[factoring]

1. Simplify
   a. $(3s^2 - s + 2) + (6x^2 - 4s - 3)$
   b. $(2y^2 - 4 - 3y) - (7 - 6y + 4y^2)$
   c. $(4m - 3m^2 + 4) - (m^2 + 3 - 2m) + (1 - 5m + 2m^2)$
   d. $6(2y + 3) - 4y$
   e. $-3(m^2 + 3m) + 5m^2$
   f. $2s(4s^2 - 7)$
   g. $5p^2(-2pq + 4)$
   h. $3(5m - 7) - 12$

2. Find the product
   a. $(x + 4y)(4x + 2y)$
   b. $(3s - 5r)(2s - r)$
   c. $(2a + b)(a - 3b)$
   d. $(5f - 4g)(f + 3g)$
   e. $(4z - 3)(4z + 3)$
   f. $(3b + 5c)^2$
   g. $(y - 2)(y + 1) + (2y + 3)(3y - 2)$
   h. $(5p + 3q)(2p + 2q) - (4p + q)^2$

3. Factor fully
   a. $6x^4 - 2x^2$
   b. $14p^4 + 21p^2 + 35p^3$
   c. $n^2 - n - 6$
   d. $x^2 - 5x + 4$
   e. $b^2 - 16b + 39$
   f. $d^2 - 17d + 52$
   g. $p^2 - 11p - 42$
   h. $2n^2 - 12n + 16$
   i. $4s^2 + 16s - 128$
   j. $3a^3 + 24a^2 + 45a$
   k. $6x^2 + 14x - 12$
   l. $14a^2 + a - 3$
   m. $15s^2 + 4s - 32$
   n. $9m^2 - 4$
   o. $16s^2 - 1$
   p. $4p^2 - 25p^2$
   q. $x^4 - 81$

4. Simplify and state any restrictions
   a. $\frac{15x^2 - 12x}{3x}$
   b. $\frac{2x^2 - 12x}{-(x-6)}$
   c. $\frac{m^2 + 2m - 1}{m^2 - 5m + 6}$
   d. $\frac{r^2 + 2r - 24}{r^2 + 3r - 18}$
   e. $\frac{x-5}{x^2 + 5x + 6} \div \frac{x^2 - 2x - 15}{x-3}$
   f. $\frac{a^2 - 4}{a^2 - 6a + 8} \times \frac{(a-4)^2}{a^2 + 5a + 6}$

5. Simplify
   a. $\frac{3x-5}{5x} - \frac{2x-4}{5x}$
   b. $\frac{2p+3}{3p} + \frac{p+1}{2p}$
   c. $\frac{3}{x+3} + \frac{2}{x-4}$
   d. $\frac{2x}{x-1} - \frac{3x}{x-2}$

worksheets