

Eileen's Work Week

Solving Systems of Inequalities

The problem

Eileen has two part time jobs. She works as a waitress at Lenny's and earns an average of \$15 per hour, including tips. She also does childcare at Weecare for \$10 per hour. She needs to earn at least \$450 per week to pay her bills, but she doesn't want to work more than 40 hours per week. Even though the Weecare job pays less, she likes it more, so she wants to work at least as many hours there as at Lenny's.

Let x = hours worked each week at Lenny's

Let y = hours worked each week at Weecare

1. Write an inequality for the total number of hours she must work.
2. Write an inequality for the total money she must earn.
3. Write an inequality to represent the division of her work hours.

The 3 inequalities you wrote form a system of inequalities. Graph the solution and use your graph to answer the following questions.

4. What are the 3 points of intersection of the borderlines? Explain the meaning and significance of each point.
5. What is the range of hours she can work at Lenny's?
6. What is the range of hours she can work at Weecare?
7. Choose 3 points from the shaded area (integer values only) and give the combinations of work hours that they represent.
8. For each of your ordered pairs from #6 and #7, determine Eileen's weekly earnings. Which of these options do you recommend that Eileen choose? Explain.

