

**Robbinsville High School**  
**Mathematics Department**  
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Dear Parents and Guardians,

We would like to take this opportunity to thank you for your support this year. Attached you will find a packet for math reinforcement for your student's use over the summer. This packet should be completed and returned to school with your student on the *first full day of school*. September is filled with review, but with completion of this packet, the review will come very naturally. The packet will be *collected* and *graded* as a **large homework grade** based on *completion* and *effort*.

In addition to this packet, we have provided for your student some resources for extra help. Below, you will find a variety of websites your student may want to visit over the summer to refresh their memory about the topics discussed in this packet.

- Math Forum at Drexel University: <http://mathforum.org/dr.math/>
- Purple Math: <http://www.purplemath.com/>
- Math Is Fun?: <http://www.mathsisfun.com/>
- Cut the Knot: <http://www.cut-the-knot.org/MathHelp.shtml>
- Cool Math (Algebra I): <http://coolmath.com/algebra/Algebra1/index.html>

Thank you again for your support throughout the year and we wish you a happy and safe summer vacation.

Happy Summer!

*Robbinsville High School Mathematics Department*

**Directions: Factoring quadratic expressions with  $a = 1$ . Factor each completely.**



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

2)  $x^2 + 6x - 40$

3)  $x^2 - 15x + 56$

4)  $x^2 - 6x + 8$

5)  $x^2 - 14x + 40$

6)  $x^2 - 3x - 54$

**Directions: Factoring quadratic expressions with  $a > 1$ . Factor each completely.**



7)  $3x^2 + 4x + 4$

8)  $3x^2 - 10x - 25$

9)  $3x^2 - 7x - 10$

10)  $3x^2 + 23x + 40$

11)  $3x^2 - x - 2$

12)  $4x^2 - 27x + 18$

**Directions: Factoring quadratic expressions with Difference of Two Squares. Factor each completely.**



13)  $9x^2 - 16$

14)  $9x^2 - 1$

15)  $16x^2 - 25$

16)  $25x^2 - 16$

**Directions: Factoring quadratic expressions with Difference of Two Squares. Factor each completely.**

17)  $p^2 - 25$

18)  $16x^2 - 9$



**Directions: Factoring quadratic expressions with a Greatest Common Factor and  $a = 1$ . Factor each completely.**

19)  $3x^2 + 9x + 6$

20)  $2x^2 - 16x + 14$



21)  $3x^3 + 33x^2 + 54x$

22)  $6x^4 - 6x^3 - 36x^2$

23)  $2x^2 - 18x + 16$

**Directions: Factoring quadratic expressions with a Greatest Common Factor and  $a > 1$ . Factor each completely.**



24)  $6x^2 + 32x - 70$

25)  $15x^2 - 12x - 36$

26)  $10x^3 - 44x^2 + 16x$

27)  $15x^4 - 63x^3 - 162x^2$

28)  $30x^2 + 66x - 216$

**Directions: Divide each of the polynomials using long division.**



29.)  $(4x^2 - 9) \div (2x + 3)$

30.)  $(2x^2 + 5x - 3) \div (x + 3)$

31.)  $(11x + 20x^2 + 12x^3 + 2) \div (3x + 2)$

32.)  $(12x^3 + 2 + 11x + 20x^2) \div (2x + 1)$

**Directions: Divide each of the polynomials using synthetic division.**



33.)  $(p^4 + 5p^3 - 11p^2 - 25p + 29) \div (p + 6)$

34.)  $(y^4 - 8y^3 + 10y^2 + 2y + 4) \div (y - 2)$

35.)  $(8v^5 + 32v^4 + 5v + 20) \div (v + 4)$

36.)  $(3x^3 - 4x^2 - 17x + 6) \div (3x - 1)$

Directions: Simplify completely and state and restrictions (*remember to factor when necessary*).



$$37.) \frac{2x+6}{4x-12}$$

$$38.) \frac{x^2+9x+20}{2x+8}$$



$$39.) \frac{6x+24}{x^2+7x+12}$$

$$40.) \frac{x^2-5x+6}{x^2+2x-15}$$

$$41.) \frac{y^2-2y-15}{4} \cdot \frac{8}{y+3}$$

$$42.) \frac{5n+15}{4n+8} \cdot \frac{2n+4}{3n+9}$$



$$43.) \frac{x^2-2x}{6} \div \frac{3x-6}{x}$$

$$44.) \frac{m^2-2m-8}{8m+24} \div \frac{2m-8}{m^2+7m+12}$$



$$45.) \frac{x+3}{10x+20} \cdot \frac{x+2}{x^2+4x+3}$$

$$46.) \frac{x^2-x-12}{x-4} \div \frac{2x+6}{x-5}$$

Directions for 47-50: Given the following graphs determine domain and range and where the functions are increasing, decreasing or constant. Use N/A for properties that do not apply.



47.)

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Increasing: \_\_\_\_\_ Decreasing: \_\_\_\_\_

Constant: \_\_\_\_\_

Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_

X intercept: \_\_\_\_\_ Y intercept: \_\_\_\_\_

48.)

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Increasing: \_\_\_\_\_ Decreasing: \_\_\_\_\_

Constant: \_\_\_\_\_

Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_

X intercept: \_\_\_\_\_ Y intercept: \_\_\_\_\_

49.)

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Increasing: \_\_\_\_\_ Decreasing: \_\_\_\_\_

Constant: \_\_\_\_\_

Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_

X intercept: \_\_\_\_\_ Y intercept: \_\_\_\_\_

50.)

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Increasing: \_\_\_\_\_ Decreasing: \_\_\_\_\_

Constant: \_\_\_\_\_

Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_

X intercept: \_\_\_\_\_ Y intercept: \_\_\_\_\_