To: Algebra 2 Honors Students for the 2026-27 School year
From: The Algebra 2 Honors Teachers (Mrs. Skowronski and Ms. Wollesen)

We are SO excited to have you in our classes next year! We cannot wait to meet you all and we want to make sure that ALL of you start the year off on the right foot. We have compiled some topics that we know students need to be good at coming into this course, so they don't already feel behind. The following topics are things that you SHOULD be able to do well. **Anything that is starred below are things that we have put into this pac3ket**.

- Operations with Fractions**
- Rules of exponents**
- Simplifying Radicals and Operations with Radicals**
- Solving multi-step linear equations
- Operations with Integers (Positive/Negative Numbers)
- Adding and Subtracting Polynomials
- Multiplying Polynomials**
- Factoring binomials and trinomials** (this is HUGE- we do this A LOT!!!)
- Solving linear systems by graphing
- Solving linear systems by substitution or elimination**
- Solving by factoring**
- Solving using the quadratic formula**

It is HIGHLY recommended that you work on this packet throughout the summer, so you can start the year strong. However, please note that **we will have approximately two weeks at the beginning of the year to refresh some of these topics before taking an assessment**. The items that are not starred are NOT in this packet. If you know you may be weak in one of those areas, we suggest you review it on your own.

Note: The expectation is that you can do ALL of these topics WITHOUT access to a calculator of any kind. All of these answers should be exact (no approximations).

For any of these topics, if you are confused, Khan Academy has a ton of great videos around these topics – just search! Youtube may also be useful, but not all videos are good, so use with caution.

If you would like answers to your work, please email Mrs. Skowronski at kskowronski2@cherrycreekschools.org or Ms. Wollesen at ewollesen@cherrycreekschools.org – be patient as you may not get a response immediately! Email will only be checked about once a week throughout the summer.

FACTORING (ALWAYS look for a GCF **first**!!!)

Factor each of the following completely.

1) $x^2 + 8x + 7$

2) $x^2 + x - 90$

3) $x^2 + 2x - 24$

4) $x^2 - 13x + 40$

5) $x^2 - x - 56$

6) $x^2 + 16x + 64$

7) $x^2 + 4x - 12$

8) $x^2 - 11x + 10$

9) $x^2 - 15x + 50$

10) $5x^2 + 10x + 20$

11) $2x^2 + 22x + 60$

12) $4x^2 - 12x - 8$

13) $2x^2 + 2x - 4$

14) $2x^2 + 6x - 108$

15) $3x^3 - 21x^2 + 30x$

16) $x^2 - 4$

17) $x^2 - 25$

18) $3x^2 - 2x - 5$

19) $2x^2 + 3x - 9$

20) $5x^2 + 19x + 12$

21) $4x^2 - 15x - 25$

22) $4x^2 - 35x + 49$

23) $4x^2 - 17x + 4$

24) $6x^2 + 25x + 25$

25) $16x^2 + 60x - 100$

26) $15x^2 - 27x - 6$

27) $10x^2 - 36x + 18$

28) $9x^3 + 66x^2 + 21x$

29) $25x^2 - 4$

30) $36x^4 - x^2$

SOLVING BY FACTORING

Solve each of the following by factoring.

1) $x^2 - 11x + 24 = 0$

2) $x^2 + 7x + 10 = 0$

3) $6x^2 - 13x + 3 = -3$

4) $15x^2 - 3x = 3 - 7x$

5) $10x^2 = 27x - 18$

6) $7x^2 - 6x + 3 = 3$

SOLVE USING QUADRATIC FORMULA

You do need to KNOW the formula. You will not be given the formula on any assessment in this course.

1) $2x^2 + 3x - 20 = 0$

2) $4x^2 + 8x + 7 = 4$

3) $2x^2 - 7x - 13 = -10$

4) $9x^2 = 4 + 7x$

5) $8x^2 + 4x - 16 = -x^2$

MULTIPLYING POLYNOMIALS

Find the product for each of the following:

1) $(6x + 3)(6x - 4)$

2) $(8x + 1)(5x - 3)$

3) $(7x - 3)(x^2 - 2x + 7)$

4) $(x^2 + 6x - 4)(2x - 4)$

5) $(6x^2 - 6x - 5)(7x^2 + 6x - 5)$

6) $(4x - 3)^2$

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

8) $(2x + 9)(7x - 6)$

9) $(8x + 5)^2$

10) $(11x + 2)(11x - 2)$

11) $(4x + 5)(3x^2 - x + 2)$

12) $(5x^2 - 2x + 4)(4x^2 + 3x - 2)$

FRACTIONS

Simplify each of the following.

1) $\frac{5}{6}+\frac{7}{8}=$

2) $\frac{7}{5}-\frac{11}{9}=$

3) $\frac{38}{2}\times\frac{27}{81}=$

4) $\frac{48}{16}\div\frac{18}{26}=$

5) $\frac{8}{9}+\frac{13}{7}=$

6) $\frac{8}{13}-\frac{4}{11}=$

7) $\frac{84}{35}\div 28=$

8) $\frac{11}{10}-\frac{5}{8}=$

9) $\frac{29}{28}\times\frac{16}{58}=$

10) $\frac{96}{98}\div\frac{18}{49}=$

11) $\frac{12}{26}+\frac{8}{13}=$

12) $\frac{7}{6}-\frac{1}{15}=$

13) $81\times\frac{7}{18}=$

RADICALS

Simplify each of the following, completely:

1) $\sqrt{92}$ 2) $\sqrt{104}$ 3) $\sqrt{54}$ 4) $\sqrt{60}$

5) $\sqrt{8}$ 6) $\sqrt{52}$ 7) $\sqrt{64}$ 8) $\sqrt{49}$

9) $\sqrt{50}$ 10) $\sqrt{400}$ 11) $4\sqrt{12}$ 12) $-8\sqrt{27}$

13) $13\sqrt{147}$ 14) $12\sqrt{120}$ 15) $-7\sqrt{125}$

16) $\sqrt{\frac{3}{4}}$ 17) $\sqrt{\frac{49}{81}}$ 18) $\sqrt{\frac{40}{25}}$

19) $-9\sqrt{15} + 23\sqrt{15}$ 20) $6\sqrt{2} - 5\sqrt{8}$

21) $-3\sqrt{45} + 3\sqrt{20}$ 22) $2\sqrt{12} - 6\sqrt{27}$

SYSTEMS

Solve the following systems using **substitution**.

1) $2x - 3y = -1$
$y = x - 1$

2) $x = 1 - 3y$
$-3x - 3y = -15$

3) $y = -3x + 5$
$5x - 4y = -3$

4) $x = 3y - 3$
$8y - 7x = -5$

Solve the following systems using **elimination**.

1) $4x + 8y = 20$
$-4x + 2y = -30$

2) $-2x - 9y = -25$
$-4x - 9y = -23$

3) $-4x - 15y = -17$
$-x + 5y = -13$

4) $5x + 4y = -30$
$3x - 9y = -18$

EXPONENT RULES

Simplify each of the following.

1) $m^2 \cdot m^3$

2) $3x^5 \cdot 4x^8$

3) $-6y^4 \cdot 2y^{10}$

4) $\frac{b^7}{b^3}$

5) $\frac{y^{13}}{y^8}$

6) $\frac{x^9}{x^5}$

7) $(x^3)^5$

8) $(2y^6)^4$

9) $(4a^7)^2$

10) $\left(\frac{x^3}{y}\right)^7$

11) $\left(\frac{3x^9}{y^4}\right)^4$

12) $\left(\frac{5a^2}{2b^4}\right)^3$