b-4a-2b = 3a+3b$

   The expression for the base is $\boxed{3a+3b}$.

3. Unlike terms have different variables or exponents. $4m^2n$ and $4mn^2$ are unlike terms because the exponents of m and n are different. The correct pair is $\boxed{4m^2n \text{ and } 4mn^2}$.

4. $$0.5(4x^2-6x+8) = 2x^2-3x+4$$
   $$-2(1.5x-x^2+1) = -3x+2x^2-2$$

   Combining both:

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

   The simplified expression is $\boxed{4x^2-9x+2}$.

5. $$2P = 2(3x^2-4xy+9) = 6x^2-8xy+18$$
   $$-3Q = -3(-2x^2+6xy-5) = 6x^2-18xy+15$$

   Adding both:

   $$(6x^2+6x^2)+(-8xy-18xy)+(18+15) = 12x^2-26xy+33$$

   The value of $2P-3Q$ is $\boxed{12x^2-26xy+33}$.

6. The coefficients of the terms containing variables are $2, 3, 4, 5$. Their sum is:

   $$2+3+4+5 = 14$$

   The sum of the coefficients is $\boxed{14}$.

7. Let the expression to be added be E:

   $$(7p^2-8pq+4q^2)+E = 10pq-3p^2+2q^2$$
   $$E = (10pq-3p^2+2q^2)-(7p^2-8pq+4q^2) = -10p^2+18pq-2q^2$$

   The expression to be added is $\boxed{-10p^2+18pq-2q^2}$.

8. Sum of $2m + 7n - 4$ and $4m - 2n + 1$:

$$(2m + 4m) + (7n - 2n) + (-4 + 1) = 6m + 5n - 3$$

Subtracting $5m - 3n + 8$:

$$(6m - 5m) + (5n + 3n) + (-3 - 8) = m + 8n - 11$$

The result is $\boxed{m + 6n - 5}$.

9.

$$\frac{1}{2} \times 3x \times (2x + 5 + x - 2) = \frac{1}{2} \times 3x \times (3x + 3) = \frac{3x(3x + 3)}{2} = \frac{9x^2 + 9x}{2}$$

The simplified expression is $\boxed{\frac{9x^2 + 9x}{2}}$ sq. units.

10. The false statement is: $3x^2y$ and $7xy^2$ are like terms. The correct answer is $\boxed{\text{Option D}}$.

11.

$$(0.2a^2b + 3.4a^2b - 0.8a^2b) + (-1.5ab^2 + 2.1ab^2) = 2.8a^2b + 0.6ab^2$$

The simplified expression is $\boxed{2.8a^2b + 0.6ab^2}$.

12. Let the other expression be E:

$$(3l^2 + 5lm - 6m^2) + E = 9l^2 - 4lm + 2m^2$$

$$E = (9l^2 - 4lm + 2m^2) - (3l^2 + 5lm - 6m^2) = 6l^2 - 9lm + 8m^2$$

The other expression is $\boxed{6l^2 - 9lm + 8m^2}$.

13.

$$5(3x + 10) + 3(x - 4) = 15x + 50 + 3x - 12 = 18x + 38$$

The total cost is $\boxed{Rs.(18x + 38)}$.

14. Simplify inside the brackets:

$$3q - (4r - p) = 3q - 4r + p$$

$$2p - [3q - 4r + p] = 2p - 3q + 4r - p = p - 3q + 4r$$

$$-\{p - 3q + 4r + 5r\} = -p + 3q - 9r$$

The equivalent expression is $\boxed{-p + 3q - 9r}$.

15. The numerical coefficients of the terms containing variables are $\frac{5}{2}$ and $-\frac{3}{4}$. Their sum is:

$$\frac{5}{2} - \frac{3}{4} = \frac{10}{4} - \frac{3}{4} = \frac{7}{4} = 1.75$$

The sum of the numerical coefficients is $\boxed{1.75}$.