

# M10-C Polynomials Review Assignment

1. 
$$\begin{array}{r} 2 \overline{) 204} \\ 2 \overline{) 102} \\ \hline 51 \end{array} \quad 204 = \boxed{2 \cdot 2 \cdot 51}$$

2. a) 
$$\begin{array}{r} 5 \overline{) 30 \quad 45} \\ 3 \overline{) 6 \quad 9} \\ \hline 2 \quad 3 \end{array}$$

$\boxed{GCF = 15}$

b) 
$$\begin{array}{r} 2 \overline{) 84 \quad 112} \\ 2 \overline{) 42 \quad 56} \\ 7 \overline{) 21 \quad 28} \\ \hline 3 \quad 4 \end{array}$$

$\boxed{GCF = 28}$

3. 
$$\begin{array}{r} 5 \overline{) 105 \quad 120} \\ 3 \overline{) 21 \quad 24} \\ \hline 7 \quad 8 \end{array}$$

$$\frac{105}{120} = \frac{\boxed{7}}{\boxed{8}}$$

4. 
$$\begin{array}{r} 5 \overline{) 15 \quad 20} \\ 3 \overline{) 6 \quad 9} \\ \hline 3 \quad 4 \end{array}$$

$\boxed{GCF = 1}$

5. 
$$\begin{array}{r} 2 \overline{) 12 \quad 16} \\ 2 \overline{) 6 \quad 8} \\ \hline 3 \quad 4 \end{array}$$

$\boxed{GCF = 2}$

6. 
$$\begin{array}{r} 3 \overline{) 15 \quad 21} \\ 3 \overline{) 6 \quad 9} \\ \hline 5 \quad 7 \end{array}$$

$$\frac{1}{18} = \frac{1}{2 \cdot 3 \cdot 3}$$

$\boxed{GCF = 1}$

$$4. a) (x+8)(x-7) = x^2 - 7x + 8x - 56 = \boxed{x^2 + x - 56}$$

$$b) (2y+3z)(4y+5z) = 8y^2 + 10yz + 12yz + 15z^2 = \boxed{8y^2 + 22yz + 15z^2}$$

$$c) (2a+7)(2a-7) = 4a^2 - 14a + 14a - 49 = \boxed{4a^2 - 49}$$

$$d) (2m-3)(2m-3) = 4m^2 - 6m - 6m + 9 = \boxed{4m^2 - 12m + 9}$$

$$e) (x+3)(x^2-5x-8) = x^3 - 5x^2 - 8x + 3x^2 - 15x - 24 = \boxed{x^3 - 2x^2 - 23x - 24}$$

$$f) -2(r-3s)(r+3s) = -2(r^2 + 3rs - 3rs - 9s^2) = -2(r^2 - 9s^2) = \boxed{-2r^2 + 18s^2}$$

$$5. a) 2x^2 + 10x = \boxed{2x(x+5)}$$

$$b) x^3 + 6x^2 + 3x = \boxed{x(x^2 + 6x + 3)}$$

$$c) 27x^2y^5z - 81xy^3z + 45xy^4z = \boxed{9xy^3z(3xy^2 - 9 + 5y)}$$

$$6. a) x^2 + 2x - 8 = \boxed{(x+4)(x-2)}$$

$$b) x^2 - 5x + 6 = \boxed{(x-3)(x-2)}$$

$$c) 2x^2 - 10x + 12 = 2(x^2 - 5x + 6) = \boxed{2(x-3)(x-2)}$$

$$d) 4x^2 + 4x - 3 = \boxed{(2x-1)(2x+3)}$$

$$\begin{array}{r|l} & 2x+3 \\ 2x & 4x^2+6x \quad \underline{6+2=8} \\ -1 & -2x-3 \quad \underline{6-2=4} \end{array}$$

$$e) x^2 - 6xy + 8y^2 = \boxed{(x-4y)(x-2y)}$$

$$f) x^2 - x - 20 = \boxed{(x-5)(x+4)}$$

$$g) 9x^2 - 12x - 5 = \boxed{(3x+1)(3x-5)}$$

$$h) 8x^2 - 10x + 2 = 2(4x^2 - 5x + 1) = \boxed{2(4x-1)(x-1)}$$

$$\begin{array}{r|l} & 3x-5 \\ 3x & 9x^2-15x \quad \underline{-15+3=-12} \\ +1 & 3x-5 \quad \underline{-15-3=-18} \end{array}$$

$$\begin{array}{r|l} & x-1 \\ 4x & 4x^2-4x \quad \underline{-4+1=-3} \\ -1 & -x+1 \quad \underline{-1-1=-2} \end{array}$$



$$i) -6x^2 + 15x - 81 = -3(2x^2 - 15x + 27) \\ = \boxed{-3(2x-9)(x-3)}$$

	$2x$	$-9$	
$x$	$2x^2$	$-9x$	$\underline{-9} + \underline{-6} = -15$
$-3$	$-6x$	$27$	$\underline{-9} \cdot \underline{-6} = 54$

1,54  
2,27  
3,18  
6,9

$$7. a) s^2 - 64 = \boxed{(s+8)(s-8)}$$

$$b) d^2 - 121 = \boxed{(d+11)(d-11)}$$

$$c) 4h^2 - 25 = (2h+5)(2h-5)$$

$$d) 9m^2 - 81n^2 = \boxed{(3m+9n)(3m-9n)}$$

$$e) 144 - 4b^2 = 4(36 - b^2) \\ = \boxed{4(6+b)(6-b)}$$

$$f) 98c - 18cd^2 = 2c(49 - 9d^2) \\ = \boxed{2c(7+3d)(7-3d)}$$

$$8. a) b^2 + 14b + 49 = (b+7)(b+7) \\ = \boxed{(b+7)^2}$$

$$b) a^2 + 24ab + 144b^2 = (a+12b)(a+12b) \\ = \boxed{(a+12b)^2}$$

$$c) 9g^2 - 24g + 16 = \boxed{(3g-4)^2}$$

d) Perfect Square Trinomials

	$3g$	$-4$	
$3g$	$9g^2$	$-12g$	$\underline{-12} + \underline{-12} = -24$
$-4$	$-12g$	$16$	$\underline{-12} \cdot \underline{-12} = 144$

$$9. a) x^2 + 8x - 9 = \boxed{(x+9)(x-1)}$$

$$b) 4x^2y + 6xy = \boxed{2xy(2x+3)}$$

$$c) x^2 + 2xy - 120y^2 = \boxed{(x+12y)(x-10y)}$$

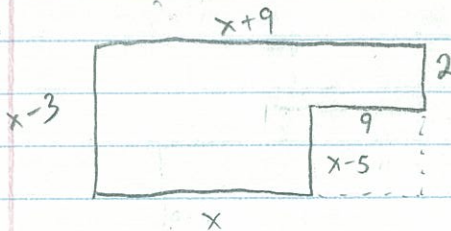
$$d) 6b^2 + 8b + 2 = 2(3b^2 + 4b + 1) \\ = \boxed{2(3b+1)(b+1)}$$

	$b$	$+1$	
$3b$	$3b^2$	$3b$	$\underline{3} + \underline{1} = 4$
$+1$	$b$	$1$	$\underline{3} \cdot \underline{1} = 3$

$$e) 16 - 4y^2 = 4(4 - y^2) \\ = 4(2+y)(2-y)$$

$$f) 3x^2 - 15x + 18 = 3(x^2 - 5x + 6) \\ = 3(x-3)(x-2)$$

10.



$$A_{\text{entire rectangle}} = (x-3)(x+9) \\ = x^2 + 9x - 3x - 27 \\ = x^2 + 6x - 27$$

$$A_{\text{missing rectangle}} = 9(x-5) \\ = 9x - 45$$

$$\text{Total Area} = A_{\text{entire}} - A_{\text{missing}} \\ = (x^2 + 6x - 27) - (9x - 45) \\ = x^2 + 6x - 27 - 9x + 45 \\ = x^2 - 3x + 18$$

11.



$$A = 9x^2 - 42x + 49 = (3x-7)(3x-7)$$

$$\begin{array}{r|l} & 3x - 7 \\ 3x & 9x^2 - 21x \\ -7 & -21x + 49 \end{array}$$

$\therefore$  side length of square  
is  $(3x-7)$

$$a) \text{ Perimeter} = 4(3x-7) \leftarrow \text{factored form} \\ = 12x - 28 \leftarrow \text{simplified form}$$

b) If  $x = 20\text{m}$ , then side length  
is  $3(20) - 7 = 53\text{m}$ .

$$12. V = x^3 - 2x^2 - 3x$$

$$V = x(x^2 - 2x - 3)$$

$$V = x(x-3)(x+1)$$

$\begin{matrix} l & w & h \end{matrix}$



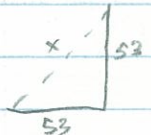
If  $x = 5\text{cm}$ ,

$$\begin{matrix} l = 5\text{cm} \\ w = 2\text{cm} \\ h = 6\text{cm} \end{matrix}$$

Use this to determine diagonal

$$x^2 = 53^2 + 53^2$$

$$x = 74.95$$



$$\text{Fence} = 4(53) + 74.95 \\ = 287.0\text{m}$$