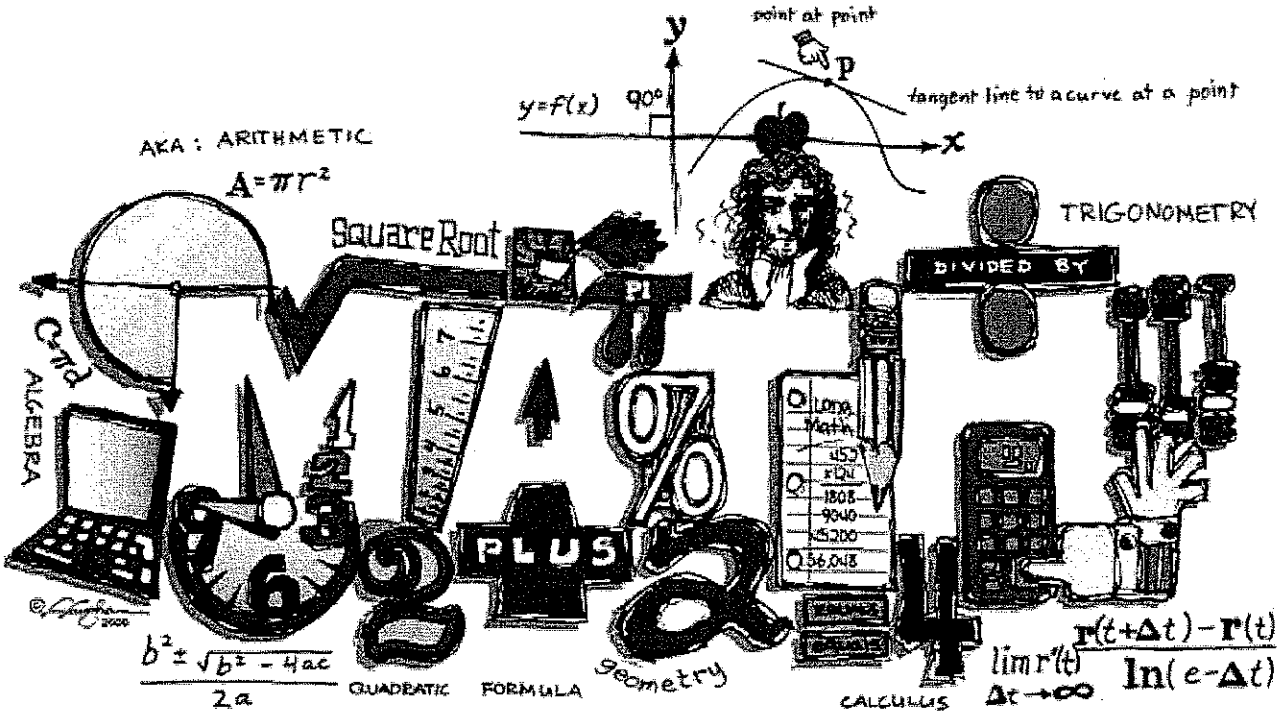
Summer Review For Students Entering Algebra 2



Haddam-Killingworth High School

Summer 2018

SUMMER + MATH REVIEW = SMOOTH TRANSITION BACK TO MATH IN THE FALL!

This summer packet has been designed to provide review of Algebra 1 skills that are essential for supporting student success in Algebra 2. The Haddam-Killingworth High School Mathematics Department is asking that all students entering Algebra 2 in the fall complete this packet by the first day of school. Although this is a multiple choice assignment, all problems should be complete with work shown in the packet (or on attached papers). In addition, answers should be entered on the bubble sheet provided at the end of the packet. Completion of this packet over the summer will help students avoid the loss of algebra 1 skills and will set students up to successfully meet the challenges awaiting them in Algebra 2 and beyond, such as the SAT, ACT, AP exams, and College Placement tests.

The material covered in this packet will be reviewed at the beginning of the school year and students will be assessed on the skills included.

Resources included in this packet are the following:

- A listing of Algebra 1 objectives that students need to have mastered to be successful in Algebra 2.
- A set of problems emphasizing these important objectives from the Algebra 1 curriculum that will help students prepare for Algebra 2.

Directions:

- All work should be shown in the packet or on lined paper to accompany the packet.
- A calculator may be used on any of the problems in the packet but work/process should still be provided (the math department strongly recommends students purchase the Texas Instruments TI-84 or TI-84+ graphing calculator).
- All summer work will be collected at the beginning of the school year and checked for and graded on completion.

Other resources recommended:

- Khan Academy: www.khanacademy.org This website provides video instruction as well as practice on all Algebra 1 skills required for Algebra 2.

  This website also provides great SAT preparation materials for those who would like to start to prepare for that assessment as well.

- Desmos: www.desmos.com This is a user-friendly online graphing calculator.

Algebra 1 Skills Needed to be Successful in Algebra 2

A. Simplifying Polynomial Expressions

Objectives: The student will be able to:

- Apply the appropriate arithmetic operations and algebraic properties needed to simplify an algebraic expression
- Simplify polynomial expressions using addition and subtraction.
- Multiply a polynomial and a polynomial

B. Solving Equations

Objective: The student will be able to:

- Solve multi-step equations

C. Rules of Exponents

Objectives: The student will be able to:

- Simplify expressions using the laws of exponents
- Evaluate powers that have zero or negative exponents

D. Binomial Multiplication

Objective: the student will be able to:

- Multiply two binomials

E. Factoring

Objectives: The student will be able to:

- Identify the greatest common factor of the terms of a polynomial expression
- Express a polynomial as a product of a monomial and a polynomial
- Find all factors of the quadratic expression ax^2+bx+c by factoring

F. Radicals

Objective: the student will be able to:

- Simplify radical expressions

G. Linear Functions

Objectives: the student will be able to:

- Identify and calculate the slope of a line
- Graph linear functions using a variety of methods
- Determine the equation of a line

H. Systems of Equations

Objectives: the student will be able to:

- Solve a system of linear equations using a variety of methods

Entering Algebra 2 - Summer Assignment SHOW YOUR WORK

Simplify each expression.

1) $\frac{6}{12p} \cdot \frac{16}{8p}$

A) $\frac{1}{p^2}$ B) 12

C) $\frac{15p^2}{17}$ D) 11

2) $\frac{9}{10} \div \frac{3}{20b}$

A) $\frac{19}{13b}$ B) $6b$

C) $\frac{11b}{4}$ D) $\frac{17}{20}$

3) $\frac{4x}{2} - \frac{6x}{2xy}$

A) $\frac{5xy-6}{2y}$

B) $\frac{12+4x+3yx+3y^2}{12y}$

C) $\frac{15x}{2y}$

D) $\frac{2xy-3}{y}$

4) $\frac{5x}{2y} - \frac{5}{3}$

A) $\frac{15x-10y}{6y}$

B) $\frac{25x+5-6y}{10y}$

C) $\frac{30x+5-6y}{10y}$

D) $\frac{30x+5-6y+2yx}{10y}$

5) $\frac{m-2n}{10nm} + \frac{m+2n}{10nm}$

A) $\frac{m-n}{6n^2m^3}$ B) $\frac{m^2-mn-12n^2}{36n^4m^6}$

C) $\frac{2m-n}{6n^2m^3}$ D) $\frac{1}{5n}$

6) $\frac{x-5y}{9y} - \frac{x-6y}{9y}$

A) $\frac{3x+y}{9y}$ B) $\frac{4x+y}{9y}$

C) $\frac{2x+y}{9y}$ D) $\frac{1}{9}$

Simplify.

7) $2p^3 \cdot 2p^0$

A) $4p^3$ B) p^6
C) $6p^4$ D) $18p^9$

8) $5v^7 \cdot 2v^6$

A) $18v^9$ B) $21v^3$
C) $10v^{13}$ D) $15v^2$

Simplify. Your answer should contain only positive exponents.

9) $\dfrac{x^4y^0}{(yx^3)^2}$

A) $8x^{12}y^{16}$ B) 1
C) y^4 D) $\dfrac{1}{y^2x^2}$

10) $\dfrac{(x^2y^3)^2}{x^4y^3}$

A) y^3 B) x^5
C) $\dfrac{8y^{12}}{x^3}$ D) $\dfrac{y^4}{4x^2}$

Simplify.

11) $2\sqrt{125}$

A) $15\sqrt{3}$ B) $10\sqrt{5}$
C) -30 D) 24

12) $3\sqrt{18}$

A) $9\sqrt{2}$ B) $4\sqrt{3}$
C) 18 D) $-10\sqrt{2}$

Simplify each expression.

13) $\dfrac{17}{4}p + 1 + \dfrac{2}{7}p$

A) $1 + \dfrac{87}{28}p$ B) $1 + \dfrac{317}{84}p$
C) $\dfrac{33}{5}p$ D) $1 + \dfrac{127}{28}p$

14) $\dfrac{29}{7}r + 1 - \dfrac{7}{6}r - \dfrac{25}{8}$

A) $-\dfrac{17}{8} + \dfrac{125}{42}r$
B) $-2r$
C) $\dfrac{39}{8}r + \dfrac{9}{7}$
D) $-\dfrac{17}{8} - \dfrac{155}{42}r$

15) $-7(p+1)-9(9p+4)$

A) $56p^2-20p$ B) $56p^2-22p$

C) $-88p-43$ D) $56p^2-25p$

16) $(5x-7x^2+2)+(x^2-3x-7)$

A) $-6x^2+2x-5$

B) $-4x^2-8$

C) $-4x^2+2x-5$

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

Solve each equation.

17) $8(a+7)=-8a+40$

A) { All real numbers. }

B) $\{14\}$

C) $\{-1\}$

D) $\{-10\}$

18) $-4p+32=-6(-7p+3)+4$

A) $\{-4\}$ B) $\{-16\}$

C) $\{15\}$ D) $\{1\}$

19) $-\frac{5}{2}r+\frac{11}{5}=-\frac{7}{5}r+\frac{11}{6}$

A) $\left\{-\frac{11}{6}\right\}$ B) $\left\{-\frac{3}{2}\right\}$

C) $\left\{\frac{1}{3}\right\}$ D) No solution.

20) $\frac{19}{6}m+\frac{5}{3}=-\frac{19}{12}+m$

A) $\left\{\frac{3}{2}\right\}$

B) { All real numbers. }

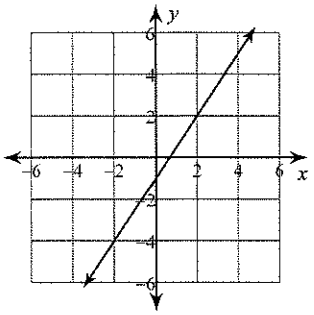
C) $\left\{-\frac{3}{2}\right\}$

D) $\left\{\frac{3}{4}\right\}$

Sketch the graph of each line.

21) $y = \frac{3}{2}x + 1$

A)



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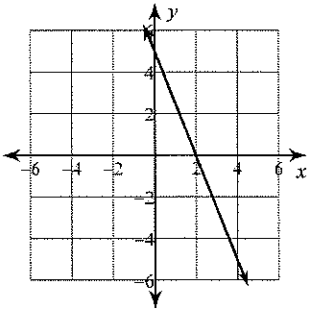

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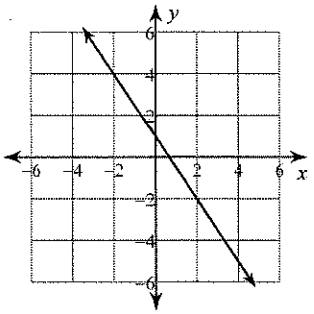

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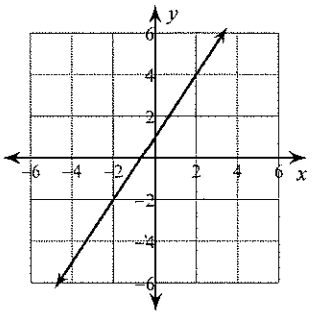
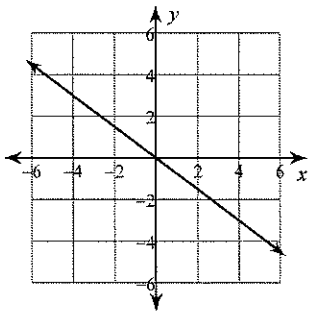


22) $3x - 4y = 0$

A)



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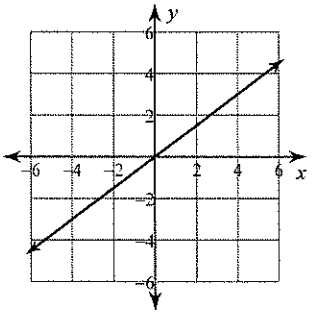

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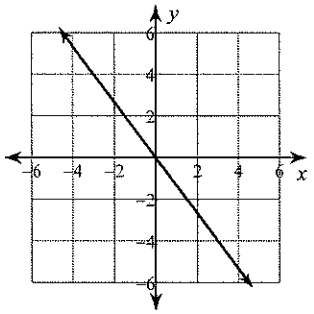

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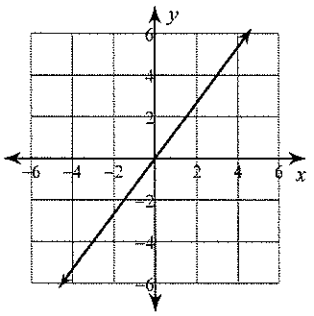


Write the slope-intercept form of the equation of each line given the slope and y-intercept.

23) Slope $= -\frac{3}{2}$, y-intercept $= -5$

A) $y = \frac{3}{2}x - 5$

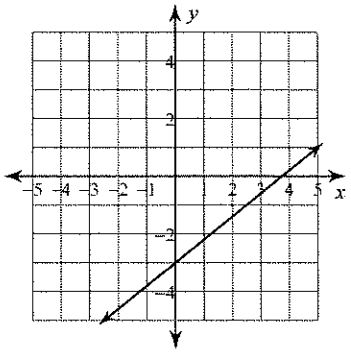
B) $y = -\frac{3}{2}x - 5$

C) $y = -5x - \frac{3}{2}$

D) $y = -2x - 5$

Write the slope-intercept form of the equation of each line.

24)



A) $y = \frac{4}{5}x - 3$ B) $y = \frac{3}{5}x + \frac{1}{5}$

C) $y = \frac{1}{5}x - 3$ D) $y = -3x + \frac{1}{5}$

25) $8x - y = -5$

A) $y = 5x + 8$ B) $y = 8x + 5$

C) $y = 2x + 5$ D) $y = 5x + 2$

26) $y - 5 = -4(x + 1)$

A) $y = 2x + 1$ B) $y = x + 2$

C) $y = 4x + 1$ D) $y = -4x + 1$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

27) through: $(1, -5)$, slope $= -8$

A) $y = x - 8$ B) $y = -x - 8$

C) $y = 3x - 8$ D) $y = -8x + 3$

Write the slope-intercept form of the equation of the line through the given points.

28) through: $(0, 4)$ and $(-2, 3)$

A) $y = \frac{1}{2}x + 4$ B) $y = 4x + \frac{1}{2}$

C) $y = 2x + \frac{1}{2}$ D) $y = -4x + \frac{1}{2}$

Write the slope-intercept form of the equation of the line described.

29) through: $(-1, -4)$, parallel to $y = x + 5$

A) $y = 5x + 3$ B) $y = 3x - 3$

C) $y = x - 3$ D) $y = -3x + 3$

30) through: $(-4, 3)$, perp. to $y = \frac{2}{3}x$

A) $y = \frac{3}{2}x - 3$

B) $y = -3x + \frac{3}{2}$

C) $y = -3x - \frac{3}{2}$

D) $y = -\frac{3}{2}x - 3$

Find each product.

31) $(a + 5)(5a + 1)$

A) $5a^2 + 24a - 5$

B) $5a^2 - 24a - 5$

C) $5a^2 + 26a + 5$

D) $5a^2 + 5$

32) $(4x - 4)(3x - 4)$

A) $20x^2 + 5$

B) $20x^2 + 29x + 5$

C) $12x^2 - 28x + 16$

D) $12x^2 + 16$

33) $(2x+5)^2$

A) $4x^2+20x+25$
B) $25x^2-16$
C) $4x^2+25$
D) $4x^2-25$

34) $(7m-6)(7m+6)$

A) $49m^2-84m+36$
B) $16m^2+64m+64$
C) $49m^2-36$
D) $16m^2-64$

Factor each completely.

35) $r^2-12r+35$

A) $(r-5)(r+7)$
B) $(r-5)(r-7)$
C) $(r+1)(r+5)$
D) $(r+7)(r+5)$

36) $n^2+14n+48$

A) $(n+6)(n+8)$
B) $(n+4)(n+12)$
C) $(n+16)(n+3)$
D) $(n+6)(n-8)$

37) $3n^2-20n+25$

A) $(2n+3)(n-7)$
B) $(5n+9)(n+9)$
C) $(3n-5)(n-5)$
D) $(3n+7)(n+3)$

38) x^2-4

A) $(5x+3)(5x-3)$
B) $(x+2)(x-2)$
C) $(2x+1)(2x-1)$
D) $(x-2)^2$

39) $27v^2-3$

A) $3(3v+1)(3v-1)$
B) $3(3v+1)^2$
C) $3(9v+1)^2$
D) $3(3v-1)^2$

40) $7n^2+2n$

A) $7n(n+2)$
B) $n(7n+1)$
C) $n(7n+2)$
D) $n(7n-2)$

Evaluate each function.

41) $h(x) = x^2 + 5x$; Find $h(4)$

A) 14 B) −6
C) 66 D) 36

42) $f(n) = n^3 - n^2 - n$; Find $f(-5)$

A) 174 B) −10
C) 15 D) −145

43) $f(x) = x^2 + 1$; Find $f(-10)$

A) −99 B) 65
C) 101 D) 26

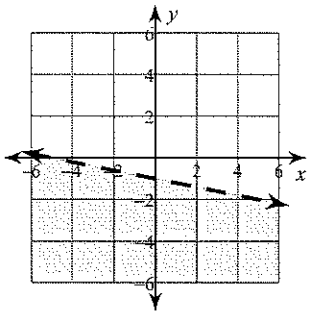
44) $g(n) = -3n - 1$; Find $g(0)$

A) −4 B) −1
C) −25 D) 8

Sketch the graph of each linear inequality.

45) $y \leq \frac{1}{5}x - 1$

A)



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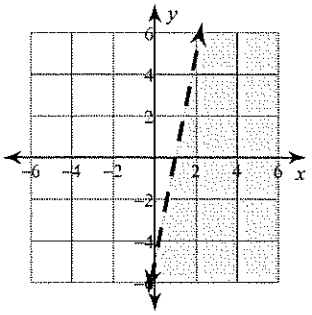

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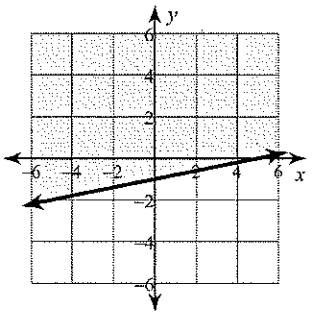

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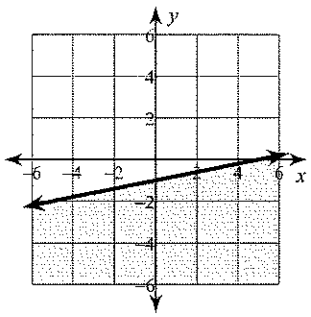
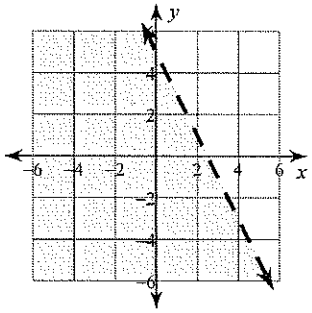


46) $2x + y > 5$

A)



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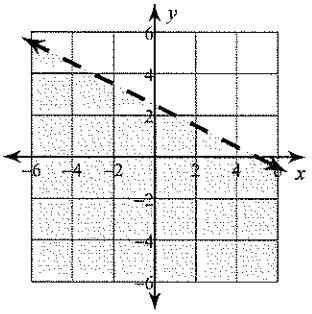

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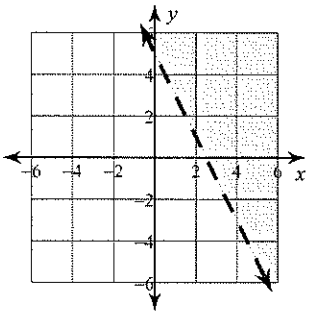

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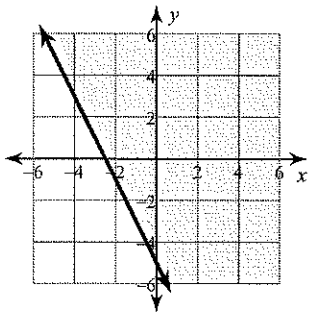


Solve each system by elimination.

47) $-6x - 8y = -6$
$6x - 3y = -27$

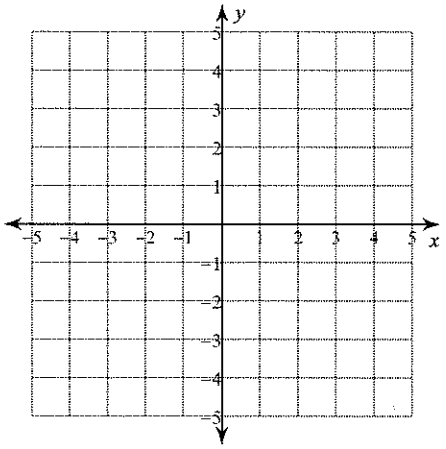
A) $(3, 3)$ B) $(3, -3)$
C) $(9, 3)$ D) $(-3, 3)$

48) $-12x + 5y = -26$
$6x - 6y = 6$

A) $(3, 2)$ B) No solution
C) $(2, 3)$ D) $(2, 1)$

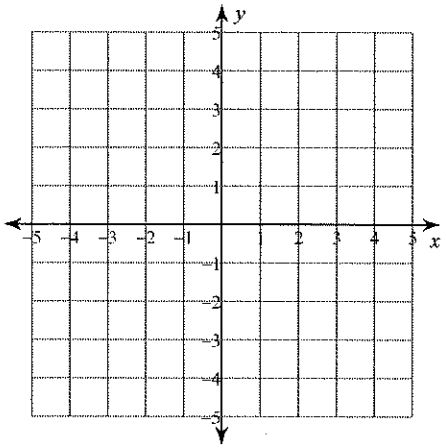
Solve each system by graphing.

49) $y = \frac{1}{2}x + 2$
$y = 2x - 1$



A) $(2, 3)$ B) $(1, -3)$
C) $(1, -1)$ D) $(1, 3)$

50) $y = x + 3$
$y = -2x - 3$



A) $(-1, 1)$ B) No solution
C) $(-2, 1)$ D) $(-1, -1)$

Solve each system by substitution.

51) $y = 7x + 17$
$-4x - 2y = 2$

A) $(2, 3)$ B) $(-2, 3)$
C) $(3, 6)$ D) $(3, -2)$

52) $2x + 3y = 8$
$y = -6x + 8$

A) $(-1, 3)$ B) $(1, 2)$
C) $(6, 5)$ D) $(1, 3)$

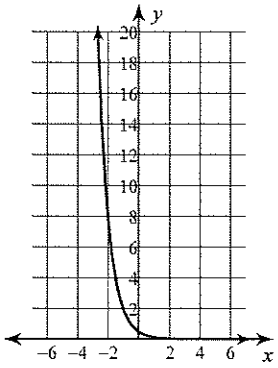
53) Scott and Ryan are selling cookie dough for a school fundraiser. Customers can buy packages of white chocolate chip cookie dough and packages of gingerbread cookie dough. Scott sold 2 packages of white chocolate chip cookie dough and 12 packages of gingerbread cookie dough for a total of $266. Ryan sold 1 package of white chocolate chip cookie dough and 5 packages of gingerbread cookie dough for a total of $113. What is the cost each of one package of white chocolate chip cookie dough and one package of gingerbread cookie dough?

A) package of white chocolate chip cookie dough: $7, package of gingerbread cookie dough: $16
B) package of white chocolate chip cookie dough: $13, package of gingerbread cookie dough: $20
C) package of white chocolate chip cookie dough: $18, package of gingerbread cookie dough: $17
D) package of white chocolate chip cookie dough: $12, package of gingerbread cookie dough: $8

Sketch the graph of each function.

54) $y = \frac{1}{3} \cdot 7^x$

A)



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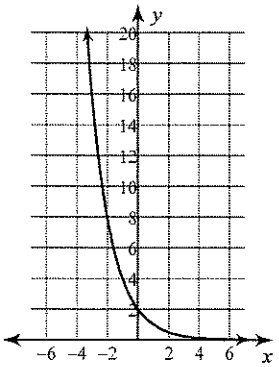

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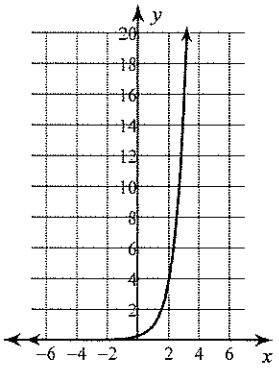

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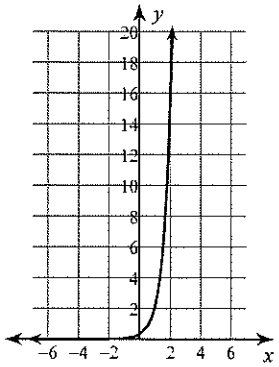
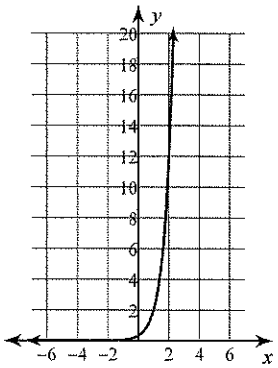


55) $y = \frac{1}{3} \cdot 6^x$

A)



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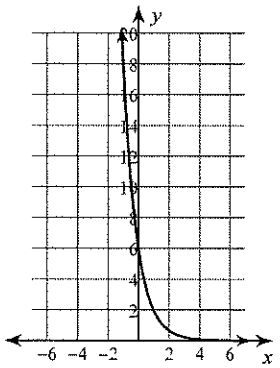

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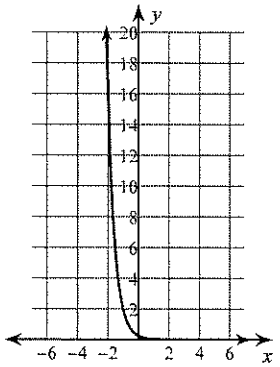
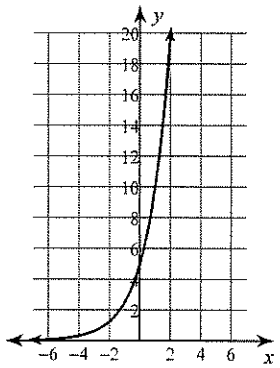


D)

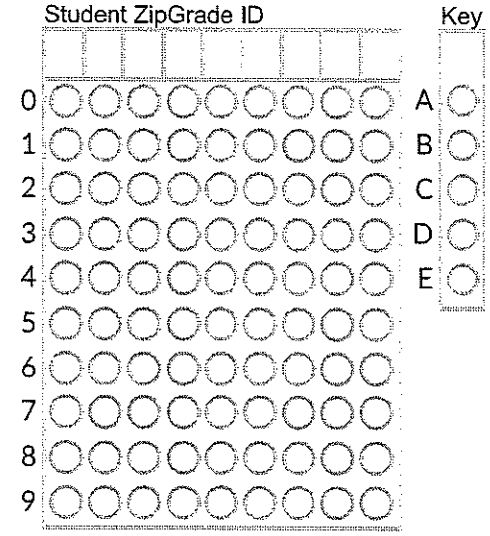


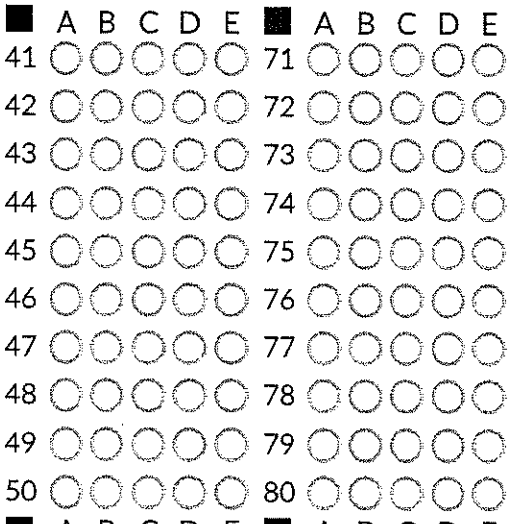
2018 ENTERING ALGEBRA 2 SUMMER SKILLS REVIEW

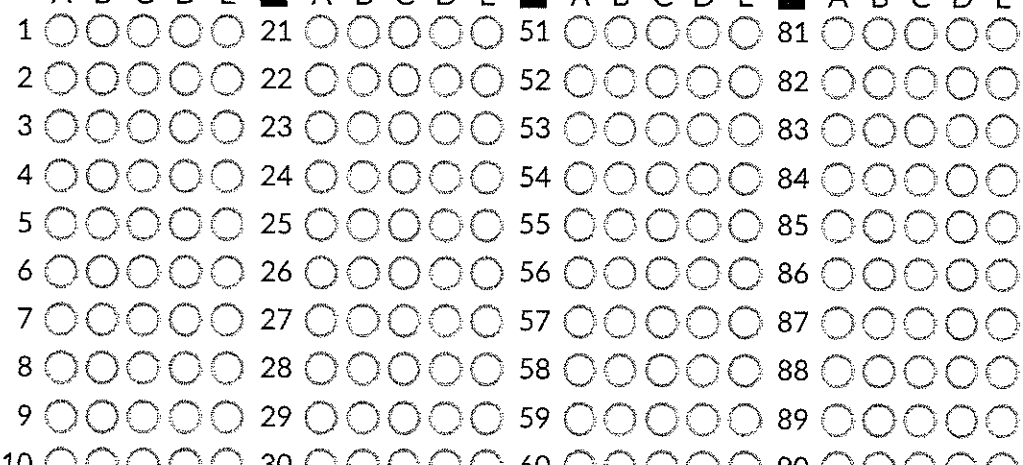
Name | Class | Quiz

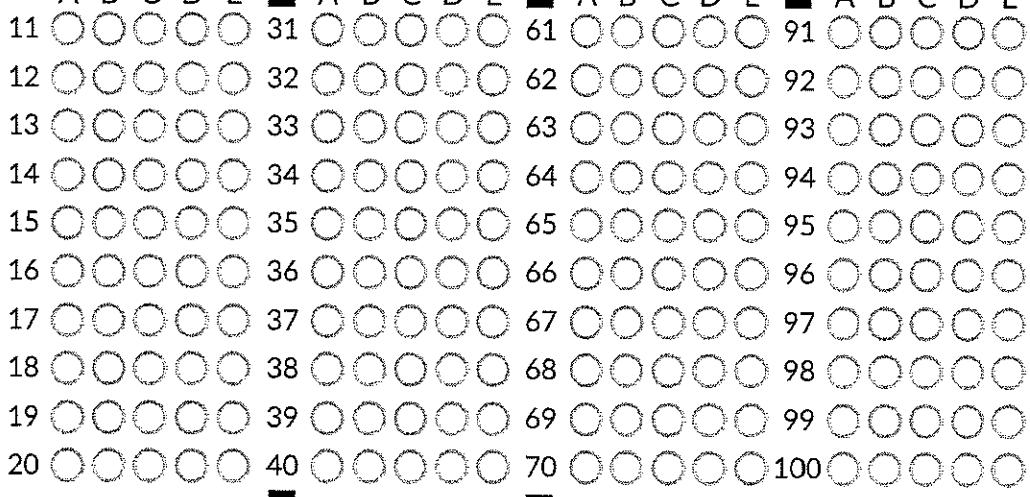
Student ZipGrade ID

Key









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• Do not fold or bend sheet
• Erase mistakes completely

• Use pencil or dark pen
• Fill circle fully