

5.1 ex GCF of 50, 30, 5
1, 5

ex GCF of 15, 30, 45, 75
1, 3, 5, 15

ex GCF of 20, 22, 23
1, 2, 4, 5, 10, 20

ex GCF of $18w$ & 27

$$2 \cdot 3^2 \cdot w \quad 3^3$$

$$\text{GCF} = 3^2 = 9$$

ex GCF of $25p^5r^7$, $30p^7r^8$, $50p^5r^3$

$$5^2 p^5 r^7$$

$$2 \cdot 3 \cdot 5 p^7 r^8$$

$$2 \cdot 5^2 p^5 r^3$$

$$\text{GCF: } 5 p^5 r^3 = 5 p^5 r^3$$

ex $12p^5 = 6p^3(\underline{2p^2})$

ex $27a^3b^2 = 9a^2b(\underline{3ab})$

$$\underline{\text{ex}} \quad 36p^3 + 24p = 12p(3p^2 + 2)$$

$$\underline{\text{ex}} \quad \frac{1}{5}z^2 + \frac{3}{5}z = \frac{1}{5}z(z + 3)$$

$$\underline{\text{ex}} \quad 19p^2y - 38p^2y^3 = 19p^2y(1 - 2y^2)$$

$$\begin{aligned} \underline{\text{ex}} \quad & x^6 + 5x^4y^3 - 6xy^4 + 10xy \\ & = x(x^5 + 5x^3y^3 - 6y^4 + 10y) \end{aligned}$$

$$\underline{\text{ex}} \quad 3r(5x-1) + 7(5x-1) = (5x-1)(3r+7)$$

$$\underline{\text{ex}} \quad \underbrace{m^2 + 2m} + \underbrace{mn + 2n}$$

$$= m(m+2) + n(m+2)$$

$$= (m+2)(m+n)$$

$$\underline{\text{ex}} \quad y^2 - 6y + yw - 6w$$

$$= y(y-6) + w(y-6)$$

$$= (y-6)(y+w)$$

$$\begin{aligned}\underline{\text{ex}} \quad & \underline{8s^2 - 4st + 6sy - 3yt} \\ &= 4s(2s - t) + 3y(2s - t) \\ &= (2s - t)(4s + 3y)\end{aligned}$$

$$\begin{aligned}\underline{\text{ex}} \quad & y^2 + 3x - 3y - xy = y^2 - 3y + 3x - xy \\ &= y(y - 3) - x(-3 + y) \\ &= y(y - 3) - x(y - 3) \\ &= (y - 3)(y - x)\end{aligned}$$

$$5.2 \quad \underline{\text{ex}} \quad x^2 + 10x + 21 = (x + \underline{7})(x + \underline{3})$$

$$\underline{\text{ex}} \quad t^2 - 14t + 24 = (t - \underline{2})(t - \underline{12})$$

$$\underline{\text{ex}} \quad t^2 - t + 42 = (t + \underline{6})(t - \underline{7})$$

$$\underline{\text{ex}} \quad x^2 + 6x + 27 = (x - \underline{3})(x + \underline{9})$$

$$\underline{\text{ex}} \quad p^2 + 4p - 5 = (p + 5)(p - 1)$$

$$\underline{\text{ex}} \quad x^2 - 13x + 36 = (x - 4)(x - 9)$$

$$\underline{\text{ex}} \quad m^2 - 10m - 25 = (\quad) (\quad)$$

1.25
5.5

prime

$$\begin{aligned}\underline{\text{ex}} \quad 5y^2 - 5y - 30 &= 5(y^2 - y - 6) \\ &= 5(y - 3)(y + 2)\end{aligned}$$

$$\begin{aligned}\underline{\text{ex}} \quad 3t^3 + 27t + 24t &= 3t(t^2 + 9t + 8) \\ &= 3t(t + 8)(t + 1)\end{aligned}$$

$$\begin{aligned}\underline{\text{ex}} \quad y^3z + 3y^2z^2 - 54yz^3 &= yz(y^2 + 3yz - 54z^2) \\ &= yz(y - 6z)(y + 9z)\end{aligned}$$

$$\begin{aligned} 5.3 \quad \underline{\text{ex}} \quad & \underline{6x^2 + 9x} + \underline{4x + 6} \\ & = 3x(2x+3) + 2(2x+3) \\ & = (2x+3)(3x+2) \end{aligned}$$

$$\begin{aligned} \underline{\text{ex}} \quad & 12p^2 - 9p - 8p + 6 \\ & = 3p(4p-3) - 2(4p-3) \\ & = (4p-3)(3p-2) \end{aligned}$$

ex

$$\begin{array}{r}
 M \\
 7 \\
 \times \\
 7 \\
 \hline
 49 \\
 70 \\
 \hline
 49r^2 + 70r + 21
 \end{array}$$

$7r^2 + 8r + 1$
 $M \quad 7 \cdot 1 = 7$
 $A \quad 8 = \underline{7} + \underline{1}$
 $R \quad 7r^2 + 7r + 1r + 1$
 $F \quad 7r(r+1) + 1(r+1)$
 $F \quad (r+1)(7r+1)$

$$\begin{array}{c} \text{ex} \\ \text{M} \\ \begin{array}{c} 20 \\ \diagdown \quad \diagup \\ 10 \quad 2 \\ \diagup \quad \diagdown \\ 12 \end{array} \\ \text{A} \end{array}$$

$$5z^2 + 12z + 4$$

$$\begin{array}{l} \text{M } 5 \cdot 4 = 20 \\ \text{A } 12 = \underline{10} + \underline{2} \end{array}$$

$$\begin{array}{l} \text{R } 5z^2 + 10z + 2z + 4 \\ \text{F } 5z(z+2) + 2(z+2) \\ \text{F } (z+2)(5z+2) \end{array}$$

ex

$$\begin{array}{r} M \\ -60 \\ -15 \quad 4 \\ -11 \\ A \end{array}$$

$$10x^2 - 11x - 6$$

$$M (10)(-6) = -60$$

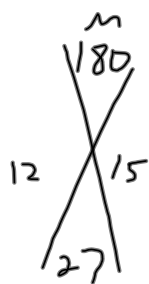
$$A \quad -11 = \frac{-15}{\quad} + \frac{4}{\quad}$$

$$R \quad 10x^2 - 15x + 4x - 6$$

$$F \quad 5x(2x-3) + 2(2x-3)$$

$$F \quad (2x-3)(5x+2)$$

ex $36y^2 + 81y + 45$
 $= 3(12y^2 +$



M $12 \cdot 15 = 180$
 A $27 = \frac{12}{\quad} + \frac{15}{\quad}$
 R $12y^2 + 12y + 15y + 15$
 F $12y(y+1) + 15(y+1)$
 F $(y+1)(12y+15)$

ex $25a^2 + 25ab + 6b^2$

$$\begin{array}{r} \text{M} \\ 150 \\ \hline 15 \quad 10 \\ \hline 25 \\ \text{A} \end{array}$$

M $25 \cdot 6 = 150$

A $25 = \underline{15} + \underline{10}$

R $25a^2 + 15ab + 10ab + 6b^2$

F $5a(5a + 3b) + 2b(5a + 3b)$

F $(5a + 3b)(5a + 2b)$

ex $24x^2 + 19xy - 5y^2$

$$\begin{array}{r} \text{M} \\ -120 \\ \hline 24 \quad -5 \\ \hline 19 \\ \text{A} \end{array}$$

M $(24)(-5) = -120$

A $19 = \underline{24} + \underline{-5}$

R $24x^2 + 24xy - 5xy - 5y^2$

F $24x(x+y) - 5y(x+y)$

F $(x+y)(24x - 5y)$

$$\underline{\text{ex}} \quad 36p^4q + 129p^3q - 60p^2q$$

$$3p^2q (12p^2 + 43p - 20)$$

$$\begin{array}{r} M \\ -240 \\ 48 \quad -5 \\ \hline A \\ 43 \end{array}$$

$$M \quad (12)(-20) = -240$$

$$A \quad 43 = \frac{48}{\quad} + \frac{-5}{\quad}$$

$$R \quad 12p^2 + 48p - 5p - 20$$

$$F \quad 12p(p+4) - 5(p+4)$$

$$F \quad (p+4)(12p-5)$$

$$3p^2q (p+4)(12p-5)$$

$$\underline{ex} \quad -5x^2 + 2x + 16 = -1(5x^2 - 2x - 16)$$

$$M \quad 5(-16) = -80$$

$$A \quad -2 = -10 + 8$$

$$R \quad 5x^2 - 10x + 8x - 16$$

$$F \quad 5x(x-2) + 8(x-2)$$

$$F \quad (x-2)(5x+8)$$

$$-1(x-2)(5x+8)$$

$$\underline{ex} \quad 18x^2(y-3)^2 - 21x(y-3)^2 - 4(y-3)^2$$

$$(y-3)^2 (18x^2 - 21x - 4)$$

$$M \quad (18)(-4) = -72$$

$$A \quad -21 = \underline{-24} + \underline{3}$$

$$R \quad 18x^2 - 24x + 3x - 4$$

$$F \quad 6x(3x-4) + 1(3x-4)$$

$$F \quad (3x-4)(6x+1)$$

$$(y-3)^2 (3x-4)(6x+1)$$