College Math CP Summer Homework

Name _____

Dear Future College Math Student,

I hope you are excited for your upcoming year in College Math! The purpose behind this summer homework packet is to reacquaint you with the necessary skills to be successful in this year's math course.

Please be prepared to submit this assignment during your **second College Math class**. It will be graded for accuracy as well as completion. Work needs to be shown in a neat and organized manner, and it is perfectly acceptable to complete the packet on separate sheets of paper. Just be sure to staple any extra papers to the packet. Also, do not rely on a calculator!

Show ALL work for each problem and take your time. Remember, this will be your first impression to your new math teacher, and you want to make sure that it is a positive one! See below for directions and helpful websites. We hope you have a wonderful summer!

Best,

Wareham High School Math Department

Suggestions for time management: There are 7 parts to the summer packet. You may choose to break up the 7 parts to 7 days (sittings) of work.

Need help with your Summer math packet???

Feel free to email Mrs. Medina at mmedina@wareham.k12.ma.us with any questions you might have. To ensure the fastest response, please include your name, summer assignment name, and (if possible) a picture of the problem and your accompanying work.

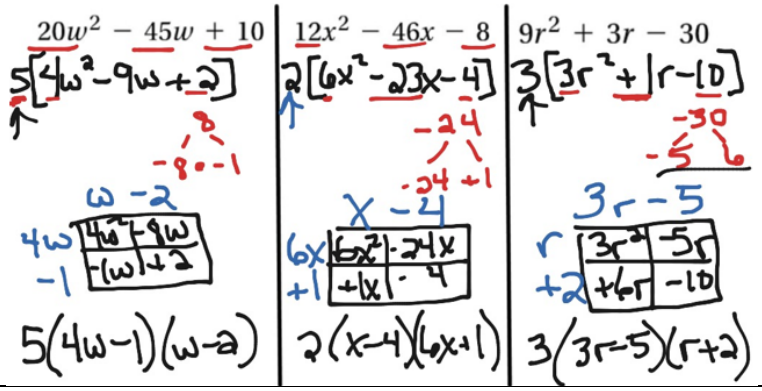
Directions:

- Before answering any questions, read through the given notes and examples for each topic.
- This packet is to be submitted during your **second** college math class period.
- All work must be shown in the packet or on a separate sheet of paper stapled to the packet.
- **To avoid a penalty on your grade, final answers MUST BE BOXED or CIRCLED.**

Part 1 – Factoring Trinomials

https://www.khanacademy.org/math/algebra-home/alg-polynomials/alg-factoring-polynomials-quadratic-forms/v/factoring-trinomials-with-a-common-factor

Examples:



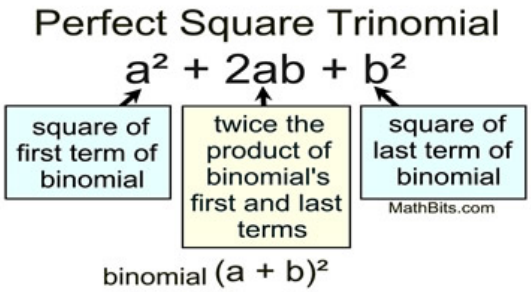
Factor the following completely. If it is not factorable, write 'prime'.

1) $2x^2+5x+3$	2) $3n^2+7n+4$
3) $4r^2+5r+1$	4) $6p^2+5p+1$
5) $11z^2+2z-9$	6) $4y^2-5y-4$
7) $15x^2-2x-8$	8) $14m^2+m-3$

Part 2 – Perfect Square Trinomials

https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-perfect-squares/v/factoring-perfect-square-trinomials

Example:



$$4x^2 - 16x + 16$$

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

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

Factor the following completely. If it's not factorable, write 'prime'.

9) $a^2 + 2a + 1$	10) $b^2 - 2b + 1$	11) $x^2 + 10x + 25$
12) $x^2 + 16x + 64$	13) $x^2 - 12x + 36$	14) $144 + 24 + x^2$
15) $16x^2 + 8xy + y^2$	16) $144y^2 - 120y + 25$	17) $81d^2 - 90cd + 25c^2$

Part 3 – Difference of Perfect Squares

https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-diff-of-squares/v/factoring-to-produce-difference-of-squares

Examples:

3) $4x^2 - 121$

$\sqrt{4x^2} = 2x$

$\sqrt{121} = 11$

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

4) $y^6 - 4$

$\sqrt{y^6} = y^3$

$\sqrt{4} = 2$

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

18) $b^2 - 9$	19) $4 - a^2$	20) $4x^2 - 25$
21) $16x^2 - 1$	22) $36 - 25c^2$	23) $36x^2 - 9y^2$
24) $3s^2 - 24$	25) $-16n^2 + 12n$	26) $x^2y^2 - 4$

Part 4 – Operations with fractions

Examples:

$$\frac{2}{15}+\frac{3}{5}=\frac{2}{15}+\frac{3}{5}\left(\frac{3}{3}\right)$$

$$=\frac{2}{15}+\frac{9}{15}$$ ← Same denominator

$$=\frac{11}{15}$$

$$\frac{2}{5}\times\frac{6}{7}=\frac{2\times 6}{5\times 7}=\frac{12}{35}$$

$$\frac{1}{4}\times\frac{2}{3}=\frac{1\times 2}{4\times 3}=\frac{2}{12}=$$ reduces to $\frac{1}{6}$

Add or Subtract. All answers must be simplified:

1. $\frac{4}{5}-\frac{2}{5}$	2. $\frac{3}{7}+\frac{5}{14}$
3. $\frac{4}{9}-\frac{11}{36}$	4. $\frac{1}{10}+\frac{46}{100}$

Multiply. All answers must be simplified:

5. $\frac{3}{6}\times\frac{7}{13}$	6. $\frac{2}{9}\times\frac{1}{5}$
7. $\frac{12}{10}\times\frac{3}{4}$	8. $\frac{7}{8}\times\frac{5}{9}$

Part 5 – Solving Quadratic Equations using Square Roots

https://www.youtube.com/watch?v=55G8037gsKY

Examples:

1) $6x^2 - 15 = 27$

$+15 \quad +15$

$\frac{6x^2}{6} = \frac{42}{6}$

$\sqrt{x^2} = \sqrt{7}$

$x = \pm\sqrt{7}$

2) $\frac{4(x-2)^2}{4} = \frac{20}{4}$

$\sqrt{(x-2)^2} = \sqrt{5}$

$x - 2 = \pm\sqrt{5}$

$+2 \quad +2$

$x = 2 \pm \sqrt{5}$

Solve.

27) $x^2 = 81$	28) $3t^2 - 6 = 60$	29) $3x^2 - 5 = 55$
30) $(y-5)^2 = 9$	31) $(x+3)^2 = 5$	32) $3(b-4)^2 = 27$
33) $2(x+5)^2 = 32$	34) $4(x-2)^2 = 7$	35) $-4(z-7)^2 = -72$
36) $9(x-4)^2 = 8$	37) $\frac{1}{2}(p+4)^2 = 22$	38) $\frac{1}{7}(x+6)^2 = 8$

Part 6 – Zero Product Property

https://www.khanacademy.org/math/algebra/quadratics/factored-form-alg1/v/zero-product-property

Examples:

$$(2x-3)(x+2)=0$$

$2x-3=0$ or $x+2=0$

$2x=3$ $\quad x=-2$

$x=\frac{3}{2}$

$$(2a+4)(a+7)=0$$

$2a+4=0$ or $a+7=0$

$2a=-4$ or $a=-7$

$a=-2$ or $a=-7$

Solve using the zero product property.

39) $(x-4)(x-6)=0$	40) $(x+4)(2x-5)(3x+15)=0$	41) $8x(x+15)=0$
42) $3(x+10)(x-8)(4x-7)=0$	43) $9x^2+38x+8=0$	44) $10x^2=39x+27$

Part 7 – Rational Equations

https://www.khanacademy.org/math/algebra-home/alg-rational-expr-eq-func/alg-solving-rational-equations/v/rational-equations

Examples:

$$\frac{x+3}{4}=\frac{x+6}{6}$$

$6\cdot(x+3)=4\cdot(x+6)$

$6x+18=4x+24$

$2x=6$

$x=3$

$$\frac{x}{x+3}=\frac{8}{x+6}$$

$$\frac{x(x+6)}{(x+3)(x+6)}=\frac{8(x+3)}{(x+6)(x+3)}$$

$x^2+6x=8x+24$

$x^2-2x-24=0$

$(x-6)(x+4)=0$

$x=6;\quad x=-4$

Solve.

45) $\frac{11-3x}{4}=\frac{6-x}{6}$	46) $\frac{3}{2x}=\frac{7}{5x-2}$