

## CHAPTER 7 REVIEW

### 7.1 – MULTIPLYING TWO BINOMIALS

1. Expand and simplify the following

$$\begin{aligned} \text{(a)} \quad & (x + 1)(x + 2) \\ & = x^2 + 2x + 1x + 2 \\ & = \mathbf{x^2 + 3x + 2} \end{aligned}$$

$$\text{(b)} \quad (x + 3)(x - 1)$$

$$\text{(c)} \quad (x - 4)(x + 6)$$

$$\text{(d)} \quad (x - 5)(x - 7)$$

$$\begin{aligned} \text{(e)} \quad & (4x + 1)(3x + 1) \\ & = 12x^2 + 4x + 3x + 1 \\ & = \mathbf{12x^2 + 7x + 1} \end{aligned}$$

$$\text{(f)} \quad (5x + 2)(6x - 1)$$

$$\text{(g)} \quad (3x - 4)(2x + 3)$$

$$\text{(h)} \quad (7x - 5)(5x - 7)$$

2. Expand and simplify the following

$$\begin{aligned} \text{(a)} \quad & (x + 9)^2 \\ & = (x + 9)(x + 9) \\ & = x^2 + 9x + 9x + 81 \\ & = \mathbf{x^2 + 18x + 81} \end{aligned}$$

$$\text{(b)} \quad (x + 10)^2$$

$$\text{(c)} \quad (x - 7)^2$$

$$\begin{aligned} \text{(d)} \quad & (2x + 3)^2 \\ & = 4x^2 + 6x + 6x + 9 \\ & = \mathbf{4x^2 + 12x + 9} \end{aligned}$$

$$\text{(e)} \quad (4x + 5)^2$$

$$\text{(f)} \quad (3x - 2)^2$$

3. Walt shovels his driveway every morning during the winter. The **length** of the driveway is  $2x + 7$  while the **width** is  $x + 3$ . Write a quadratic expression that represents the area that needs to be shoveled, where **Area = Length x Width**



## 7.2 – COMMON FACTORING

1. For each expression, determine the **greatest common factor (GCF)** and factor each expression using **common factoring**

(a)  $4x + 20$       GCF = 4  
    =  $4(x + 5)$

(b)  $5x + 30x^2$       GCF = \_\_\_\_\_

(c)  $12x^2 - 48x$       GCF = \_\_\_\_\_

(d)  $21x^2 - 49x$       GCF = \_\_\_\_\_

(e)  $-18x + 36$       GCF = \_\_\_\_\_

(f)  $-20x^2 - 60x$       GCF = \_\_\_\_\_

2. The area of a tennis court is represented by the expression  $60x^2 + 75x$ . Use **common factoring** to determine the **length** and **width** of the tennis court



### 7.3 – FACTOR A DIFFERENCE OF SQUARES

1. Factor each of the following using **difference of squares**

(a)  $x^2 - 25$   
 $= (x + 5)(x - 5)$

(b)  $x^2 - 49$

(c)  $x^2 - 81$

(d)  $100 - x^2$

(e)  $4x^2 - 49$   
 $= (2x + 7)(2x - 7)$

(f)  $9x^2 - 121$

(g)  $36 - 25x^2$

2. The area of a chalkboard is represented by the expression  $x^2 - 144$

(a) Factor the expression using **difference of squares** to determine the **length** and the **width**

(b) What are the *actual* dimensions if  $x = 100$  cm?



**7.4 – FACTORING TRINOMIALS OF THE FORM  $ax^2 + bx + c$  (“PRODUCT and SUM” METHOD)**

1. Factor each trinomial using the “Product and Sum” method

(a)  $x^2 + 8x + 15$       P = 15      (b)  $x^2 + 4x - 12$       P = \_\_\_\_\_  
=  $(x + 5)(x + 3)$       S = 8      S = \_\_\_\_\_

(c)  $x^2 - 6x - 16$       P = \_\_\_\_\_      (d)  $x^2 - 9x + 14$       P = \_\_\_\_\_  
S = \_\_\_\_\_      S = \_\_\_\_\_

(e)  $x^2 + 2x - 24$       P = \_\_\_\_\_      (f)  $x^2 + 7x + 10$       P = \_\_\_\_\_  
S = \_\_\_\_\_      S = \_\_\_\_\_

(g)  $x^2 - 3x - 28$       P = \_\_\_\_\_  
S = \_\_\_\_\_

2. The surface area of a teacher’s desk is represented by the expression  $x^2 - 8x + 15$

(a) Factor the expression to determine the **length** and **width** of the desk

(b) What are the actual dimensions if  **$x = 100$  cm**?

3. The area of a TV screen is represented by the expression  $x^2 + 3x - 18$

(a) Factor the expression to determine the **length** and **width** of the TV

(b) What are the actual dimensions if  **$x = 75$  cm**?



## SOLUTION

### 7.1

1. (b)  $x^2 + 2x - 3$  (c)  $x^2 + 2x - 24$  (d)  $x^2 - 12x + 35$   
(f)  $30x^2 + 7x - 2$  (g)  $6x^2 + x - 12$  (h)  $35x^2 - 74x + 35$
2. (b)  $x^2 + 20x + 100$  (c)  $x^2 - 14x + 49$  (e)  $16x^2 + 40x + 25$   
(f)  $9x^2 - 12x + 4$
3.  $2x^2 + 13x + 21$

### 7.2

1. (b) GCF =  $5x$ ,  $5x(1 + 6x)$  (c) GCF =  $12x$ ,  $12x(x - 4)$   
(d) GCF =  $7x$ ,  $7x(3x - 7)$  (e)  $-18$ ,  $-18(x - 2)$   
(f)  $-20x$ ,  $-20x(x + 3)$
2.  $15x(4x + 5)$

### 7.3

1. (b)  $(x + 7)(x - 7)$  (c)  $(x + 9)(x - 9)$  (d)  $(10 + x)(10 - x)$   
(f)  $(3x + 11)(3x - 11)$  (g)  $(6 + 5x)(6 - 5x)$
2. (a)  $(x + 12)(x - 12)$  (b) 112 cm, 88 cm

### 7.4

1. (b)  $(x + 6)(x - 2)$  (c)  $(x - 8)(x + 2)$  (d)  $(x - 7)(x - 2)$   
(e)  $(x + 6)(x - 4)$  (f)  $(x + 5)(x + 2)$  (g)  $(x - 7)(x + 4)$
2. (a)  $(x - 5)(x - 3)$  (b) 95 cm, 97 cm
3. (a)  $(x + 6)(x - 3)$  (b) 81 cm, 72 cm