pp. 368-369, #1-33 odd, #35, #36, #39-42 all, #47-50 all

1. In the monomial $4g$, the exponent of g is 1. So, the degree of the monomial is 1.

3. In the monomial $-1.75k^2$, the exponent of k is 2. So, the degree of the monomial is 2.

5. In the monomial $7s^8t$, the exponent of s is 8, and the exponent of t is 1. So, the degree of the monomial is $8 + 1$, or 9.

7. In the monomial $9xy^3z^7$, the exponent of x is 1, the exponent of y is 3, and the exponent of z is 7. So, the degree of the monomial is $1 + 3 + 7$, or 11.

9. The polynomial $3t^8$ is in standard form.

The only term has a degree of 8, so the degree of the polynomial is 8.

The leading coefficient is 3.

The polynomial has 1 term, so it is a monomial.

11. You can write the polynomial $7 + 3p^2$ in standard form as $3p^2 + 7$.

The greatest degree is 2, so the degree of the polynomial is 2.

The leading coefficient is 3.

The polynomial has 2 terms, so it is a binomial.

13. You can write the polynomial $6c^2 + 2c^4 - c$ in standard form as $2c^4 + 6c^2 - c$.

The greatest degree is 4, so the degree of the polynomial is 4.

The leading coefficient is 2.

The polynomial has 3 terms, so it is a trinomial.

15. You can write the polynomial $5z + 2z^3 + 3z^4$ in standard form as $3z^4 + 2z^3 + 5z$.

The greatest degree is 4, so the degree of the polynomial is 4.

The leading coefficient is 3.

The polynomial has 3 terms, so it is a trinomial.

17. It is the product of a number, $\frac{4}{3}\pi$, and a variable with a whole number exponent, r^3; 3

19.
$$\begin{aligned}(5y + 4) + (-2y + 6) &= 5y - 2y + 4 + 6\\ &= (5y - 2y) + (4 + 6)\\ &= 3y + 10\end{aligned}$$

21. $(2n^2 - 5n - 6) + (-n^2 - 3n + 11)$

$$= 2n^2 - n^2 - 5n - 3n - 6 + 11$$
$$= (2n^2 - n^2) + (-5n - 3n) + (-6 + 11)$$
$$= n^2 - 8n + 5$$

23. $(3g^2 - g) + (3g^2 - 8g + 4)$

$$= 3g^2 + 3g^2 - g - 8g + 4$$
$$= (3g^2 + 3g^2) + (-g - 8g) + 4$$
$$= 6g^2 + (-9g) + 4$$
$$= 6g^2 - 9g + 4$$

25. $\left(\frac{1}{4}a - a^3 - 3\right) + \left(2a^3 - \frac{1}{2}a^2 + 8\right)$

$$= \frac{1}{4}a - a^3 - 3 + 2a^3 - \frac{1}{2}a^2 + 8$$
$$= (-a^3 + 2a^3) - \frac{1}{2}a^2 + \frac{1}{4}a + (-3 + 8)$$
$$= a^3 - \frac{1}{2}a^2 + \frac{1}{4}a + 5$$

27. $(d - 9) - (3d - 1) = d - 9 - 3d + 1$

$$= (d - 3d) + (-9 + 1)$$
$$= -2d - 8$$

29. $(y^2 - 4y + 9) - (3y^2 - 6y - 9)$

$$= y^2 - 4y + 9 - 3y^2 + 6y + 9$$
$$= (y^2 - 3y^2) + (-4y + 6y) + (9 + 9)$$
$$= -2y^2 + 2y + 18$$

31. $(k^3 - 7k + 2) - (k^2 - 12) = k^3 - 7k + 2 - k^2 + 12$

$= k^3 - k^2 - 7k + (2 + 12)$

$= k^3 - k^2 - 7k + 14$

33. $(t^4 - 1.5t^2 + t) - (12 - 9.5t^2 - 7t)$

$= t^4 - 1.5t^2 + t - 12 + 9.5t^2 + 7t$

$= t^4 + (-1.5t^2 + 9.5t^2) + (t + 7t) - 12$

$= t^4 + 8t^2 + 8t - 12$

35. When writing the subtraction as addition, the last term of the polynomial was not multiplied by -1.

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

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

$= -x^2 + 4x$

36. The terms $-4x^2$ and $8x$ are not like terms, so they cannot be added.

$$\begin{array}{r} x^3 - 4x^2 \qquad + 3 \\ +\ -3x^3 \qquad + 8x - 2 \\ \hline -2x^3 - 4x^2 + 8x + 1 \end{array}$$

39. $\begin{array}{l} 2s^2 - 5st - t^2 \\ \underline{-\,(s^2 + 7st - t^2)} \end{array} \Rightarrow \begin{array}{r} 2s^2 - 5st - t^2 \\ \underline{+\ -s^2 - 7st + t^2} \\ s^2 - 12st \end{array}$

40. $(a^2 - 3ab + 2b^2) + (-4a^2 + 5ab - b^2)$

$$= a^2 - 4a^2 - 3ab + 5ab + 2b^2 - b^2$$
$$= (a^2 - 4a^2) + (-3ab + 5ab) + (2b^2 - b^2)$$
$$= -3a^2 + 2ab + b^2$$

41.
$$\begin{array}{r} c^2 \qquad\quad - 6d^2 \\ +\, c^2 - 2cd + 2d^2 \\ \hline 2c^2 - 2cd - 4d^2 \end{array}$$

42. $(-x^2 + 9xy) - (x^2 + 6xy - 8y^2)$

$$= -x^2 + 9xy - x^2 - 6xy + 8y^2$$
$$= (-x^2 - x^2) + (9xy - 6xy) + 8y^2$$
$$= -2x^2 + 3xy + 8y^2$$

47. The terms of a polynomial are *always* monomials. A polynomial is a monomial or a sum of monomials, and each monomial is a term of the polynomial.

48. The difference of two trinomials is *sometimes* a trinomial. If like terms have the same coefficient, they will cancel when subtracted, so the difference will have fewer than 3 terms. Or, if the terms in the trinomial are not all of the same degree, then the difference could have more than 3 terms.

49. A binomial is *sometimes* a polynomial of degree 2. The two terms in the binomial can be of any degree.

50. The sum of two polynomials is *always* a polynomial.
Polynomials are closed under addition.