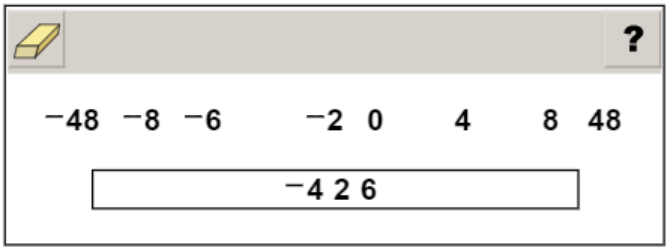
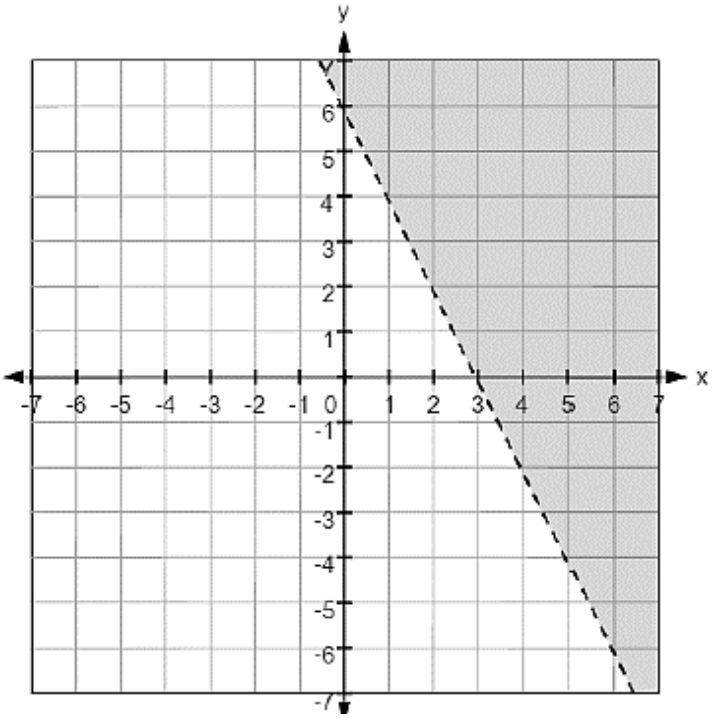
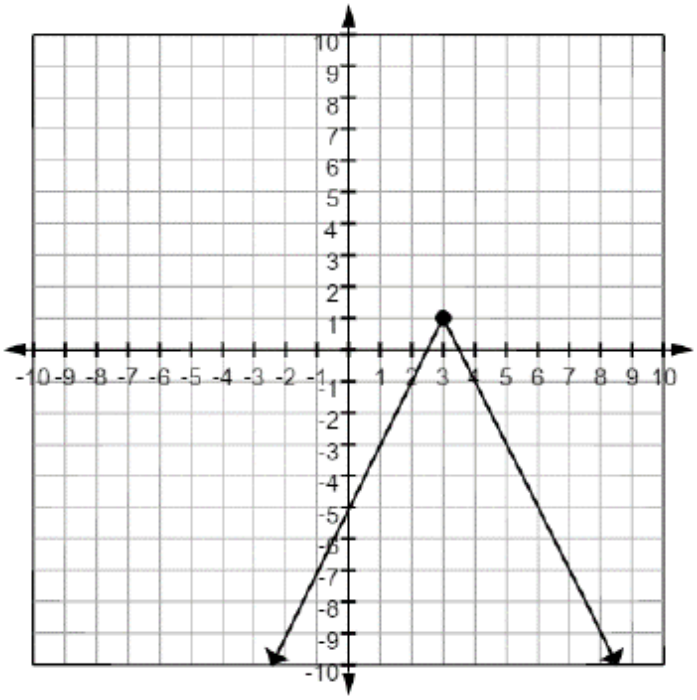
LEAP 2025 Algebra I
Practice Test Answer Key

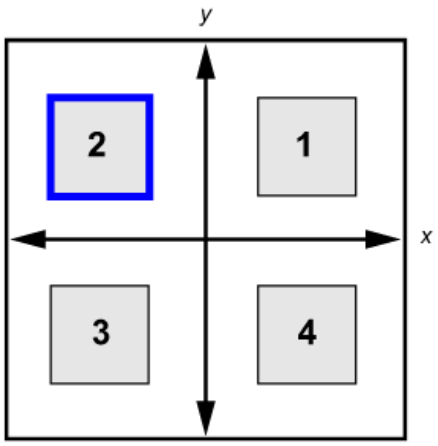
This document contains the answer keys and rubrics for the LEAP 2025 Algebra I Practice Test.

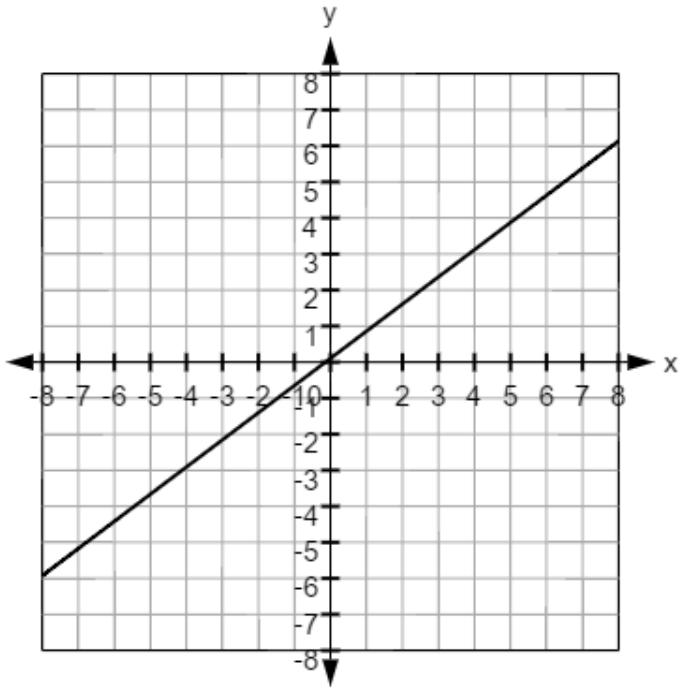
Session 1a				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
1	I	1	 *order does not matter	A1: A-APR.B.3
2	I	1		A1: A-REI.D.12
3	I	1	C	A1: A-APR.A.1
4	I	1	D	A1: A-REI.D.12
5	I	2	Part A: D Part B: B	LEAP.I.A1.7
6	I	1	$f(2)$ [is greater than] $g(2)$ and $f(-2)$ [is less than] $g(-2)$.	A1: F-IF.C.9

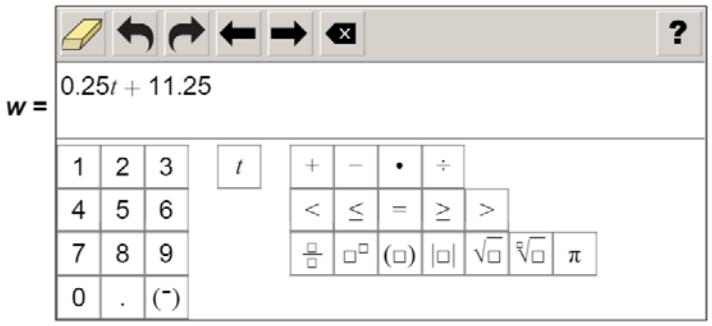
Session 1a				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
7	I	1	If $C(4) = 398$, then [4] pairs of sunglasses cost $ [398.00].	LEAP.I.A1.1
8	I	1	C	A1: A-CED.A.4

Session 1b				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
9	I	1		A1: F-IF.C.7b
10	I	4	Part A: D Part B: A, B, C Part C: 11 Part D: 13	A1: A-CED.A.3

Session 1b				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
11	I	1	Two response options: $x = \frac{\boxed{c-d}}{\boxed{b-a}}$ OR $x = \frac{\boxed{d-c}}{\boxed{a-b}}$	A1: A-REI.B.3
12	I	1	C	A1: A-SSE.B.3c
13	II	3	See Rubric	LEAP.II.A1.1 A1: N-RN.B.3
14	III	3	See Rubric	LEAP.III.A1.3 A1: A-CED.A.3

Session 2				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
15	I	1	6.7	A1: A-REI.C.6
16	I	1		A1: F-BF.B.3
17	I	1	B	A1: A-CED.A.4
18	I	2	Part A: B Part B: D	A1: F-IF.B.4
19	I	1	A, C, D	A1: S-ID.B.5
20	I	1	D	A1: F-IF.B.5
21	I	1	-2	A1: F-IF.B.6
22	I	1	C, E	A1: A-REI.D.10
23	I	1	24.8 ▼ bacteria per minute ▼.	A1: F-IF.B.6
24	I	1	B	A1: A-SSE.A.1b
25	I	1	-1, 7, 1, 7	A1: A-SSE.B.3a
26	I	1	A,D	A1: F-IF.A.1
27	III	6	See Rubric	LEAP.III.A1.1 7.RP.A.3 7.EE.B.3

Session 2				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
28	II	4	Part A:  Part B: See Rubric Part C: See Rubric	LEAP.II.A1.10 8.EE.B

Session 3				
Task #	**Task Type**	**Value (Points)**	**Key**	**Alignment**
29	I	2	Part A:  Part B: 4.5	A1: F-LE.A.2
30	I	2	Part A: B Part B: D	A1: F-IF.A.2
31	I	1	$(x -$ 1/2 $)^2 =$ 9/4 .	A1: A-REI.B.4a
32	I	1	C	A1: A-SSE.A.1a
33	I	2	Part A: 4 Part B: A, E	LEAP.I.A1.5 A1: A-APR.B.3 A1: A-SSE.B.3a
34	I	2	Part A: (18,0) width Part B: 9	A1: F-IF.C.8a
35	I	1	A,C,E	A1: A-REI.B.4b
36	I	2	Part A: D Part B: C	A1: A-SSE.A.2
37	II	4	See Rubric	LEAP.II.A1.8 A1: F-IF.C.8a
38	III	3	See Rubric	LEAP.III.A1.2 A1: F-BF.A.1a A1: F-IF.B.6
39	III	3	Part A: See Rubric Part B: See Rubric	LEAP.III.A1.2 A1: A-CED.A.1 A1: A-CED.A.3

RUBRICS

Task #13	
Score	**Description**
3	The student response includes each of the following 3 elements: • Correct identification of *a* as rational and *b* as irrational • Correction identification that the product is irrational • Correction reasoning use to determine rational and irrational numbers Sample Student Response: A rational number can be written as a ratio. In other words, a number that can be written as a simple fraction. $a = 0.44444\ldots$ can be written as $\frac{4}{9}$. Thus, *a* is a rational number. All numbers that are not rational are considered irrational. An irrational number can be written as a decimal, but not as a fraction. $b = 0.354355435554\ldots$ can not be written as a fraction, so it is irrational. The product of an irrational number and a rational number (both nonzero) is always irrational, so the product of *a* and *b* is irrational. You can also see it is irrational with my calculations: $\frac{4}{9}(.354355435554\ldots) = .15749\ldots$ $.15749\ldots$ is irrational.
2	The student response includes 2 of the 3 elements.
1	The student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

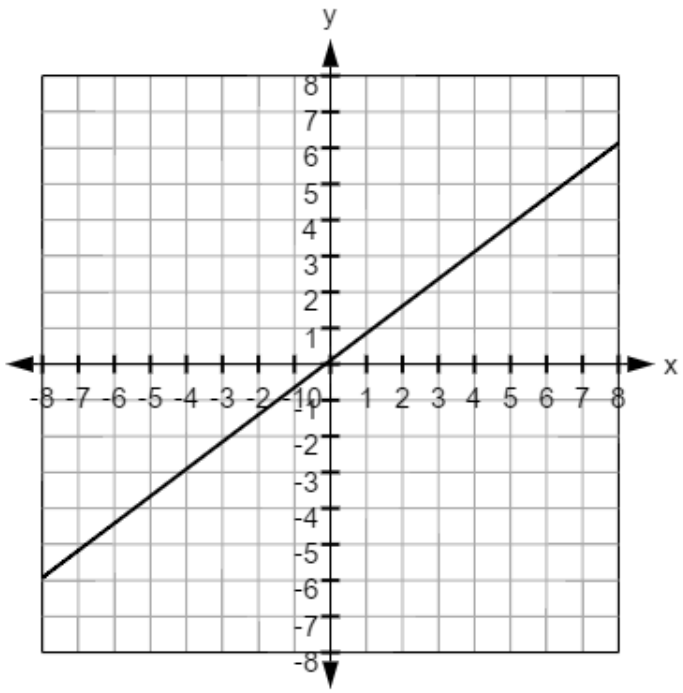
Task #14	
Score	**Description**
3	The student response includes each of the following 3 elements: • Speed of riverboat for current tour • Speed of time of riverboat for shorter tour • Decision with justification Note: There is no reason given in the task on why the riverboat takes longer going upstream than downstream. One reason could be the current of the river. Another could be that there is more sightseeing happening upstream and the boat tends to slow down. Whatever the case, the decision should be made whether to treat the upstream/downstream trip separately or as one. Either is fine, but the response should be consistent in all parts. Sample Student Response: Traveling upstream, the riverboat goes 25 miles in 2 hours giving it an average speed of 12.5 mph. Downstream, it travels the same distance in less time, going a distance of 25 miles in 1.25 hours. This gives an average speed of 20 mph. Using the upstream speed of 12.5 mph, a 20-mile trip would take 1.6 hours. Using the downstream speed of 20 mph, the trip back would take 1 hour. The entire trip would take 2.6 hours. A 20-mile tour upstream and back again would take about 6 minutes longer than the desired 2.5 hours (2 hours 30 minutes). So technically the answer is no, such a trip is not possible using the current speeds. But possibly increasing the speed only slightly could allow for the trip to fit into the desired time constraint. Note: Students could instead use a single speed approach. For example, the total trip of 50 miles takes 3.25 hours giving an average speed of 15.4 mph. The shorter tour of 40 miles traveling 15.4 mph would take about 2.6 hours.
2	The student response include 2 of the 3 elements.
1	The student response includes of the 3 elements.
0	Student response is incorrect or irrelevant.

Task #27	
Part A	
Score	**Description**
2	Student response includes each of the following 2 elements: • Correct equation • Valid justification of how the equation was determined Sample Student Response: Let *m* be the number of cookies that Matt made. Then the number of cookies that Phil made would be 1.25m. Let *A* represent the total amount of money earned. $A = 0.25(0.80)(m + 1.25m)$ The total number of cookies made is the sum of the number Matt made and the number Phil made. Only 80% of the cookies sold, so the total number needs to be multiplied by 0.8. Each cookie sold for \$0.25, so the total amount earned would be 0.25 times the 80% that were sold.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Task #27	
Part B	
Score	**Description**
2	Student response includes each of the following 2 elements: • Determination that Matt made 160 cookies and Phil made 200 cookies • Valid work shown Sample Student Response: $72 = 0.25(0.80)(m + 1.25m)$ $72 = (0.20)(2.25m)$ $72 = 0.45m$ $160 = m$ $1.25m = 1.25(160) = 200$ Note: Student may earn the points in Part B by correctly using an incorrect equation from Part A.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.
Part C	
Score	**Description**
2	Student response includes the following element: • Full justification for raising the price Sample Student Response: If they raise the price to \$0.50 and only sell 70% of the cookies, the equation will be $A = 0.5(0.70)(160 + 200)$. In this case they will make \$126, which is over \$50 more than they made this year. They should raise the price of the cookies. Note: The student may give a valid reason for not raising the price based on risk. This should still earn credit. Also, the student may earn the points in Part C by correctly using an incorrect equation from Part A or B.
1	Student response includes partial justification for raising the price.
0	Student response is incorrect or irrelevant.

Task #28

Part A

Score	Description
1	 *machine scored

Part B

Score	Description
2	Student response includes the following 2 elements: • Explanation of why the coordinate values have the same ratio • Explanation of the exception regarding the y-intercept Sample Student Response: The graph passes through the origin, so if (*x*, *y*) is a point on the line, then the slope can be represented by $\frac{y-0}{x-0}$ which is the same as the ratio of the coordinate values. Because the slope is constant, the ratio is the same for all points on the line, with the exception of the *y*-intercept which is (0, 0). The *y*-intercept (the origin) does not work because 0 divided by 0 is undefined.
1	Student response includes 1 of the following 2 elements.
0	Student response is incorrect or irrelevant.

Part C

Score	Description
1	Student response includes the following element: • Explanation why the line does not have the same property as in Part B Sample Student Response: The equation $y = 3x - 2$ has a *y*-intercept of -2, so the line will not pass through the origin. As a result, the line will not have the same property as in Part B.
0	Student response is incorrect or irrelevant

Task #37	
Score	**Description**
4	Student response includes 3 of the following 4 elements: • Algebraic reasoning about the point $(2 + d, y)$ • Algebraic reasoning about the point $(2 - d, y)$ • Identification of the line of symmetry, $x = 2$ • Justification of the line $x = 2$ as the line of symmetry of $f(x)$ Sample Student Response: If $(2 + d, y)$ is on the graph of *f*, then $y = f(2 + d) = (2 + d)(2 + d - 4) = (2 + d)(d - 2) = d^2 - 4 = y$ Therefore, *y* = *y*, so if the point $(2 + d, y)$ is on the graph of *f*, then so is $(2 - d, y)$. The line *x* = 2 is a line of symmetry for the graph of *f*. I know this because *x*-values that are the same distance (absolute value) *d* from 2 yield equal *y*-values in the function. Notes: • Correct simplification is not necessary to earn the first point. • To earn the second point, the two expressions must match and have no mistakes • The student may appeal to a formula (such as, $x = -b/2a$) for the line of symmetry. • Any justification that addresses point pairs on either side of the line is accepted.
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.

Task #38	
Score	**Description**
3	Student response includes each of the following 3 elements: • Correct estimation for the average rate of change • Provides mathematical reasoning used to determine rate of change • Displays correct calculations used to derive the estimation for rate of change Sample Student Response: Looking at the graph, I can determine that a = 2.5 seconds. Thus, I know $h(2.5) = 34.25$. Using this information and knowing $h(1) = 23$ meters, I can determine the average rate of change from 1 to a as $\frac{34.25-23}{2.5-1} = \frac{11.25}{1.5} = 7.5$ meters per second. From looking at the graph, I can also determine that a, is where the maximum height will be reached and can also determine there is symmetry around a. The change in height between a and b is less than change between 1 and a. Thus, the rate of change will be close to 7.5 (but less than 7.5) and the value will be negative. I can also estimate that b = 3.6 seconds and $h(b) = 28$ meters, thus $\frac{34.25-28}{2.5-3.6} = \frac{6.25}{-1.1} = -5.68$ meters per second. So, a reasonable estimation for the average rate of change between a and b seconds is -6 meters per second.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

Task #39	
Part A	
Score	**Description**
1	Student response includes the following element: • Correct model Sample Student Response: $x + (x - 50) + (x - 100) + (x - 150) + (x - 200) = P$ Where *x* is the amount of money for the first place prize and *P* is the total amount of prize money.
0	Student response is incorrect or irrelevant
Part B	
Score	**Description**
2	Student response includes each of the following 2 elements: • Correct amounts for each of the five prizes; or a correct response based on an incorrect response in Part A • Valid work shown Sample Student Response: $x + (x - 50) + (x - 100) + (x - 150) + (x - 200) = 1000$ $5x - 500 = 1000$ $5x = 1500$ $x = 300$ Fifth place is \$100, fourth place is \$150, third place is \$200, second place is \$250, and first place is \$300. Note: Student may earn credit for a response in Part B based on an incorrect equation in Part A.
1	Student response includes one of the 2 elements.
0	Student response is incorrect or irrelevant