Arithmetic with Polynomials - Worksheet 1
Answer Key

P and Q are polynomials where
$P = x^2 + 3x - 4$,
$Q = x + 5$.
Simplify the following:

1. $P + Q$
   $x^2 + 4x + 1$.

2. $P - Q$
   $x^2 + 2x - 9$.

3. $Q - P$
   $-x^2 - 2x + 9$.

4. QP
   $x^3 + 8x^2 + 11x - 20$.

5. How many terms are in P? How many terms are in Q?
   3 terms in P, 2 terms in Q.

6. How does the number of terms change if you add P and Q? If you multiply P and Q?
   $P + Q$ has 3 terms. PQ has 4 terms.

7. Can you determine the number of terms when a polynomial of degree m is multiplied to a polynomial of degree n?
   There will be atmost $m + n + 1$ terms.

Johnny and Karine have invested some of their money in the stock market, which has been fluctuating over time. The projected value of Johnny's assets after t years is $t^3 + 2t^2 - 3t + 400$. Karine's projected assets after t years is $t^4 - 5t^2 + 100$.

8. How much money did each of them invest?
   Johnny initially invested 400 and Karine initially invested 100.

9. What is their combined wealth after seven years?
   Together they have \$820 + \$2256 = \$3076.

10. What is their combined wealth after t years?
    After t years, they have $t^4 + t^3 - 3t^2 - 3t + 500$.
