Sunset Middle School

Summer Math Packet

Dear Geometry Students and Families,

We are excited to welcome you to Geometry at Sunset Middle School for the 2026–2027 school year!

Attached you will find the Summer Math Packet. The skills included in this packet are important foundational concepts that will support your student's success in Geometry.

The packet is designed to be completed over the course of the summer. We encourage students to complete approximately one page per week to build fluency and maintain their math skills in a steady and manageable way.

Parents, we invite you to support your student by checking in on their progress and signing each section once it has been completed. If your student falls behind at any point, please don't be discouraged—simply pick up where they left off and keep going. Consistent effort over time makes a big difference.

All work should be completed without a calculator so that students can strengthen their number sense and problem-solving skills.

We look forward to beginning this new school year with you and can't wait to see the growth and confidence students build over the summer!

Mrs. DeHart

Math/Science Instructional Coach

Jennifer.dehart@wcs.edu

Week 1

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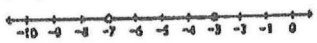
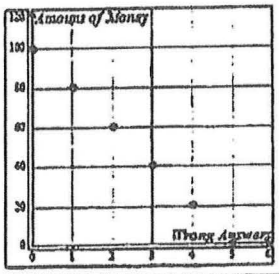
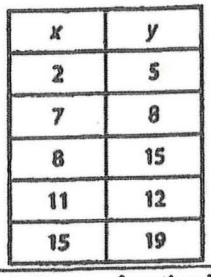
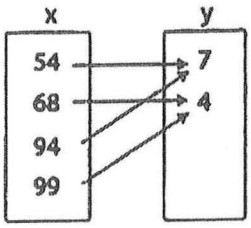
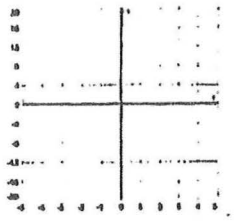
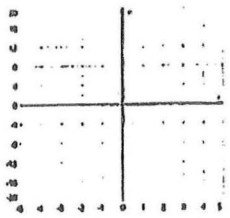
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1. Solve the following: $\frac{2}{3}m - \frac{1}{3} = \frac{1}{6}$	2. Solve the following: $16y + 26 = 154$	3. Solve the following: $7 - \frac{m}{9} = 14$	4. Solve the following: $\frac{x}{21} - \frac{1}{7} = 42$
5. Sam is building a model of antique car. The scale of his model to the actual car is 1:8. His model is 12 ½ inches long. How long is the actual car?	6. Use dimensional analysis to convert the measurements. 11 millimeters to fluid ounces. Use 1 mL = .034 fl oz.	7.Determine the number of significant digits in 6533.87 g	8. Determine the number of significant digits in 20400.093 lbs
9. State the terms and coefficients of the expression. $-20 + 6p - 5z$	10. State the terms and coefficients of the expression. $6x - 30y - 60$	11. Write an equation for the description. Two-thirds a number x plus 3 is 5	12. Write an equation for the description. The length of a rectangle is twice its width. The perimeter of the rectangle is 124 feet.
1 3. Solve for P in the formula $PV = nRT$	14. Solve for t in the formula $C = Wtc/1000$	15. Enter an inequality that represents the description and then solve. Four more than three times a number (x) is at least twenty-eight.	16. Solve the inequality $4x - 2(x + 3) > 2 - 3(x + 4)$

Week 2

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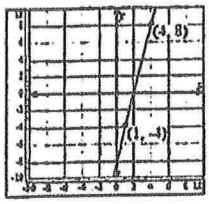
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1. Solve the compound inequality $-5 < \frac{x-10}{4} < -3$	2. Enter the compound inequality shown by the graph. 	3. Determine the Domain and Range of the following 	4. State the domain and range of the relation. 
5. State the domain and range of the relation. 	6. Identify the independent and dependent variables. Write a function to represent the situation and solve. Almira earns $23 an hour. How much does she earn is 4 hours?	7. Identify the independent and dependent variables. Write a function to represent the situation and solve. Autumn sells laptop computers for $700 each. If she sells 55 computers, how much money does she earn?	8. Enter a function in function notation to describe the situation. Find a reasonable domain and range for the function. Sarah has sold $49 worth of tickets to the comedy show. She has 3 tickets left to sell at $7 per ticket.
9. Graph the function X + y = -2. 	10. Graph the function for the given domain. $y = 2x \quad D: \{-4, -2, 0, 2\}$ 	11. Enter the first 4 terms of the sequence. Assume that the domain is the set of whole numbers greater than 0. $f(n) = (4n + 1)^2$	12. Find the 10th term of the sequence. Assume that the domain of each function is the set of whole numbers greater than 0. $f(1) = 8, f(n) = f(n-1) + 18$
13. Complete the recursive rule and the explicit rule for the arithmetic sequence. 69, 75, 81, 87, 93 ...	14. Complete he recursive and explicit rule for the arithmetic sequence. 62, 32, 2, -28, -58	15. Construct an explicit rule in function notation for the arithmetic sequence and solve. To package and ship an item, it costs $5.75 for the first pound and $0.75 for each additional pound. How much would it cost to ship a 12 pound package.	16. Construct an explicit rule in subscript notation for the arithmetic sequence and solve. A new bag of cat food weighs 21 pounds. At the end of each day, 1.5 pounds of food is removed to feed the cats. How much food will be left after 8 days.

Week 3

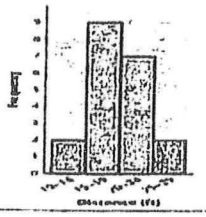
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1. Select whether the function is discrete or continuous. Function y = 2^3x, where x is the time and y is gallons of water.	2. Select whether the function is discrete or continuous. Function: The amount of packages shipped per shift.	3. Find the x and y intercepts. $\frac{2}{5}x + \frac{1}{2}y = 20$	4. Find the x and y intercepts. $-3x + 9y = 45$
5. Find the intercepts A lake is stocked with 330 trout. Each year, the population descreases by 10. The population of trout in the lake after x years is represented by the function f(x) = 330 – 10x	6. Find the slope of the line. Enter your answer in simplest form.  	7. Find the slope of the line that passes through the following points (-5,7) and (9,7)	8. Find the slope of the line that passes through the following points (-4,-11) and (-2,-4)
9. For the situation, determine the slope and y intercept. John gets a new job and receives a $500 signing bonus. After that, he makes $200 a day. .	10. Enter the equation of the line in slope intercept form. Slope is – ½ and (-9,2) is on the line.	1 1. Enter an equation in point-slope form for the line. (2,3) and (4,4) are on the line.	12. Enter an equation in point slope form for the line. Slope is 5 and (-7, -1) is on the line.
13. Enter the equation in standard form $y = \frac{8}{3}x - \frac{6}{3}$	14. Use the information given to enter an equation in standard form. Slope is -6, and (4,2) is on the line	15. Write the following situation in all 3 forms Slope: 5 Point (-3, 2)	16. Write the following situation in all 3 forms Points on the line: (3,4) and (-2,7)

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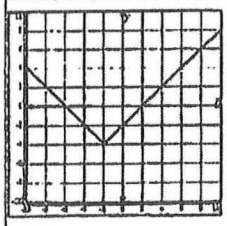
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1. Describe the transformation(s) on the graph of the parent function f(x) = x that results in the graph g(x). g(x) = 1/5(x) - 3	2. Describe the transformation(s) on the graph of the parent function f(x) = x that results in the graph g(x). g(x) = 7x + 3	3. A baker sells bread for $5 a loaf and rolls for $1 each. The baker needs to sell $45 worth of baked goods by the end of the day. Enter a linear equation that describes the problem.	4. A local charity is selling seats to a baseball game. Seats cost $22 each, and snacks cost an additional $6 each. The charity needs to raise $574 to consider the event a success. Enter a linear equation that describes the problem.
5. A shoe store offers frequent-buyers card. Each transaction is worth 10 points and customers automatically earn 26 points when they sign up. Enter the function rule for the transaction function, where p represents the number of transactions.	6. Bridget needs an actor. Actor A is offering her services for an initial $250 in addition to $65 per day. Actor B is offering her services for an initial $220 in addition to $70 per day. When will the two actors charge the same amount of money?	7. Yuma needs a singer. Singer A is offering her services for an initial $60 in addition to $20 per hour. Singer B is offering his services for an initial $120 in addition to $5 per hour. When will the two singers charge the same amount of money?	8. Lindsey needs a jeweler to repair her earrings. Jeweler A is offering her services for an initial $140 in addition to $14 per hour. Jeweler B is offering his services for an initial $150 in addition to $12 per hour. When will the two jewelers charge the same amount of money?
9. Charles has $3280 in his bank account and makes automatic $410 monthly payments on a utility bill. If he stops making deposits to that account, when would the automatic payments make the value of the account zero?	10. Lena has $1120 in her bank account and makes automatic $560 monthly payments on a cell phone bill. If she stops making deposits to that account, when would the automatic payments make the value of the account zero?	11. Find the mean and median of the data set. The numbers of hours Cheri works each day are 4, 8, 5, 7, and 6	12. Find the standard deviation of 144, 155, 169, 138, 169, and 162. If necessary, round your answer to the nearest tenth.
13. The numbers of members in 8 workout clubs are 95, 90, 85, 80, 80, 90, 95, and 85. Suppose that a new workout club opens and immediately has 145 members. Is the number of members at this new club an outlier?	14. If the value for the median of a set is not found in the data set, what must be true about the number of values in the data set?	15. Estimate the mean of the data set displayed in the histogram 	16. The scores on a test given to all juniors in a school district are normally distributed with a mean of 72 and a standard deviation of 8. Find the percent of juniors whose score is no more than 80

Week 5

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1. Suppose the heights (in inches) of adult males in the United States are normally distributed with a mean of 73 inches and a standard deviation of 3 inches. Find the probability that a randomly chosen man is between 67 and 79 inches tall.	2. If you combined two data sets, each with r values close to 1, into a single data set, would you expect the new data set to have an r value between the original two values?	3. Solve the system of linear equations $y = 2x - 4$ $x + 3y = 9$	4. Solve the system of equations $y = -\frac{3}{4}x + \frac{1}{4}$ $\frac{3}{4}x + y - 2 = 0$
5. Solve the system of linear equations by substitution $5x + y = 11$ $2x + y = 8$	6. Solve the system of linear equations by substitution $\frac{x}{5} + \frac{y}{3} = 8$ $x - 2y = 7$	7. Solve the system of linear equations $3x + 4y = 15$ $3x - y = 30$	8. Solve the system of linear equations $\frac{3}{5}x - \frac{6}{7}y = -\frac{40}{3}$ $-\frac{3}{5}x + \frac{6}{7}y = 13\frac{1}{3}$
9. Solve the system of linear equations $2x + 2y = 10$ $4x + 11y = 6$	10. Solve the system of linear equations $-3x + 2y = -7$ $5x - 3y = 19$	11. Set up and solve a system of equations to solve the problem. The school band sells carnations on Valentine's Day for $3 each. It buys the carnations from a florist for $0.50 each, plus a $17 delivery charge. When will the cost of the carnations be equal to the revenue from selling them? How many carnations does it need to sell to reach this point?	12. There are 155 adults and 250 children at a zoo. The zoo makes a total of $6385 from the entrance fees, and the cost of an adult and a child to attend is $32, how much does it cost each for a parent and a child? Let a represent an adult. Let c represent a child. Enter a system of equations to represent the situation, then solve the system.
13. Nicole has 18 nickels n and dimes d. If the value of her coins is $1.45, how many of each coin does she have? Enter a system of equations to represent the situation, then solve the system	14. Evaluate the piecewise function for the given values Find f (-5), f(-1) and f (2) for $f(x) = \begin{cases} \frac{4}{x} & \text{if } x \le -2 \\ x & \text{if } -2 < x < 0 \\ 3 & \text{if } x \ge 0 \end{cases}$	15. Enter an equation for the absolute value function whose graph is shown. 	16. Solve the equation $\left\lvert \frac{1}{3}x + 4 \right\rvert = 3.$

Week 6

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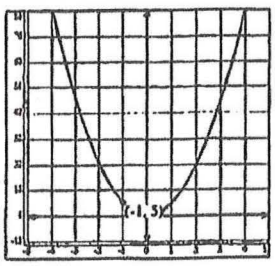
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1. This absolute value equation has nested absolute values. $\|\|2x+3\|-5\| = 16$ What are the solutions?	2. Solve the absolute value inequality $2\left\|x-\frac{7}{2}\right\|+2>5$ algebraically.	3. The speed limit on a road is 35 miles per hour. Drivers on this road typically vary their speed around the limit by as much as 4 miles per hour. What is the range of typical speeds on this road?	4. Find the common ratio r for the geometric sequence and use r to find the next three terms. $-3, 9, -27, 81, \ldots$
5. A biologist studying ants started on day 1 with a population of 1000 ants. On day 2, there were 2000 ants, and on day 3, there were 4000 ants. The increase in an ant population can be represented using a geometric sequence. What is the ant population on day 5?	6. Find an explicit rule for each geometric sequence using subscript notation. Use a calculator and round your answer to the nearest tenth if necessary. The fourth term of the sequence is 243. The sixth term is 108.	7. A state began an effort to increase the deer population. In year 2 of the effort, the deer population in a state forest was 1800. In year 4, the population was 2592	8. Enter an equation for the function. Give your answer in the form $a(b^n)$. In the event that $a = 1$, give your answer in the form b^n. A laser beam with an output of 6 milliwatts is directed into a series of mirrors. The laser beam loses 2% of its power every time it reflects off of a mirror. The power p(n) is a function of the number n of reflections
9. Enter an equation for the function that includes the points. Give your answer in the form $a(b^n)$. In the event that $a = 1$, give your answer in the form b^n. (1, 9) and (2, 81)	10. A ball is rolling down a slope and continuously picks up speed. Suppose the function $f(x) = 1.3(1.11)^x$ describes the speed of the ball in inches per minute. How fast will the ball be rolling in 19 minutes? Round the answer to the nearest whole number	11. Refer to the functions $f_1(x) = 5.5^x$ and $f_2(x) = 6^x$. Which function approaches 0 faster as x decreases toward?	12. What kind of transformation is the function $h(n) = 4(0.5)^n$ from the original function, $h(n) = 10(0.5)^n$?
13. The equation $2=(1.03)^x$ models a population that has doubled. What is the rate of increase? What does x represent?	14. Solve the given equation. $12(2)^x = 96$	15. Enter the exponential function using t (for time) as the independent variable to model the situation. Then find the value of the function after the given amount of time. The value of a car is $7600 and decreases at a rate of 9% yearly for 6 years	16. Enter the exponential function using t (for time)as the independent variable to model the situation. Then find the value of the function after the given amount of time. Annual sales for a company are $200000 and increases at a rate of 8% per year for 9 years.

Week 7

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1. State whether the situation is best represented by an exponential or linear function. Then enter an exponential or linear function for the model and state whether the model is increasing or decreasing. A salesperson initially earns $50446 per year, and receives a yearly raise of $625	2. State whether the situation is best represented by an exponential or linear function. Then enter an exponential or linear function for the model and state whether the model is increasing or decreasing. A customer borrows $452 at 6% interest compounded annually.	3.Enter the polynomial in standard form. Then enter the leading coefficient. $2x - 10x^3 - 2x^2$	4. Simplify. $-y^3x - y^2x + y^2 + y^3x + y^2$
5. Find the sum. $(7x + 3y + 8z) + (-x + 3y - 8z)$	6. Find the sum. $(7q^3r^2 + 5qr^2 + 22q) +$ $(-5qr^2 - qr^2 - 11q - 5q^3r^2)$	7.Find the difference $-a^5 - (2b^2 + a^2b^2) - (-a^5 - a^2b^2)$	8. Find the difference horizontally. $(q^3r^2 - 4qr^2 - 20q)$ $-$ $(-qr^2 - 4qr^2 - 9q - 4q^3r^2)$
9. Find the product. $(15x^3)(3x^5) =$	10. Find the product. $(x^4 + 7y + 6xy^2)(3xy) =$	11. Multiply by using the Distributive Property. $(3x + 5)(x - 5)$	1 2. Multiply the polynomials. Enter your answer in standard form. $(x^3 + x^2 + 2x)(x^4 - x^3 + x^2)$
1 3. Multiply. $(8 + 4x)(8 - 4x)$	14. Multiply. $(5 + x^2)^2$	15. Determine the equation of the parabola graphed  	16. How is the graph of $g(x) = x^2 + 15$ related to the graph of $f(x) = x^2$ (How is it translated)

5th

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1. For what values of a and c will the graph of $f(x) = ax^2 + c$ have one x-intercept?	2. Determine whether the function represented by the equation is quadratic. $8 - y + 3x^2 = 9x$	3. Change and enter the quadratic function from vertex form, $y = a(x - h)^2 + k$, to standard form, $y = ax^2 + bx + c$. $y = -2(x - 1)^2 - 16$	4. Change and enter the quadratic function from vertex form, $y = a(x - h)^2 + k$, to standard form, $y = ax^2 + bx + c$. $y = 2(x + 5)^2 + 17$
5. Use the given quadratic function model to answer the question about the situation it models. If necessary, round your answer to the nearest tenth. A shark jumps out the water. The quadratic function $f(x) = -16x^2 + 21x$ models the shark's height, in feet, above the water after x seconds. How long is the shark out of the water?	6. Create a quadratic equation for the given problem and then solve the equation with a related function using a graphing calculator. If necessary, round your answer to the nearest hundredth. A bird is in a tree 33 feet off the ground and drops a twig that lands on a rosebush 30 feet below. The function $h(t) = -16t^2 + 33$ where t represents the time in seconds, h gives the height, in feet, of the twig above the ground as it falls. When will the twig land on the bush?	7. Enter the function in standard form. $y = 8(x - 2)(x + 1$	8. Enter the function in standard form. Determine the x-intercepts and zeros of the function. $y = 2(x + 4)(x - 6)$
9. Find the solutions of the equation. $(x - 12)(x - 25) = 0$	10. Find the zeros of the function. $f(x) = (x + 27)(x + 27)$	11. Factor the expressions. $x^2 - 25x + 46$	12. Solve the equation. $x^2 - 28x + 27 = 0$
13. Factor the quadratic. $9x^2 + 39x + 30$	14. Solve the following quadratic equation. $3(4x - 1)(4x + 3) = 48x$	15. Factor the perfect-square trinomial. $16x^2 + 72x + 81$	16. Solve the following equation. $x^3 - 6x^2 + 9x = 0$

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1. Solve the equation. Enter the answer in radical form. $5x^2 - 17 = 48$	2. Solve the equation. Enter the answer in radical form, and then use a calculator to approximate the solution to two decimal places, if necessary. $(x - 12)^2 = 68$	3. Complete the square to form a perfect-square trinomial. $x^2 + 54x$	4. Solve the equation by completing the square. $16x^2 - 24x = 55$
5. Solve using the quadratic formula. Leave irrational answers in radical form. $8x + 2 = 10x^2$	6. Solve using the quadratic formula. Leave irrational answers in radical form. $2x^2 = 2 - x$	7. Solve the quadratic equation by any means. Identify the method and complete the explanation on why you chose it. Convert irrational answers to a decimal (round to two decimal places). $(8x + 7)^2(x + 3) = 32$	8. Solve the quadratic equation by any means. Identify the method and complete the explanation on why you chose it. Irrational answers may be left in radical form. $3x^2 + 6x + 1 = 0$
9. Find the discriminant of the quadratic equation, and determine the number of real solutions of the equation. $5x^2 + 3x + 8 = 0$	10. Find the discriminant of the quadratic equation, and determine the number of real solutions of the equation. $3x^2 + 7x = 9$	11. Solve the equation using the given method. $7x^2 - 63 = 0$; square root	12.Solve the equation using the given method. $25x^2 + 10x = 4$; complete the square
13. Solve the equation using the given method. $3x^2 + 27x + 24 = 0$; factoring	14. Solve the equation using the given method. $3x^2 + 4x + 9 = 0$; quadratic formula	15. Find the solutions of the system of equations $\begin{cases} y = x^2 + 4 \\ y = -x + 10 \end{cases}$	16. Is the given expression a perfect-square trinomial? $x^2 + 28x + 196$

Week 10
(Bonus)

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1. Is the given expression a perfect-square trinomial? Select Yes or No for each expression. A. $x^2 + 28x + 196$	2. Identify the expression as a perfect-square trinomial, a difference of squares, or neither. Factor the expression. $p^2 - 9p - 36$	3. Solve the equation. $x^2 - 9x - 22 = 0$	4. Solve the equation. $9x^2 - 100 = 0$
5. Solve the equation. $3x^2 - 20x - 7 = 0$	6. Solve the equation. $x^2 + 18x + 81 = 0$	7. A golfer hits a ball from a starting elevation of 2 feet with a velocity of 70 feet per second down to a green with an elevation of −7 feet. The number of seconds t it takes the ball to hit the green can be represented by the equation $-16t^2 + 70t + 2 = -7$. How long does it take the ball to land on the green?	8. Enter a function in factored and standard form for the given k and set of x-intercepts. x-intercepts: −8 and 9; k = −3
9. Find the zeros of the function. $f(x) = 6(x + 7)(x - 7.5)$	10. Find the zeros of the function. $f(x) = x(x - 45)$	11. Find the zeros of the function. $f(x) = 6x(x - 6) + 3(x - 6)$	12. Describe the transformations necessary to get from the graph of the parent function $f(x) = x^2$ to the graph of the given function. $g(x) = (x + 4)^2 - 9$
13. Rewrite the function in standard form. $f(x) = 2(x + 4)^2 - 6$	14. Rewrite the function in standard form. $f(x) = 4(x - 2)^2 + 3$	15. Multiply. Identify the product as a perfect-square trinomial, a difference of squares, or neither. $(2y + 8)(2y - 8) =$	16. Multiply. Identify the product as a perfect-square trinomial, a difference of squares, or neither. $(7x + 5)^2 =$