

Graphing Inequalities and Systems with Shaded Regions

Grade 9 – Algebra 1 math · Test · Standards: A-REI.D.12, A-CED.A.3

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total. Show every test point, label boundary lines as solid or dashed and write constraints with clear variables. A calculator and straightedge are allowed. Plan on about 45 minutes.

Standards: A-REI.D.12, A-CED.A.3 · **Level:** Grade 9 Algebra 1

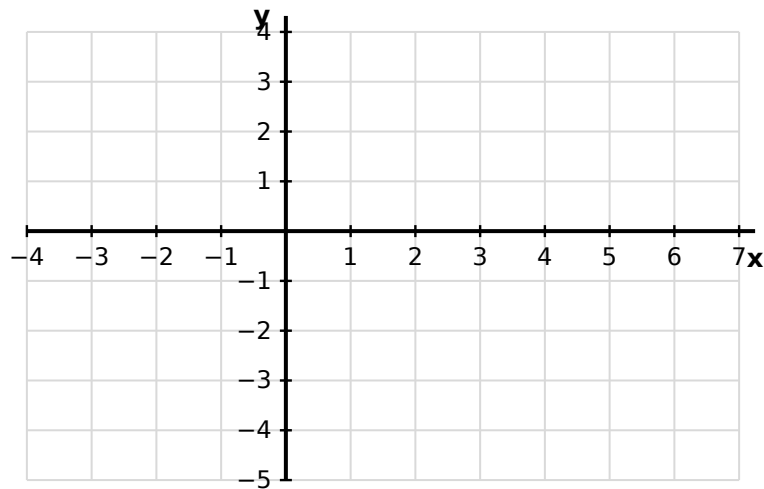
Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Test points (2 points)

Decide whether each point is a solution of $y < 3x - 4$. (a) (4, 7) (1 point) (b) (2, 2) (1 point)

Question 2 Graph an inequality (2 points)

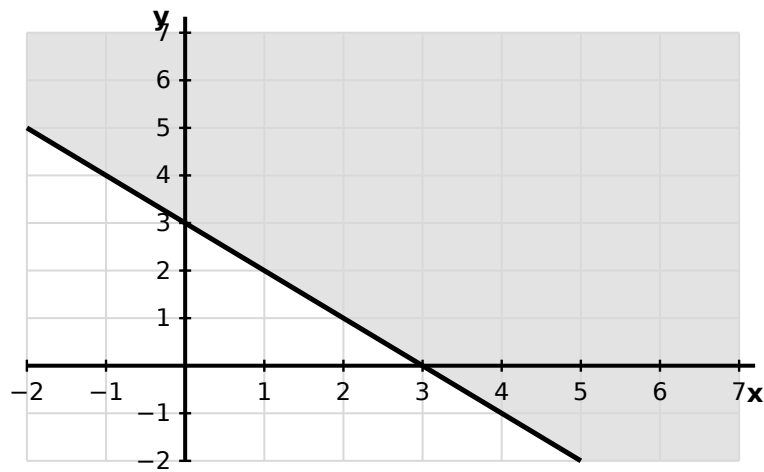
Graph $y \leq \frac{2}{3}x - 1$ on the grid.



Graph on this grid.

Question 3 Write the inequality (2 points)

Write the inequality for the graph.



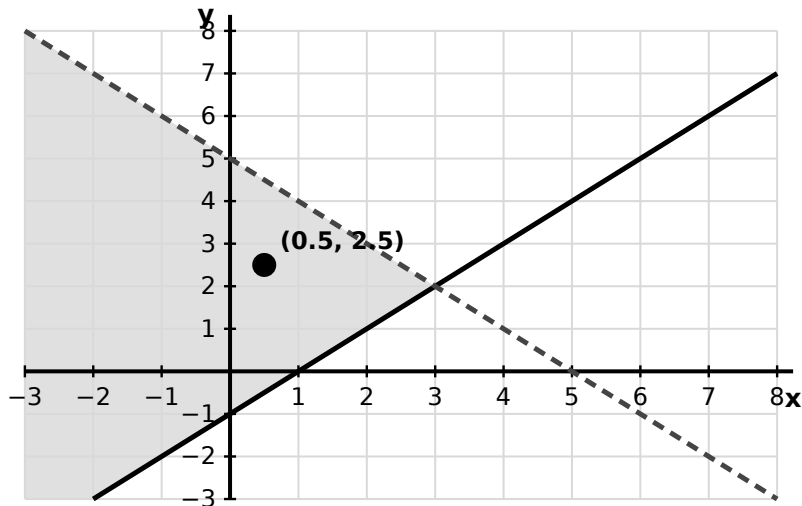
A shaded region.

Question 4 Solve for y (3 points)

Consider $6x - 3y > 9$. (a) Rewrite it with y alone. (1 point) (b) Is the boundary solid or dashed? (1 point) (c) Is $(0, 0)$ in the solution set? (1 point)

Question 5 Read a system (3 points)

Study the shaded solution region of a system of two inequalities.



A system of two inequalities.

(a) Write the two inequalities. (2 points) (b) Show that the point $(0.5, 2.5)$ is a solution. (1 point)

Question 6 Choir trip (3 points)

A choir trip has at most 50 seats. Adult tickets cost \$20 and student tickets cost \$12, and the budget is at most \$800. (a) Write a system. (1 point) (b) Is $(30, 20)$ feasible (adults, students)? (1 point) (c) Is $(25, 25)$ feasible? (1 point)

Question 7 Jewelry table (3 points)

Lena makes bracelets b and necklaces n . She wants at least 10 pieces in total and at most 6 necklaces. (a) Write the constraints, including that counts cannot be negative. (1 point) (b) Which of (4, 6), (3, 6) and (5, 4) are feasible? (1 point) (c) Give one more feasible point. (1 point)

Question 8 No solution (2 points)

Explain why the system $y > 4x + 9$ and $y < 4x - 2$ has no solution.