

## Unit 5 Study Guide

### Adding & Subtracting Polynomials

1.  $(4a-5) + (3a+6)$

$$\boxed{7a+1}$$

2.  $(3p^2-2p+3) - (p^2-7p+7)$

$$\boxed{2p^2+5p-4}$$

3.  $(7x^2-8) + (3x^2+1)$

$$\boxed{10x^2-7}$$

4.  $(x^2+y^2) - (-x^2+y^2)$

$$\boxed{2x^2}$$

5.  $(5x^2-x-7) + (2x^2+3x+4)$

$$\boxed{7x^2+2x-3}$$

6.  $(5a+9b) - (4b+2a)$

$$5a+9b-4b-2a$$

$$\boxed{3a+5b}$$

7.  $(5x+3z) + 9z$

$$5x+3z+9z$$

$$\boxed{5x+12z}$$

8.  $6p - (8q+5p)$

$$6p-8q-5p$$

$$\boxed{p-8q}$$

9.  $(5a^2x+3ax^2-5x) + (2a^2x-5ax^2+7x)$

$$\boxed{7a^2x-2ax^2+2x}$$

10.  $(x^3-3x^2y+4xy^2+y^3) - (7x^3-9x^2y+xy^2+y^3)$

$$\boxed{-6x^3+6x^2y+3xy^2}$$

11. P-(sides) = missing

$$3x+3y - (x+y+x+y)$$

$$3x+3y - (2x+2y)$$

$$3x+3y-2x-2y$$

$$\boxed{x+y}$$

12. P-(sides) = missing

$$\text{sides: } 9ab+8a^2$$

$$-4ab+4a^2$$

$$-2ab \quad +7b^2$$

$$3ab+12a^2+7b^2$$

$$9b^2-2ab+12a^2 - (3ab+12a^2+7b^2)$$

$$9b^2-2ab+12a^2-3ab-12a^2-7b^2$$

$$\boxed{2b^2-5ab}$$

# Multiplying Polynomials

1.  $4x(2x+6)$   
 $8x^2 + 24x$

8.  $(2x+5y)(7y-3x)$

	2x	5y
7y	14xy	35y <sup>2</sup>
-3x	-6x <sup>2</sup>	-15xy

$-6x^2 - xy + 35y^2$

2.  $9y^2(5y-3)$   
 $45y^3 - 27y^2$

9.  $(8r^2-2r)(5r+4)$

	8r <sup>2</sup>	-2r
5r	40r <sup>3</sup>	-10r <sup>2</sup>
4	32r <sup>2</sup>	-8r

$40r^3 + 22r^2 - 8r$

3.  $-6a(3a^2-7a-11)$   
 $-18a^3 + 42a^2 + 66a$

10.  $(2n-7)(3n+3)$

	2n	-7
3n	6n <sup>2</sup>	-21n
+3	6n	-21

$6n^2 - 15n - 21$

4.  $3z^3(12z+4z^3-1)$   
 $36z^4 + 12z^6 - 3z^3$   
 $12z^6 + 36z^4 - 3z^3$

11.  $2x^2 - 5x + 3$

4x	8x <sup>3</sup>	-20x <sup>2</sup>	12x
+9	18x <sup>2</sup>	-45x	27

5.  $2pq(3p^2+6pq+7q^2)$   
 $6p^3q + 12p^2q^2 + 14pq^3$

$8x^3 - 2x^2 - 33x + 27$

6.  $-5xy^3(-3x^3+7y-2xy)$   
 $15x^4y^3 - 35xy^4 + 10x^2y^4$

12.  $(3x+5)^2 = (3x+5)(3x+5)$

	3x	+5
3x	9x <sup>2</sup>	15x
+5	15x	25

$9x^2 + 30x + 25$

7.  $(3x+2)(x+4)$   
 $3x^2 + 12x + 2x + 8$   
 $3x^2 + 14x + 8$

	3x	+2
x	3x <sup>2</sup>	2x
+4	12x	8

$3x^2 + 14x + 8$

	3x	+5
3x	9x <sup>2</sup>	15x
+5	15x	25

$9x^2 + 30x + 25$

# Factoring Polynomials

1.  $24(x+2y)$   
2.  $30mn^2 + m^2n - 6m$

$n(30m + m^2 - 6)$

3.  $45x^4y^2 + 15xy^2$   
 $15xy^2(3x^3 + 1)$

4.  $a^2b + a$   
 $a(ab + 1)$

5.  $g^2 - 2g - 63$   
prime

6.  $y^2 + 4y - 60$

$\begin{array}{r} -60 \\ 10 \quad -6 \\ \hline 4 \end{array}$   $(x+10)(x-6)$

7.  $x^2 - 11x + 30$   
 $\begin{array}{r} 30 \\ -6 \quad -5 \\ \hline -11 \end{array}$   $(x-6)(x-5)$

8.  $m^2 - m - 56$   
 $(m-8)(m+7)$

9.  $2a^2 + 5a + 3$   
 $a^2 + 5a + 6$   
 $(a+2)(a+3)$   
 $\frac{2}{2} \quad \frac{3}{2}$   
 $(a+1)(2a+3)$

10.  $18x^2 - 27x - 5$

$x^2 - 27x - 90$

$(x-30)(x+3)$   
18      18

$(x - \frac{5}{3})(x - \frac{1}{6})$

$(3x-5)(6x-1)$

11.  $3x^2 + 2x - 8$

$x^2 + 2x - 24$

$(x+6)(x-4)$   
3      3

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

12.  $10x^2 - 19x - 15$

$x^2 - 19x - 150$

$(x-25)(x+6)$   
10      10

$(x - \frac{5}{2})(x + \frac{3}{5})$

$(2x-5)(5x+3)$

13.  $4x^2 + 4x - 3$

$x^2 + 4x - 12$

$(x+6)(x-2)$   
4      4

$(x+3)(x-\frac{1}{2})$   
2      2

$(2x+3)(2x-1)$

14.  $16a^3b^4 - 6a^2$

$2a^2(8ab^4 - 3)$

15.  $12xq^2 + 34xq - 28x$

$2x(6q^2 + 17q - 14)$

16.  $3a^2 + 30a + 63$

$3(a^2 + 10a + 21)$

$3(a+7)(a+3)$

### Area-Factoring Application

1.  $A = lw$

$A = g^2 + 3g - 10$

$A = (g+5)(g-2)$

$L = g+5$

$W = g-2$

4.  $V = lwh$

$V = 8m^3 - 128m$

$V = 8m(m^2 - 16)$

$V = 8m(m-4)(m+4)$

$L = 8m$

$W = m-4$

$h = m+4$

} 2 sides are binomials

2.  $A = lw$

$A = m^2 + 10m + 25$

$A = (m+5)(m+5)$

$L = m+5$

$W = m+5$

5.  $10w^2 - 19w - 15$

$w^2 - 19w - 150$

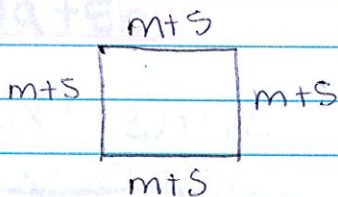
$(w-25)(w+6)$

$\frac{10}{10} \quad \frac{10}{10}$

$(w-5)(w+3)$

$(2w-5)(5w+3)$

3.



$P = m+5 + m+5 + m+5 + m+5$

$P = 4m+20$

6.  $2y^2 + 11y + 18$

$y^2 + 11y + 36$

(y prime)

**Not possible**

$$7. A = lW$$

$$A = 4x^2 - 6x - 40$$

$$A = 2(2x^2 - 3x - 20)$$

$$A = 2(x^2 - 3x - 40)$$

$$A = \frac{2(x-8)(x+5)}{2 \quad 2}$$

$$A = 2(x-4)(2x+5)$$

$$A = (2x-8)(2x+5)$$

$$W = (2x-8)$$

$$L = (2x+5)$$

$$x \times 5 = (x+5) + (x+5) \times 5$$

$$(5+0)(7+0) \times 8$$

$$W = 2x - 8$$

$$L = 2x + 5$$

$$W = 2x - 8$$

$$L = 2x + 5$$

$$W = 2x - 8$$

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Not possible