

Chapter 3 Algebra 1 Quick Review

I. FOILing: First Outside Inside Last for multiplying!

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

$$x^2 - 3x + 2x - 6$$

$$\boxed{x^2 - x - 6}$$

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

$$-2x^2 + 10x - 3x + 15$$

$$\boxed{-2x^2 + 7x + 15}$$

3. $(-3x+1)(x-7)$

$$-3x^2 + 21x + x - 7$$

$$\boxed{-3x^2 + 22x - 7}$$

II. Punnet Square: Make the window to multiply terms.

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

	x	$+2$
x	x^2	$2x$
-3	$-3x$	-6

$$\boxed{x^2 - x - 6}$$

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

	$2x$	$+3$
$-x$	$-2x^2$	$-3x$
$+5$	$10x$	15

$$\boxed{-2x^2 + 7x + 15}$$

3. $(-3x+1)(x-7)$

	$-3x$	$+1$
x	$-3x^2$	$+1x$
-7	$+21x$	-7

$$\boxed{-3x^2 + 22x - 7}$$

III. Simplifying Square Roots: Always think of perfect squares first!!

1. $\sqrt{25}$

$$\sqrt{5 \cdot 5}$$

$$\boxed{5}$$

2. $\sqrt{0}$

$$\boxed{0}$$

3. $-\sqrt{200}$

$$-\sqrt{2 \cdot 100}$$

$$\boxed{-10\sqrt{2}}$$

4. $-\sqrt{127}$

$$\boxed{-\sqrt{127}}$$

5. $-\sqrt{148}$

$$-\sqrt{4 \cdot 37}$$

$$\boxed{-2\sqrt{37}}$$

6. $\sqrt{\frac{1}{4}}$

$$= \frac{\sqrt{1}}{\sqrt{4}} = \boxed{\frac{1}{2}}$$

7. $\sqrt{\frac{196}{225}}$

$$= \frac{\sqrt{196}}{\sqrt{225}}$$

$$= \boxed{\frac{14}{15}}$$

8. $\sqrt{144}$

$$\sqrt{12 \cdot 12}$$

$$\boxed{12}$$

IV. Factoring: "UnFOILing": ALWAYS GCF first, if possible.

1. $m^2 - 9m + 8$

$$\frac{8}{-1-8}$$

$$-2-4$$

$$\boxed{(m-1)(m-8)}$$

2. $7x^2 - 31x - 20$

$$\frac{-140}{-35 \times +4}$$

$$(7x^2 - 35x)(4x - 20)$$

$$7x(x-5) + 4(x-5)$$

$$\boxed{(7x+4)(x-5)}$$

3. $7k^2 + 9k$

$$\boxed{k(7k+9)}$$

4. $3b^3 - 5b^2 + 2b$

$$b(3b^2 - 5b + 2)$$

$$b(3b^2 - 3b - 2b + 2)$$

$$b[3b(b-1) - 2(b-1)]$$

$$\boxed{b(3b-2)(b-1)}$$

$$\frac{6}{-3 \times -2}$$

$$= 5$$