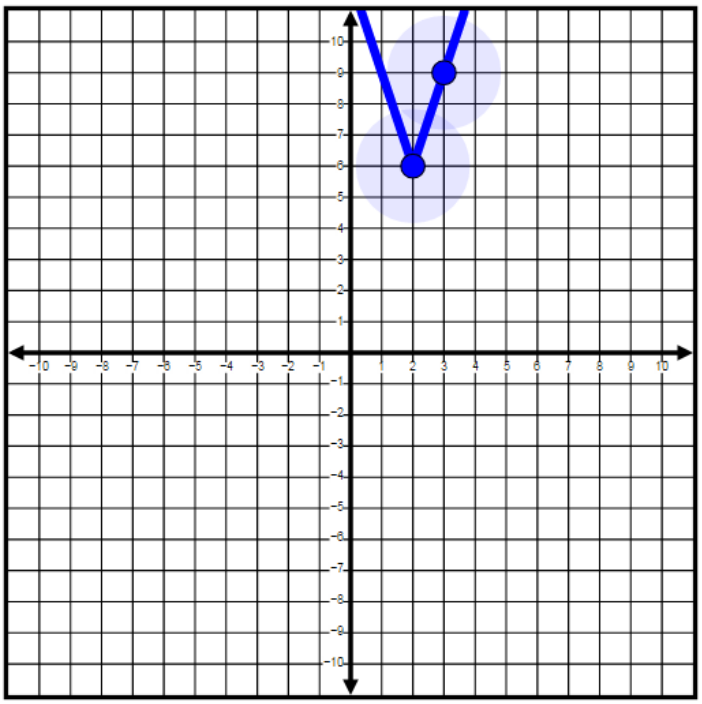
Released Test Answer and Alignment Document

Mathematics – Algebra 1

Spring 2016

Item Number	Answer Key	Evidence Statement Key	Integrated Course Alignment
1.	C	A-CED.4-2	Math 2
2.	−7 7	A-APR.3-1	Math 3
3.	A, D, E	A-REI.10	Math 1
4.	$a =$ 1 $b =$ 0 $c =$ −2 $d =$ 2	A-APR.1-1	Math 2
5.	D	A-REI.12	Math 1
6.	12	F-IF.6-1a	
7.	Part A: B Part B: D	F-BF.3-4	Math 2
8.	Part A: B Part B: D	N-RN.B-1	Math 2
9.	A, B, D, E, F	F-IF.1	Math 1
10.	A, C, D, E	A-SSE.1-2	Math 2
11.	B, D	A-REI.4b-2	Math 2

12.		F-IF.7b	Math 2
13.	$f(x) =$ [-3] $(x -$ [3] $)^2 +$ [6]	A-REI.4a-1	Math 2
14.	The equation can be rewritten as $y = -2(x +$ [-1] $)^2 +$ [7] . Therefore, the vertex of the graph of the function $y = -2x^2 + 4x + 5$ in the *xy*-coordinate plane is located at the point ([1] , [7]) .	A-SSE.3b	Math 2
15.	$x = \dfrac{d - c}{a - b}$	A-REI.3	Math 1
16.	The number of bacteria at the start of the experiment: 150 The rate of growth per hour: 0.02 The number of bacteria when $h = 1$: $150(1.02)$	A-SSE.1-1	Math 1
17.	D	S-ID.5	Math 1
18.	C, D	F-LE.2-1	Math 1
19.	D	A-CED.4-2	Math 2

<table>
<tr><td>20.</td><td>A, B, C, E</td><td>F-IF.A.Int.1</td><td>Math 1</td></tr>
<tr><td>21.</td><td>$-5x^3+30x^2+35x$
$-5x(x^2+$ -6 $x+$ -7 $)$
$-5x(x+$ -7 $)(x+1)$</td><td>A-SSE.2-4</td><td></td></tr>
<tr><td>22.</td><td>Part A: B
Part B: D</td><td>F-IF.4-1</td><td></td></tr>
<tr><td>23.</td><td>Part A:
B D E
Part B:
B C D F</td><td>F-Int.1-1</td><td></td></tr>
<tr><td>24.</td><td>Part A:
<table>
<tr><th>b</th><th>1 real root</th><th>2 unique rational roots</th><th>2 unique non-rational real roots</th><th>no real roots</th></tr>
<tr><td>-7</td><td>☐</td><td>☐</td><td>☑</td><td>☐</td></tr>
<tr><td>0</td><td>☐</td><td>☐</td><td>☐</td><td>☑</td></tr>
<tr><td>6</td><td>☑</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>10</td><td>☐</td><td>☑</td><td>☐</td><td>☐</td></tr>
</table>
Part B: -2</td><td>HS-Int.2</td><td></td></tr>
<tr><td>25.</td><td>Part A: D
Part B: C</td><td>S-ID.Int.2</td><td>Math 2</td></tr>
<tr><td>26.</td><td>Part A:
$t(2)=$ 39
Part B:
$t(2)$ < $t(1)$</td><td>F-IF.2</td><td>Math 1</td></tr>
<tr><td>27.</td><td>Part A: C
Part B: B
Part C: B</td><td>HS-Int.3-1</td><td>Math 1</td></tr>
</table>

	Part D: D		
28.	Part A: A, F Part B: A, B, E Part C: 55 batches of tomato salsa and 20 batches of corn salsa Part D: 64 batches of corn salsa	A-CED.3-1	Math 1
29.	Part A: See Rubric Part B: See Rubric	HS-C.6.1	Math 1
30.	See Rubric	HS-C.18.1	Math 1

#29 Rubric Part A	
Score	**Description**
1	Student response includes the following element. • **Computation component** = 1 point o Correct System of Equations Sample Student Response: $y > 0$ $x + y > -2$
0	Student response is incorrect or irrelevant.

#29 Rubric Part B	
Score	**Description**
2	Student response includes the following 2 elements. • **Reasoning component** = 2 points o Valid reasoning about why all points in the first quadrant have coordinates that satisfy $y > 0$ o Valid reasoning about why all points in the first quadrant have coordinates that satisfy $x + y > -2$ Sample Student Response: All points (x, y) in quadrant I have a positive x-coordinate and a positive y-coordinate. Therefore $y > 0$ is satisfied. Because all points (x, y) in quadrant I have a positive x-coordinate and a positive y-coordinate, the sum of x and y must also be positive. If $x + y$ is greater than 0, then $x + y$ must be greater than -2, and $x + y > -2$ is satisfied. **Note**: The response does not have to include the identification (x, y); referring to the x- and y-coordinates in general is enough. To earn the second point, the student must make the connection that anything greater than 0 is also greater than -2. It is ok if the student uses a specific example; such as showing the point $(2, 3)$ meets both conditions. However, if only a specific point is used and the student never refers to all points in general, award at most 1 point for reasoning.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#30 Rubric	
Score	**Description**
4	Student response includes the following 4 elements. • **Reasoning component** = 4 points o Valid representation of the distance/time relationship for the cars o Valid comparison of Car A to Car B o Valid comparison of Car A to Car C o Valid assumption stated Sample Student Response: The distance/time relationship of Car A is displayed as a linear graph. The equation for Car A is $D = 70t$. The distance/time relationship of Car B is displayed in a table. The relationship is also linear with an equation $D = 65t + 45$. The distance/time relationship of Car C is given by the linear equation $D = 68t + 20$. In each case, D is the distance in miles t hours after noon. If Car A reaches Car B, they will have traveled the same distance, or $70t = 65t + 45$. Therefore, it will take 9 hours for Car A to pass Car B (at about 9:00 p.m.). If Car A reaches Car C, they will have traveled the same distance, or $70t = 68t + 20$. It will take 10 hours for Car A to pass Car C (at about 10:00 p.m.). In order for this to be true, I would have to assume that the campground is a distance of at least 700 miles from where they began at noon and that all three cars continue to travel at a constant speed without taking breaks. **Note:** The comparison given here is with equations, but other methods of determining the relationship between time and distance for the cars are acceptable. These include using tables to represent all three cars, making graphical representations of the cars, calculating the rate of change for each car, or determining the total distance traveled by each car after a specific amount of time.
3	Student response includes 3 of the 4 elements.
2	Student response includes 2 of the 4 elements.
1	Student response includes 1 of the 4 elements.
0	Student response is incorrect or irrelevant.