

Factoring Review 1 - Practice Worksheet

1. Factor each expression completely, if possible.

a) $am + bm - cm$
 $= m(a + b - c)$

b) $3x - 6y - 9z$
 $= 3(x - 2y - 3z)$

c) $7m^2 - 14mn - 21n^2$
 $= 7(m^2 - 2mn - 3n^2)$

d) $x^2 + 7x + 12$
 $= (x + 3)(x + 4)$

e) $n^2 + 11n + 30$
 $= (n + 5)(n + 6)$

f) $m^2 + 16m + 39$
 $= (m + 13)(m + 3)$

g) $8(2a - b) + 3y(2a - b)$
 $= (2a - b)(8 + 3y)$

h) $c^2 - 9$
 $= (c - 3)(c + 3)$

i) $80a^2 - 45b^2$
 $= 5(16a^2 - 9b^2)$
 $= 5(4a - 3b)(4a + 3b)$

j) $y^3 - 36y$
 $= y(y^2 - 36)$
 $= y(y - 6)(y + 6)$

k) $y^2 - 10y + 16$
 $= (y - 8)(y - 2)$

l) $5a^3 - 75a^2 + 180a$
 $= 5a(a^2 - 15a + 36)$
 $= 5a(a - 12)(a - 3)$

m) $m^2 + 7m - 78$
 $= (m + 13)(m - 6)$

n) $25x^2 - 121y^2$
 $= (5x - 11y)(5x + 11y)$

o) $12m^4n - 9m^3n^2 - 6n^3$
 $= 3n(4m^4 - 3m^3n - 2n^2)$

p) $3b^2 - 33b - 180$
 $= 3(b^2 - 11b - 60)$
 $= 3(b - 15)(b + 4)$

q) $x^2 - 17x + 30$
 $= (x - 15)(x - 2)$

r) $8b^2 - 800$
 $= 8(b^2 - 100)$
 $= 8(b - 10)(b + 10)$

1, 78
 2, 89
 3, 26
 6, 13

$$\begin{aligned} \text{s) } 36x^2 + 100y^2 \\ = 4(9x^2 + 25y^2) \end{aligned}$$

$$\begin{aligned} \text{t) } 3x^2 + 6x + 3 \\ = 3(x^2 + 2x + 1) \\ = 3(x+1)^2 \end{aligned}$$

$$\begin{aligned} \text{u) } 33ab + 22bc - 11b^2 \\ = 11b(3a + 2c - b) \end{aligned}$$

$$\begin{aligned} \text{v) } y^2 - 20y + 36 \\ = (y-18)(y-2) \end{aligned}$$

$$\begin{aligned} \text{w) } x^2 + 5xy - 36y^2 \\ = (x+9y)(x-4y) \end{aligned}$$

$$\begin{aligned} \text{x) } 3x^3 - 48x \\ = 3x(x^2 - 16) \\ = 3x(x-4)(x+4) \end{aligned}$$

$$\begin{aligned} \text{y) } 12y - 8y^2 + 24y^3 \\ = 4y(3 - 2y + 6y^2) \end{aligned}$$

$$\begin{aligned} \text{z) } 2x^2 - 392 \\ = 2(x^2 - 196) \\ = 2(x-14)(x+14) \end{aligned}$$

$$\begin{aligned} \text{aa) } y^2 - 10y + 25 \\ = (y-5)^2 \end{aligned}$$

$$\begin{aligned} \text{bb) } 64x^2 - 121y^2 \\ = (8x-11y)(8x+11y) \end{aligned}$$

$$\begin{aligned} \text{cc) } x^2 + 14x + 49 \\ = (x+7)^2 \end{aligned}$$

$$\begin{aligned} \text{dd) } 8 + 7y - y^2 \\ = -(y^2 - 7y - 8) \\ = -(y-8)(y+1) \end{aligned}$$

$$\begin{aligned} \text{ee) } 4x^2 - 8x - 60 \\ = 4(x^2 - 2x - 15) \\ = 4(x-5)(x+3) \end{aligned}$$

$$\begin{aligned} \text{ff) } 25x^2 + 10x \\ = 5x(5x+2) \end{aligned}$$

$$\begin{aligned} \text{gg) } r^2 - r - 30 \\ = (r-6)(r+5) \end{aligned}$$

$$\begin{aligned} \text{hh) } p^2 + 14pq - 32q^2 \\ = (p+16q)(p-2q) \end{aligned}$$

$$\begin{aligned} \text{ii) } x^4 - 81 \\ = (x^2-9)(x^2+9) \\ = (x-3)(x+3)(x^2+9) \end{aligned}$$

$$\begin{aligned} \text{jj) } 27a^2b^3 + 9a^2b^2 - 18a^3b^2 \\ = 9a^2b^2(3b+1-2a) \end{aligned}$$

$$\begin{aligned} \text{kk) } 4x + 13 \\ = \text{prime} \end{aligned}$$

$$\begin{aligned} \text{ll) } 3t(x-y) - (x-y) \\ = (x-y)(3t-1) \end{aligned}$$

$$\begin{aligned} \text{mm) } y^3 - 18y^2 + 81y \\ = y(y^2 - 18y + 81) \\ = y(y-9)^2 \end{aligned}$$

$$\begin{aligned} \text{nn) } 9y - 9 \\ = 9(y-1) \end{aligned}$$

$$\begin{aligned} \text{oo) } 3x - 2x^2 - x^3 \\ = -x(x^2 + 2x - 3) \\ = -x(x+3)(x-1) \end{aligned}$$

$$\begin{aligned} \text{pp) } 5w^2 + 20w - 60 \\ = 5(w^2 + 4w - 12) \\ = 5(w+6)(w-2) \end{aligned}$$

1, 32
2, 16