

Factoring Review

Example: Factor. Use decomposition where appropriate.

a)  $x^2 + 15x + 36$

$$= (x+3)(x+12)$$

b)  $y^2 - 10y + 25$

$$= (y-5)(y-5)$$
$$= (y-5)^2$$

c)  $3m^2 + 8m + 4$

$$= 3m^2 + 2m + 6m + 4$$
$$= m(3m+2) + 2(3m+2)$$
$$= (m+2)(3m+2)$$

d)  $4c^2 + 20c + 25$

$$\frac{10}{2} \times \frac{10}{2} = 100$$
$$\frac{10}{2} + \frac{10}{2} = 20$$

	2c	5
2c	4c <sup>2</sup>	10c
5	10c	25

$$= (2c+5)(2c+5)$$
$$= (2c+5)^2$$

e)  $6a^2 - 7a - 10$

$$= 6a^2 - 12a + 5a - 10$$
$$= 6a(a-2) + 5(a-2)$$
$$= (a-2)(6a+5)$$

$$\begin{array}{r} \underline{6} \times \underline{6} = 36 \\ \underline{6} + \underline{6} = 12 \end{array}$$

f)  $36x^2 + 12x + 1$

$6x$	$36x^2$	$6x$
$1$	$6x$	$1$

$$(6x+1)(6x+1) = (6x+1)^2$$

g)  $16x^2 - 56xy + 49y^2$

$$= 16x^2 - 28xy - 28xy + 49y^2$$

$$= 4x(4x-7y) - 7y(4x-7y)$$

$$= (4x-7y)(4x-7y)$$

$$= (4x-7y)^2$$

h)  $24x^2 - 20x - 24$

$$= 4(6x^2 - 5x - 6)$$

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

$$\begin{array}{r} \underline{-9} \times \underline{4} = -36 \\ \underline{-9} + \underline{4} = -5 \end{array}$$

$3x$	$6x^2$	$-9x$
$2$	$4x$	$-6$

Which of the previous examples are considered to be perfect squares?

b, d, f, g