Name _____ Date _____ Class _____

Write and solve an inequality for each situation.

1. Rosa sells pet rocks at the fair for $5 each. She pays $50 to rent a table and it costs her $2 to package each rock. For what numbers of sales will Rosa make a profit?

Solution:

Let $r =$ the number of rocks Rosa sells.

$5r$ is what she gets for selling r rocks.

$5r > 50 + 2r$ where 50 is the cost of renting the table and $2r$ is her costs for packing r rocks.

$5r > 50 + 2r$

$3r > 50$

$r > 17$

2. Jamie has a job paying $25,000 and expects to receive a $1,000 raise each year. Wei has a job paying $19,000 a year and expects a $1,500 raise each year. How many years does Jamie make more money than Wei?

Let $y =$ number of years

$25,000 + 1,000y > 19,000 + $ _____

$-500y > -$ _____

$500y < $ _____

$y < $ _____

The table below shows the population in 2004 and the population change from 2003 of four cities. Use this table to answer questions 3–4.

3. If the trends in this table continue, after how many years y will the population of Manchester, NH, be **more** than the population of Vallejo, CA? Round your answer to the nearest tenth of a year.

 A $y > 0.2$
 B $y > 6.4$
 C $y > 34.6$

4. If the trends in this table continue, for how long x will the population of Carrollton, TX be **less** than the population of Lakewood, CO? Round your answer to the nearest tenth of a year.

 F $x < 11.7$
 G $x < 14.6$
 H $x < 20.1$

City	Population (2004)	Population Change (from 2003)
Lakewood, CO	141,301	−830
Vallejo, CA	118,349	−1,155
Carrollton, TX	117,823	+1,170
Manchester, NH	109,310	+261

LESSON 3-5

Problem Solving

Solving Inequalities With Variables on Both Sides

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Let $y =$ number of years

$25,000 + 1,000y > 19,000 + \mathbf{1,500y}$

$-500y > -\underline{\mathbf{6,000}}$

$500y < \underline{\mathbf{6,000}}$

$y < \underline{\mathbf{12}}$

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