ALGEBRAIC FACTORISATION

Name: _____ ( ) Class: _____ Date: _____

THREE TERMS

Factorise the following expressions:

a. $y^2 + 5y - 6$

b. $w^2 + 5w - 6$

c. $1 - p - 12p^2$

d. $8x - 10 + 2x^2$

e. $2 - 5x - 12x^2$

f. $7x^2 - 17x - 12$

g. $49p^2 - 14p + 1$

h. $6y^2 - 28y - 10$

i. $1 - 5xy + 6x^2y^2$

j. $6x^2 - xy - 15y^2$

k. $36a^2 + 6a^3 + 54a$

l. $-5y^2 - y + 6$

Two Terms

Factorise the following expressions:

a. $25y^2 - 9$

b. $4a^2 - 9b^2$

c. $25a^2 - 16b^2$

d. $49w^2 - 225$

e. $54a^2 - 6$

f. $50x^2 - 72$

g. $16p^4 - 1$

h. $(m+7)^2 - 81$

i. $h^2 - (2h - 1)^2$

j. $m^4 - 81$

k. $4y^2 - 100x^2$

l. $2x^7 - 2x$

FOUR TERMS

Factorise the following expressions:

a. $3xy - 2y + 3x^2 - 2x$

b. $2ax + ay + 6x + 3y$

c. $4ac + 12ad - bc - 3bd$

d. $3mx - 6nx + 4ny - 2my$

e. $x^3 - x^2y + x - y$

f. $15ap - 3aq - 20bp + 4bq$

g. $px - qy + py - qx$

h. $3cd - 6ce - d + 2e$

i. $2hw - 2h + xw - x$

j. $2a - 3ab + 4b - 6b^2$

k. $ac + 3bc - 2ad - 6bd$

l. $2a - 2b + 3bc - 3ac$

Challenge Yourself !

Factorise the following expressions:

a. $x(y - z) + 3(y - z)$

b. $e(3f - g) - k(g - 3f)$

c. $8mx^3 - 2mx + 1 - 4x^2$.

d. $(y^5 – y^3) + (2y^2 - 2)$

e. $(x + y)^2 - 3(x + y) - 10$

f. $(3c^2 + 8)(5c - 7d) - (7d - 5c)(11c - 2)$.

g. $9px^2 - 4q - p + 36qx^2$

h. $-12gh^2 + 8h$

i. $3uv + 12u + v + 4$

j. $abc - a^2b^3c^4$

k. $2a(a - 2b) - 6b^2$

l. $x^6 - 3x^5 - x + 3$

Application Questions

1. a) Factorise completely $2x^2 + 8x + 6$

   b) Hence or otherwise, express 286 as a product of three prime numbers.

2. a) Factorise $2x^2 - 8$ completely.

   b) Use your answer in part (a) to find two factors of 4992, other than 1, 2 ,3 and 4992.

3. (a) Factorise completely $2x^2 - 11x - 21$.

   (b) Hence, factorise completely $2(2y + 1)^2 - 22y - 32$.

4. (a) Factorise $36x^2 + 27x + 5$

   (b) Use part (a) to deduce the factors of 362705

5. (i) Factorise completely $3a^2 + 9a + 6$

   (ii) Hence, express 396 as a product of three prime factors

6. (a) Factorise $x^2 - 9$

   (b) Using the result above, find 2 factors of 9991 other than 1 and 9991