

## Practice Test Answer and Alignment Document

### Mathematics: Algebra I

### Pencil-and-Paper

The following pages include the answer keys for all machine-scored items. A sample student response for the top score is included for all hand-scored constructed response items.

- Some answer keys include one possible sample student response. Other valid methods for solving the problem can earn full credit unless a specific method is required by the item.
- In items where the scores are awarded for full and partial credit, the definition of partial credit will be confirmed during range-finding (reviewing sets of real student work).
- If students make a computation error, they can still earn points for reasoning or modeling.

### Section 1

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	C	A-SSE.B.3.b
2.	-6	A-REI.B.3-1
3.	A	F-IF.C.7-1.a
4.	A, C, E	A-SSE.A.2
5.	B, E, F	N-RN.B.3
6.	21	A-REI.B.4.a
7.	D	A-CED.A.3
8.	C	F-BF.B.3
9.	D	A-CED.A.2
10.	A	A-REI.C.6
11.	C	F-LE.B.5-1

Item Number	Answer Key	Evidence Statement Key/ Content Scope
12.	B, C, D, E	F-IF.C.9
13.	-12	A-APR.A.1

## Section 2

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	A	S-ID.C.8
2.	121	F-IF.A.3
3.	D	A1.R.1 A-REI.B.4.b
4.	B	A1.M.7 A-CED.A.3
5.	<p><b><u>Sample Top Score Response</u></b></p> $x + y = 1$ $y = -x + 1$ $2x - 3(-x + 1) = 17$ $2x + 3x - 3 = 17$ $5x = 20$ $x = 4$ $y = -4 + 1 = -3$ <p>Thus, the solution is <math>(4, -3)</math>. Confirming that the solution is valid:</p> $4 + (-3) = 1$ $2(4) - 3(-3) = 17$ $8 + 9 = 17$ <p>Since both equations are true, the solution is valid.</p> <p><b>Refer to the Holistic Rubric for 4-Point Reasoning Constructed Response Items for score point information.</b></p>	A1.R.8 A-REI.A.1 A-REI.C.6
6.	C, E	A1.M.5 S-ID.B.6b
7.	B	F-IF.A.1
8.	B, G	A-REI.D.11
9.	C	F-IF.B.6-2

## Section 3

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	B	F-IF.B.5
2.	D	A1.M.2 A-CED.A.2
3.	<p><b><u>Sample Top Score Response</u></b></p> <p><b>Part A:</b></p> <p>The graph of the function <math>f</math> is a parabola opening down with a vertex 3 units above the <math>x</math>-axis. Shifting the function down by more than 3 units would result in a graph with no <math>x</math>-intercepts. The transformation would be of the form <math>g(x) = f(x) + k</math> where <math>k &lt; -3</math>.</p> <p><b>Part B:</b></p> <p>There is no such transformation. The graph of <math>f</math> is a parabola with two <math>x</math>-intercepts and a domain of all real numbers. No matter how much the parabola is shifted to the left or right, there will always be two <math>x</math>-intercepts.</p> <p><b>Refer to the Holistic Rubric for 4-Point Reasoning Constructed Response Items for score point information.</b></p>	A1.R.10 F-BF.B.3
4.	D, E	A1.R.3 A-REI.D.12

Item Number	Answer Key	Evidence Statement Key/ Content Scope
5.	<p><b><u>Sample Top Score Response</u></b></p> <p><b>Part A:</b> The situation is best modeled with an exponential function, because the resale value is decreasing at a constant percent rate of 15% per year.</p> <p><b>Part B:</b> The situation can be modeled by the function <math>v(t) = p(0.85)^t</math>, where <math>p</math> is the value of the car when it was purchased, <math>t</math> is the number of years since it was purchased, and <math>v</math> is the current value of the car. We can use the fact that the value of the car 2 years after it was purchased was \$17,918 to find the value of the car when it was purchased by substituting into the function and solving for <math>p</math>.</p> $17,918 = p(0.85)^2$ $17,918 = 0.7225p$ $p = 24,800$ <p>This means that the value of the car when it was purchased was \$24,800.</p> <p><b>Refer to the Holistic Rubric for 4-Point Modeling Constructed Response Items for score point information.</b></p>	A1.M.1 F-LE.A.1c
6.	125	A-SSE.B.3.a

## Section 4

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	C	A-REI.D.10
2.	A	S-ID.B.6b
3.	B	A1.M.4 F-IF.A.2
4.	B	A1.R.4 F-IF.C.9
5.	<p><b><u>Sample Top Score Response</u></b></p> <p>Let <math>x</math> represent the number of hours in one week that the student works at the doctor’s office, and let <math>y</math> represent the number of hours the student tutors.</p> <p>The system of inequalities is</p> $\begin{cases} x + y \leq 20 \\ 15x + 25y \geq 375 \end{cases}$ <p>Solving for the intersection of the lines:</p> $x + y = 20 \rightarrow y = 20 - x$ $15x + 25(20 - x) = 375$ $15x + 500 + 25x = 375$ $-10x = -125$ $x = 12.5$ $y = 20 - 12.5 = 7.5$ <p>Since the student only works a whole number of hours, the student should work at the office 12 hours each week since <math>15(12) + 25(8) = 380</math> and if the student worked at the office for 13 hours or more, the student would earn less than \$375.</p> <p><b>Refer to the Holistic Rubric for 4-Point Modeling Constructed Response Items for score point information.</b></p>	A1.M.6 A-CED.A.3

<b>Item Number</b>	<b>Answer Key</b>	<b>Evidence Statement Key/ Content Scope</b>
6.	B	A1.R.10 A-REI.D.11 F-BF.B.3
7.	A, E	A-REI.B.4.b
8.	D	F-LE.A.2