

Acting Out

Mathematical Goals

- Model and write an equation in one variable and solve a problem in context.
- Create one-variable linear equations and inequalities from contextual situations.
- Represent constraints with inequalities.
- Solve word problems where quantities are given in different units that must be converted to understand the problem.

Common Core State Standards

MCC9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and exponential functions.

MCC9-12.A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

MCC9-12.N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

MCC9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.

MCC9-12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.

Part 1:

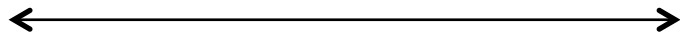
Erik and Kim are actors at a theater.

Erik lives 5 miles from the theater and Kim lives 3 miles from the theater.

Their boss, the director, wonders how far apart the actors live.

- On grid paper, pick a point to represent the location of the theater.
- Illustrate all of the possible places that Erik could live on the grid paper.
- Using a different color, illustrate all of the possible places that Kim could live on the grid paper.

1. What is the smallest distance, d , that could separate their homes? How did you know?
2. What is the largest distance, d , that could separate their homes? How did you know?
3. Write and graph an inequality in terms of d to show their boss all of the possible distances that could separate the homes of the 2 actors.



Name: _____ Date: _____ Period: _____

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Part 2:

The actors are good friends since they live close to each other. Kim has a leaky faucet in her kitchen and asks Erik to come over and take a look at it.

Kim estimates that the faucet in her kitchen drips at a rate of 1 drop every 2 seconds. Erik wants to know how many times the faucet drips in a week. Help Erik by showing your calculations below.

Kim estimates that approximately 575 drops fill a 100-milliliter bottle. Estimate how much water her leaky faucet wastes in a year in milliliters.