

Name: _____ Date: _____ Score: ____ / 10

INSTRUCTIONS

For multiple-choice questions, circle the letter of the correct answer. For short-answer and problem-solving questions, show your complete work in the space provided. No calculator unless your teacher says otherwise.

1**Which ordered pair is a solution to the system $y > x + 1$ and $y \leq -2x + 8$?**

Multiple Choice

A (1, 4)**B** (0, 0)**C** (5, 1)**D** (3, 0)**2****What does the "feasible region" of a system of inequalities represent?**

Multiple Choice

A The set of all points that satisfy every inequality in the system**B** The single point where all boundary lines intersect**C** The area outside all shaded regions**D** The boundary lines only**3****Short Answer — For the system $x + y \leq 10$, $x \geq 0$, $y \geq 0$, is the point (4, 5) in the feasible region? Justify your answer.**

Short Answer

4**A system of inequalities has no overlapping shaded region. What can you conclude?**

Multiple Choice

A The system has no solution**B** The system has infinitely many solutions**C** The system has exactly one solution**D** The lines are the same line**5****When graphing $y < 3x - 2$, what type of boundary line and shading should be used?**

Multiple Choice

A Dashed line, shade below**B** Solid line, shade below**C** Dashed line, shade above**D** Solid line, shade above

Unit 5 Test

Graphing Systems, Feasible Regions & Linear Programming

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When graphing $y \geq -x + 5$, what type of boundary line and shading should be used?

Multiple Choice

A

Solid line, shade above

B

Dashed line, shade above

C

Solid line, shade below

D

Dashed line, shade below

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Short Answer — Determine whether $(2, 2)$ satisfies the system $y \leq x + 1$ and $y \geq 2x - 5$.

Short Answer

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In a linear programming problem, the maximum or minimum value of the objective function always occurs at:

Multiple Choice

A

A vertex (corner point) of the feasible region

B

The center of the feasible region

C

Any point on the boundary

D

The origin

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Problem Solving — A student has at most \$20 to spend on pens (x , \$2 each) and notebooks (y , \$4 each), and needs at least 3 items total. Write a system of inequalities modeling this situation, including non-negativity constraints.

Problem Solving

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Problem Solving — A factory makes tables (x) and chairs (y). Each table takes 3 hours and each chair takes 1 hour to build, with at most 24 hours available per day. The factory must build at least 2 tables per day. Write a system of inequalities to model these constraints, including non-negativity.

Problem Solving