

Systems of Linear Equations: math test, Grade 9 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Checking pairs

/ 2 pts

Consider the system $3x + 2y = 8$ and $x - 3y = 10$. Is $(4, -2)$ a solution? Is $(1, 5)$ a solution? Justify.

2 Solve by graphing

/ 3 pts

Solve the system $y = x - 2$ and $y = -2x + 7$ by graphing. Complete a table of values for $x = 0, 1, 2, 3, 4$, draw both lines on a coordinate plane, and check your answer.

3 Substitution

/ 3 pts

Solve by substitution: $y = -2x + 1$ and $5x + 2y = 1$.

4 Elimination

/ 3 pts

Solve by elimination: $4x + 5y = 12$ and $6x - 7y = -40$.

5 How many solutions?

/ 2 pts

For each system, say how many solutions it has and explain.

a. $y = 3x - 2$ and $6x - 2y = 4$

b. $y = -x + 1$ and $x + y = 5$

6 Bike rental

/ 4 pts

Shop A charges 15 dollars plus 4 dollars per hour to rent a bike. Shop B charges 9 dollars plus 6 dollars per hour. Let h be the number of hours and c the total cost in dollars.

- Write a system of equations.
- After how many hours do both shops charge the same, and how much is it?
- Which shop is cheaper for a 5-hour rental?

7 Inequalities

/ 3 pts

Consider the system $x + y \leq 6$ and $y > 2x - 3$.

- Which boundary line is solid and which is dashed?
- Is $(1, 1)$ a solution? Is $(3, 2)$ a solution?
- Find the point where the two boundary lines meet.



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