



Jakarta International
School

8th Grade – AG1

Practice Test - Black

Linear Systems

Name:

Date:

Score:

$\frac{\quad}{25}$

Goal 5: Solve and apply linear systems

Directions: Use systems of linear equations/inequalities to solve the following problems.

1. A rectangular board is to be constructed to the following specifications.
 - the perimeter is equal to or greater than 12 inches, but less than 20 inches
 - the ratio of adjacent side lengths is greater than 1 but less than 2.

Find all sets of integral (integer values) dimensions satisfying the above specifications (5 points)

2. **The Farmer in the Dilemma.** Once upon a time in the land of giants and beanstalks, there lived a farmer and his wife. One day the honorable tax collector came to the village and told the people that he was returning \$100 of the tax moneys to them on the condition that it be used to purchase exactly 100 farm animals. The farmer was chosen by the villagers to go into town and buy some cattle, some sheep, and some horses. He was to spend the entire \$100 on animals - no popcorn, jelly beans, or anything else. When he arrived in town, he discovered that sheep cost \$.50 each, cattle cost \$1.00 each, and horses cost \$10 each. Your job is to provide a solution to the farmer's dilemma. (5 points)

3. **The Great Doughnut Caper:** Dan's Donut Shop makes the best donuts in town - and makes it easy to get them: Dan accepts orders by phone, even offering home delivery.

One day, Mr. Allen, Mr. Brown, and Mr. Carter each ordered a different number of Dan's donuts; together they ordered five dozen. Dan prepared three boxes. In order to avoid any confusion, as he was filling the boxes he labeled each one with the respective customer's name. When he had filled the orders, Dan stepped back into his kitchen.

While he was out, who should enter the shop but Little Lester, the town prankster. Lester, a 10-year-old scamp, played practical jokes every chance he could.

Lester took 6 donuts out of Allen's box and put them into Brown's box. Before he could do anything to Carter's box, he heard Dan returning, so Lester ducked back out, escaping without Dan being aware of the mischief he had stirred up.

As soon as he learned of the switcheroo, Dan promptly made amends to Mr. Allen. Your task is to determine how many donuts were in each box before Lester entered the scene. After the switch was made, Allen's box contained one-third as many doughnuts as Carter's box; and Carter's box contained one-half as many doughnuts as Brown's box. (5 points)

