

RAMAPO-INDIAN HILLS SCHOOL DISTRICT

Dear Ramapo-Indian Hills Student:

Please find attached the summer packet for your upcoming math course. The purpose of the summer packet is to provide you with an opportunity to review prerequisite skills and concepts in preparation for your next year's mathematics course. While you may find some problems in this packet to be easy, you may also find others to be more difficult; therefore, you are not necessarily expected to answer every question correctly. Rather, the expectation is for students to put forth their best effort, and work diligently through each problem.

To that end, you may wish to review notes from prior courses or on-line videos (www.KhanAcademy.com, www.glencoe.com, www.youtube.com) to refresh your memory on how to complete these problems. We recommend you circle any problems that cause you difficulty, and ask your teachers to review the respective questions when you return to school in September. Again, given that math builds on prior concepts, the purpose of this packet is to help prepare you for your upcoming math course by reviewing these prerequisite skills; therefore, the greater effort you put forth on this packet, the greater it will benefit you when you return to school.

Please bring your packet and completed work to the first day of class in September. Teachers will plan to review concepts from the summer packets in class and will also be available to answer questions during their extra help hours after school. Teachers may assess on the material in these summer packets after reviewing with the class.

If there are any questions, please do not hesitate to contact the Math Supervisors at the numbers noted below.

Enjoy your summer!

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Geometry CP Summer Packet
RAMAPO INDIAN HILLS HIGH SCHOOL
GEOMETRY CP
SUMMER PACKET

Name _____

Directions: Solve each problem as directed. Show all work and box in your final answer.

PEMDAS – the order in which you evaluate expressions

P – Parenthesis

E – Exponents

M – Multiplication (from left

D – Division to right)

A – Addition (from left

S – Subtraction to right)

Evaluate each expression if $a = 2$, $b = -3$, $c = -1$, and $d = 4$.

1. $2a + c$

2. $\frac{bd}{2c}$

3. $\frac{2d-a}{b}$

4. $\frac{3b}{5a+c}$

Example: Solve the equation.

$$\frac{2}{3}n + 1 = 11$$

$$\begin{array}{r} \frac{2}{3}n + 1 = 11 \\ -1 \quad -1 \\ \hline \end{array}$$

Subtract 1 from each side.

$$(3)\frac{2}{3}n = 10(3)$$

Multiply each side by 3.

$$\frac{2n}{2} = \frac{30}{2}$$

Divide each side by 2.

Solve each equation.

5. $\frac{8}{5}a = -6$

6. $\frac{m}{10} + 15 = 21$

7. $9n + 4 = 5n + 18$

8. $-2y + 17 = -13$

9. $-2(n + 7) = 15$

Solving Systems by Substitution

Example: Solve the system of equations by substitution.

$$\begin{aligned} y - 3x &= -3 \\ -2x - 4y &= 26 \end{aligned}$$

Step 1: Solve for a variable for either equation. (It is ideal to pick the variable with a coefficient of 1)

$$\begin{aligned} y - 3x &= -3 \\ \underline{+3x} \quad \underline{+3x} & \\ y &= 3x - 3 \end{aligned}$$

Step 2: Plug the expression $3x - 3$ in for y of the OTHER equation.

$$\begin{aligned} -2x - 4y &= 26 \\ -2x - 4(3x - 3) &= 26 \end{aligned}$$

Step 3: Solve for x .

$$\begin{aligned} -2x - 4(3x - 3) &= 26 \\ -2x - 12x + 12 &= 26 \\ -14x + 12 &= 26 \\ -14x &= 14 \\ x &= -1 \end{aligned}$$

Step 4: Plug in x for either equation to solve for y .

$$\begin{aligned} y &= 3x - 3 \\ y &= 3(-1) - 3 \\ y &= -6 \end{aligned}$$

Final Solution: $(-1, -6)$

Solve by substitution.

10.
$$\begin{aligned} -5x + 3y &= 12 \\ x + 2y &= 8 \end{aligned}$$

11.
$$\begin{aligned} x - 4y &= 22 \\ 2x + 5y &= -21 \end{aligned}$$

Solving Systems by Elimination

Example: Solve the system of equations by elimination.

$$\begin{aligned} 4x - 3y &= 25 \\ -3x + 8y &= 10 \end{aligned}$$

Step 1: Decide which variable you want to eliminate and find the LCM of the two coefficients for that variable.

Eliminate $x \rightarrow 4$ and -3 have an LCM of 12

Step 2: Multiply each equation by the number that will make the x -terms have a coefficient of 12. One must be negative and the other must be positive.

$$\begin{array}{rcl} 3(4x - 3y = 25) & \rightarrow & 12x - 9y = 75 \\ 4(-3x + 8y = 10) & & -12x + 32y = 40 \end{array}$$

Step 3: Add the columns of like terms.

$$\begin{array}{r} 12x - 9y = 75 \\ -12x + 32y = 40 \\ \hline 23y = 115 \\ y = 5 \end{array}$$

Step 4: Plug in y for either equation to solve for x .

$$\begin{aligned} 4x - 3y &= 25 \\ 4x - 3(5) &= 25 \\ x &= 10 \end{aligned}$$

Final Solution: (10, 5)

Solve by elimination.

12.
$$\begin{aligned} -3x + y &= 7 \\ 3x + 2y &= 2 \end{aligned}$$

13.
$$\begin{aligned} -4x + 5y &= -11 \\ 2x + 3y &= 11 \end{aligned}$$

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Find each product by FOIL method and combine all like terms

14. $(n + 8)(n + 2)$

15. $(y + 4)(y - 3)$

16. $(x - 3)(x + 3)$

17. $(k + 12)(3k - 2)$

18. $(4h + 5)(h + 7)$

19. $(5m - 6)(5m - 6)$

Factoring functions where $a > 1$ involves a different process. Some will use guess and check. Below is a method that will always work.

$$ax^2 + bx + c$$

Ex 2: $6x^2 + 13x - 5 = 0$

Multiply $a \cdot c$. $6(-5) = -30$

- 2, 15

Find two numbers that multiply the - 30 and sum to 13

$$6x^2 - 2x + 15x - 5 = 0$$

Group the Terms

$$(6x^2 - 2x) + (15x - 5) = 0$$

Factor GCF

$$2x(3x - 1) + 5(3x - 1) = 0$$

Use the $(3x - 1)$ and factored terms

$$(2x + 5)(3x - 1) = 0$$

Zero Product Rule

$$2x + 5 = 0 \text{ or } 3x - 1 = 0$$

Solve

$$x = -5/2 \text{ or } x = 1/3$$

Solve each equation.

20. $20x^2 + 15x = 0$

21. $6x^5 + 18x^4 = 0$

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22. $x^2 - 16x + 64 = 0$

23. $x^2 - 6x - 16 = 0$

24. $15x^2 - 8x + 1 = 0$

25. $-12x^2 + 8x + 15 = 0$