

Algebra One Summer Review

Week One: Back to Basics

Calculate each of the following without using "electronics!"

Monday

- ① $+20 + -7 =$
- ② $-3\frac{1}{4} + 8\frac{7}{12} =$
- ③ $23.1 - -16.09 =$
- ④ $-5.6 - 18.096 =$
- ⑤ $17 - 51 =$
- ⑥ $-7/8 (6/7) =$
- ⑦ $-16.5 (8.2) =$
- ⑧ $-40.5 \div -0.05 =$
- ⑨ $6/25 \div -18/35 =$
- ⑩ $-2\frac{1}{3} \div -3\frac{3}{4} =$

⑧ If $V=Bh$, calculate the volume of a rectangular prism with $l=12$ m, $w=5$ m, and $h=6$ m.

⑨ Find the range, mean, median, and mode for the list: 52, 53, 53, 53, 55, 55, 57

⑩ What is the perimeter of a triangular garden with sides 6.0 m, 3.5 m, and 4.0 m.

Wednesday

- ① Write 5% as a fraction in simplest form.
- ② Write the percent proportion.
- ③ Solve "What is 15% of 60" as an equation.
- ④ 36 is what percent of 24?
- ⑤ Brian answered 36 out of 40 questions correctly on his test. Calculate the percentage of correct answers.
- ⑥ Find both perimeter and area for a square 7.5 m on each side.
- ⑦ If the area of a rectangle is 210 cm^2 and the width is 15 cm, find the length.

Friday

- ① Simplify: $\sqrt{25}$, $\sqrt{121}$, $\sqrt{\frac{25}{64}}$, $\sqrt{\frac{49}{225}}$
 - ② Write a verbal expression for $x^2 + 7$.
 - ③ Write an algebraic expression for, "nineteen decreased by the product of x and y ."
 - ④ Write an algebraic expression for, "seven less a number q ."
 - ⑤ Write an algebraic expression for, "six less than the cube of y ."
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⑥ Calculate
 $4[12 \div (6-2)]^2$

⑦ $\frac{(1+b)^9}{5^2 - 4}$

⑧ Evaluate if $a=8$, $b=4$,
 and $c=16$
 $\frac{2b+3c^2}{4a^2-2b}$

⑨ Aaron answered 36
 out of 40 questions
 correctly on his first
 test of the semester
 and 47 out of 52
 on the second test.
 On which test did he
 receive the higher score?

⑩ Name the property (properties)
 used in each step.

$7(4-3) - 1 + 5 \cdot \frac{1}{5}$ (a) _____

$7(1) - 1 + 5 \cdot \frac{1}{5}$ (b) _____

$7 - 1 + 5 \cdot \frac{1}{5}$ (c) _____

$7 - 1 + 1$ (d) _____

$6 + 1$ (e) _____

7 (f) _____

Week Two: Properties and Equations

Monday

Simplify

① $4(x^2 + 3x - 7)$

② $12n^2 - 18n + 6n^2 - 15$

③ $4(ab + 3b) + 17ab$

④ Write the symmetric
 property of equality
 using x and y .

⑤ Solve: $y = \frac{4(14-1)}{3(6)-5}$

⑥ Use the replacement set
 $K = \{1, 3, 5, 7, 9\}$ to solve:
 $4K = 20$

⑦ $\{(4,2), (6,3), (8,4), (10,5)\}$

Name the (a) domain

(b) range

⑧ What is a relation?

⑨ If $f(x) = x^2 - 2$,
 what is $f(5)$?

⑩ Use $f(x) = x^2 - 2$
 and solve $f(b)$.

Wednesday

① Identify the hypothesis
 and conclusion in the following
 conditional statement:

"If I am working on this Algebra
 packet, it must be summer!"

② Write a counterexample for,
 "If I am eating M+M's, then it
 must be Wednesday."

③ Write an equation for:

The product of a number, x , and
 seven is fifty-six.

④ Solve:

$$-63 + m = -74$$

⑤ $-1\frac{3}{8}k = \frac{2}{3}$ (solve)

⑥ Solve: $-\frac{9}{24} = \frac{5}{12}$

⑦ Solve: $12 = -7f - 9$

⑧ Solve: $-\frac{3}{7} = \frac{3}{4} - \frac{b}{2}$

⑨ Solve: $2m - 13 = -8m + 27$

⑩ $14.2t - 25.2 = 3.8t + 26.8$

Friday

① Solve: $|n + 7| = 18$

② Solve: $|5h - 12| = -3$

③ Graph the solution
for: $|\frac{3}{4}a - 3| = 9$

④ If $\frac{x+4}{12} = \frac{3}{4}$,
solve for x

⑤ ☐ Proportion or
Not a proportion?

$$\frac{2}{3.5}, \frac{8}{14}$$

⑥ Evaluate: $4^2 \cdot 3 - 5(6+3)$

⑦ Find the percent of change:
(Round to the whole percent.)
original amt: 250
new amt: 325

⑧ What is 8% tax on the
sale of a \$240 coat?

⑨ What is the discount price
for an \$800 necklace on sale
at a 35% discount?

⑩ Translate " $-14 + 7g$ " into
a word phrase



Monday

① Solve $7x - 2z = 4$ for z

② Solve $5b + 12c = 9$ for b

③ Solve: $8k + 9 = 7k + 6$
Write equations and solve:

④ A number is divided by 4, and
then the quotient is added to
17. The result is 25. Find the
number.

⑤ Find three consecutive numbers
whose total is 42.

⑥ Find three consecutive odd
integers whose sum is 51.

⑦ Fifteen minus three times a
number is -22. Find the number.

⑧ Margo took a nonstop flight to visit her grandmother. The 750 mile trip took 3 hrs. Due to bad weather, the return trip took 4.5 hrs. What was her average rate?

⑨ Two trains leave Pittsburgh at the same time, one traveling east and the other traveling west. The eastbound train travels at 40 mph and the westbound train travels at 30 mph. In how many hours will the trains be 245 miles apart?

⑩ Peanut Butter cookies sell for \$6.50 per doz. and chocolate chip sells for \$9 per dozen. Yesterday, 85 dozen more peanut butter cookies were sold than choc. chip cookies. If the total sales were \$4055.50, how many dozen of each type of cookie was sold?

Wednesday

⑪ Two cyclists begin traveling in the same direction on the same bike path. One travels 17

20 mph, and the other travels at 14 mph. When will they be 15 miles apart?

⑫ Find the sum of three consecutive odd integers if the sum of the first two integers is equal to twenty-four less than four times the third integer.

⑬ Write $8 + y = 4x$ in standard form for a linear equation.

⑭ Why is $5x + y^2 = 25$ not a linear equation?

⑮ Make a table and graph $x - y = -3$

⑯ Solve: $4x + 3 = 4x - 5$
Find the x and y intercepts

⑰ $x = 5y + 5$

⑱ $x + y = 4$

⑲ $y = -8x$

⑳ $2x - 7y = 14$

Friday

① Write the slope formula.

Find the slope:

② $(-3, 4)$ $(5, 3)$

③ $(-4, -2)$ $(-1, 11)$

④ $(6, 7)$ $(6, -8)$

⑤ $(8, 2)$ $(9, 2)$

⑥ If $y = 15$ and $x = 9$,
find y when $x = 30$
Also, what is "k" in
the direct variation?

⑦ If $y = 3.2$ when $x = 0.8$,
find y when $x = 20$.
Also, what is k ?

⑧ What is the formula to
calculate the n^{th} term
of an arithmetic sequence?

⑨ Is $3, -10, -23, -36, \dots$
an arithmetic sequence?
If so, what is the
common difference?

⑩ Give the next three terms
of the sequence
 $0.02, 1.08, 2.14, _, _, _$

Monday

Write the following
in slope-intercept form.

① $-4x + y = 2$

② slope = 2, y -int. = -1

③ $6x - 4y = 16$

④ Graph $y = \frac{3}{4}x - 2$

Write the equation for
the line in slope-int.
AND standard form

⑤ passes through $(2, -3)$
with a slope of $\frac{1}{2}$.

⑥ passes through $(-3, -4)$
and $(-2, -8)$

⑦ What is point-slope
form?

⑧ Write point-slope
form for $(-2, -8)$
with a slope of 5.

⑨ Write
 $y - 10 = 2(x - 8)$
in standard form.

⑩ If $m = \frac{3}{4}$, what is the
slope for a line that is
perpendicular? page 5

Wednesday

① What is the slope of a line parallel to $3x - y = 17$?

② What is the slope of a line perpendicular to the line $2x - 6y = -5$?

③ Write an equation in slope-intercept form for the line that passes through $(2, 6)$ and is perpendicular to the graph of the line for $y = -\frac{1}{4}x + 3$.

④ Write the range for $\{(3, 4), (4, 3), (2, 2), (5, -4), (-4, 5)\}$

⑤ Draw a line representing "positive" slope.

⑥ Solve $|x - 4| = 9$

⑦ Solve $12n - 4 \leq 13n$.
Write your answer in set-builder notation.

⑧ Solve and write in set-builder notation: $-\frac{3}{5}d \geq 6$
Graph your solution, also.

⑨ Solve and write in set-builder notation.

$$2(x - 4) \leq 2 + (3)(x - 6)$$

⑩ Solve, graph, and write set-builder notation.

$$-3 \leq 7c + 4 < 18$$

Friday

① Solve, graph, and write set-builder notation.

$$y - 1 \geq 7 \text{ or } y + 3 \leq 2$$

② Solve: $\frac{14}{x} = \frac{20}{8}$

③ Solve and graph $|5x - 2| \leq 6$

④ $|-3p - 7| > 5$

⑤ Graph $y < x - 3$

⑥ Solve $y = mx + b$ for x

⑦ Solve by graphing:

$$y = 2x + 3$$

$$8x - 4y = -12$$

⑧ Solve by substitution:

$$x + y = 4$$

$$4x + y = 1$$

⑨ Solve by elimination:

$$-3x + 4y = 12$$

$$3x - 6y = 18$$

⑩ Solve using multiplication and elimination:

$$3x - 3y = -6$$

$$-5x + 6y = 12$$



Monday:

① If $M = \begin{bmatrix} -8 & 4 & 5 \\ 3 & 8 & 2 \\ 6 & 0 & 1 \end{bmatrix}$,

What is $3M$?

② $A = \begin{bmatrix} -8 & 15 & 9 \\ 4 & -3 & 7 \end{bmatrix}$

$B = \begin{bmatrix} -12 & 10 & -13 \\ -8 & 11 & -6 \end{bmatrix}$

③ $A + B$

④ $B - A$ $B - A$

Simplify:

⑤ $(5a^2b^3)(7ab^4)$

⑥ $(0.4h^3)^2$

⑦ $\left(\frac{4}{5}x^2\right)^2$

Assume no denominator is zero.

⑧ $\frac{x^8y^{12}}{x^3z^4}$

⑨ n^{-6}

⑩ $\frac{32a^{-8}b^3c^{-4}}{4a^3b^{-5}c^2}$

⑪ $\left(\frac{-3x^{-6}y^{-1}z^{-2}}{6x^{-2}yz^{-5}}\right)^{-2}$

Wednesday:

① Write 10,700,000 in scientific notation.

② Write 1.67×10^{-4} in standard form.

③ Simplify:
 $(7.08 \times 10^{14})(5 \times 10^{-9})$

④ $\frac{2.05 \times 10^{-8}}{4 \times 10^{-2}}$

⑤ What degree is 17?

⑥ What degree is $7x^3y^2z$

⑦ What degree is:
 $18x^3y^2 - 7x^2y^3 + 7z^7$

$$(8) (6x^3 - 4) + (-2x^3 + 9)$$

$$(9) (-4z^3 - 2z + 8) - (4z^3 + 3z^2 - 5)$$

$$(10) (4x + 2y - 6z) + (5y - 2z + 7x) + (-9z - 2x - 3y)$$

Friday:

$$(1) 5w(6w^2 - 3w + 7)$$

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

$$(3) \text{ Solve } t(2t + 3) + 20 = 2t(t - 3)$$

$$(4) (3a + 2)(9 - 6)$$

$$(5) (z - 6)(z + 6)$$

$$(6) (2y + 7)(3y - 6)$$

$$(7) (3a + 4)(a^2 - 12a + 1)$$

$$(8) (m + 2)[(m^2 + 3m - 6) + (m^2 - 2m + 4)]$$

$$(9) (4x + 6)^2$$

$$(10) (w - 7)^2$$

Week Six
Factoring and
Quadratics

Monday:

$$(1) \text{ Write the prime factorization for } -52a^2b^3$$

$$(2) \text{ Find the GCF for } 25x^3, 45x^5, 75x$$

Factor:

$$(3) 15x^2 - 30x$$

$$(4) 2xy + 7x - 2y - 7$$

$$(5) w^2 + 25$$

$$(6) c^2 + 3c$$

Solve

$$(7) 3k(k + 10) = 0$$

$$(8) d^2 = 3d$$

$$(9) 2n(n + 3)(n - 6) = 0$$

$$(10) \text{ Simplify: } (ab^4)(7a^2b)(3a)^2$$

Wednesday:

Factor:

$$(1) 4a^2 - 25$$

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

$$(3) r^4 - k^4$$

Solve:

$$(4) 4a^2 = \frac{9}{64}$$

Factor

$$(5) 4x^2 + 64$$

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$$(6) 8y^2 - 200z^2$$

Solve using the quadratic formula.

Round to the nearest tenth.

$$(7) x^2 - 4x + 3 = 0$$

$$(8) 2x^2 - 9x = -8$$

Simplify

$$(9) \sqrt{68}$$

$$(10) \sqrt{5} \cdot \sqrt{6} \cdot \sqrt{2}$$

Friday

Simplify

$$(1) 3\sqrt{10} \cdot 4\sqrt{5}$$

$$(2) 4\sqrt{121x^3y^5}$$

$$(3) \sqrt{6c^3d^3} \cdot \sqrt{8c^3d}$$

$$(4) \sqrt{\frac{2}{3}} \cdot \sqrt{\frac{6}{12}}$$

$$(5) \frac{7}{6 + \sqrt{3}}$$

$$(6) \frac{5}{\sqrt{6} + \sqrt{3}}$$

$$(7) \frac{\sqrt{45a^4b^5c^6}}{\sqrt{9a^5b}}$$

$$(8) 5\sqrt{2} + 6\sqrt{3} - 8\sqrt{2}$$

$$(9) 4\sqrt{10} + 6\sqrt{40}$$

$$(10) \sqrt{5}(\sqrt{2} + 4\sqrt{2})$$

Week Seven

Monday

Identify a) right triangle?
and b) Pythagorean Triple?

$$(1) 14, 15, 50$$

$$(2) \sqrt{7}, 8, \sqrt{71}$$

$$(3) 9, 12, 15$$

Find the missing sides
of the following right triangles.
Round to the nearest tenth.

$$(4) a=7, b=6, c= \underline{\hspace{2cm}}$$

$$(5) a=20, b= \underline{\hspace{2cm}}, c=29$$

$$(6) a= \underline{\hspace{2cm}}, b=12, c=25$$

Find the distance

$$(7) (3, 1) \quad (-2, -1)$$

$$(8) (3, 6), (5, -5)$$

$$(8) \frac{r^3 - r^2}{r - 1}$$

$$(9) (5, -1) (5, 13)$$

$$(9) \frac{6y^3 - 12y^2}{12y^2 - 18}$$

$$(10) (6, 3) (10, 0)$$

Wednesday

$$(10) \frac{5x^2 + 10x + 5}{3x^2 + 6x + 3}$$

Calculate the midpoint

$$(1) (3, 2) (3, 6)$$

Friday

$$(2) (6, 3) (-4, -11)$$

Simplify

$$(3) (-4, 2) (6, 3)$$

$$(1) \frac{a^2b}{b^2c} \cdot \frac{c^2d}{bd}$$

Use the distance formula to calculate the missing coordinate.

$$(2) \frac{5n-5}{3} \cdot \frac{9}{n-1}$$

$$(4) (2, -1) (-6, a) \quad d=10$$

$$(3) \frac{a^2}{a-b} \cdot \frac{3a-3b}{ab}$$

$$(5) (1, 0) (a, b) \quad d=\sqrt{61}$$

$$(4) \frac{x^2 - y^2}{(x-y)^2} \cdot \frac{x-y}{x+y}$$

Simplify. Set excluded values

$$(6) \frac{p+5}{2(p+5)}$$

$$(5) \frac{5d-f}{5d+f} \div (25d^2 - f^2)$$

$$(7) \frac{13a^2b}{39ab^3}$$

$$(6) \frac{a^2 + 10a + 21}{(a+7)}$$

↑

- ⑦ Simplify and state exclusions

$$\frac{8x^5 - 10xy^2}{2xy^3}$$

⑧ $\frac{7x^2y}{12z^3} \cdot \frac{14z}{49xy^4}$

⑨ $\frac{b+3}{4b-12} \cdot \frac{b^2-4b+3}{b^2-7b-30}$

⑩ $\frac{n^2+7n+12}{16n^2} \div \frac{n+3}{2n}$

Week Eight

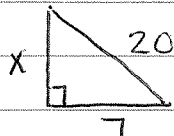
Monday:

- ① Solve $5y^2 - y - 4 = 0$ using the quadratic formula.

- ② Find the sum:
 $(3a^2 + 2a - 12) + (8a + 7 - 2a^2)$

- ③ Find the slope
 $(6, 2)$ $(-8, 4)$

- ④ Find the length of the third side to the nearest tenth.



⑤ $\frac{g^3h}{b} \div \frac{gh^3}{b^2}$

- ⑥ Write $y = 3x - 7$ in standard form.

- ⑦ Find the distance between $(3, 4)$ and $(9, 16)$ to the nearest tenth.

- ⑧ What is 15% of 260?

- ⑨ Use elimination to solve:
 $3x + 5y = 11$
 $5(x - y) = 5$

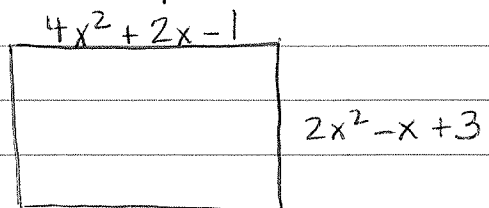
- ⑩ What is the longest side of a right triangle called?

Wednesday:

- ① Simplify:
 $5g - 8g + 2(-4g)$

- ② Simplify:
 $\frac{(16x^2y^{-1})^0}{(4x^0y^{-4}z)^{-2}}$

- ③ Find the perimeter:



- ④ Is $\frac{2x^2 - 4x}{x - 2}$ in

simplest form? Explain

- ⑤ Simplify $\sqrt{180a^2b^3}$

- ⑥ Simplify. Name the excluded values.

$$\frac{5x+15}{x^2+10x+21}$$

- ⑦ Write the quadratic formula from memory!

- ⑧ Write $\frac{7}{8}$ as a percent to the nearest tenth.

- ⑨ Simplify: $\frac{8}{x^2} \cdot \frac{x^4}{4x}$

- ⑩ If $m = -3$, what is the slope of the line perpendicular to $y = -3x + 6$?

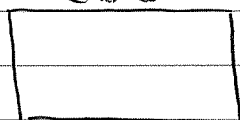
Friday:

- ① If two angles of a triangle are congruent and the 3rd angle is twice the other two, what is the measure of each angle?

- ② What degree is $18abcde^6$?

- ③ Solve $\sqrt{x+3} = \sqrt{5}$

- ④ Find the area:



- ⑤ Write the equation in slope-intercept form with a slope of $\frac{9}{10}$ and a y-intercept of -10 ?

- ⑥ Find the next three terms in the sequence:
 $36, 12, 4, _, _, _$

- ⑦ FOIL $(6a-2b)(9a+b)$

- ⑧ Simplify $\left(-\frac{3}{4}c\right)^3$

- ⑨ What is the solution to an identity?

- ⑩ Solve
 $3(2k-2) = -2(4k-11)$

Congratulations!
This is the end of the Alg. I review packet. Review what "gave you problems" prior to the opening of school and I wish you every success in Geometry and beyond!

MMA