**Systems of Linear Inequalities Real World Applications**

**Directions:** For the following problems,

1. Define the variables
2. Write a system of linear inequalities
3. Graph the system of linear inequalities. Make sure to label the x and y axis and create a title!
4. Answer all questions!

|  |
| --- |
| 1. Blueberries cost $2 per bag and raspberries cost $3 per bag. You have $24 to spend on fruit to be used for a fruit salad, and you do not want to purchase more than ten bags in total. You also need at least one and a half times as many bags of blueberries as raspberries. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. Karen works two jobs. She earns $9 per hour walking dogs and $12 per hour helping take care of horses at a barn. Karen would like to earn at least $216 this week, but does not want to work more than 36 hours. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. Vince wants to fence in a rectangular area for his dog. He wants the length of the rectangle to be at least 30 feet and only has 120 feet of fencing available. The area will be in the interior of his yard. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. Enrique is recording the number of hamburgers and hotdogs he eats each week. The table shows the nutritional information for hotdogs and hamburgers that he found on the Internet. From the hamburgers and hotdogs he eats each week, Enrique decides to have no more than 1,200 total calories and no more than 60 total grams of fat. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

|  |  |  |
| --- | --- | --- |
|  | Calories | Fat (in grams) |
| Hot Dog | 240 | 16 |
| Hamburger | 300 | 10 |

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |

**Solving Systems of Linear Inequalities Real World Applications Homework**

*Try to figure out appropriate scales on your own…if you absolutely need a hint, check the answer key on Stay up to Date! ☺*

|  |
| --- |
| 1. A psychologist needs at least 40 subjects, adults and children, for her experiment. She cannot use more than 30 children. Write and graph a system of inequalities. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. Each week Todd must complete a minimum of 9 hours of homework. Participation in sports requires at least 6 hours per week. Todd has no more than 24 hours per week in total to devote to these activities. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. Ed works mowing lawns and raking. The table shows the number of hours and the amount of money he earns on each activity. In one week, Ed can only work these jobs for a maximum of 24 hours. He also needs to earn at least $120 in one week. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

|  |  |  |
| --- | --- | --- |
|  | Hours per Job | Charge per Job |
| Mowing Lawns | 3 | 20 |
| Raking | 2 | 10 |

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |
| 1. A surf shop makes the profits given in the table. The shop owner sells at least 10 surfboards and at least 20 wakeboards per month, but cannot sell more than 50 boards each month in total. He wants to earn at least $2000 a month. Provide an example of one point that satisfies the constraints and one point that does not satisfy the constraints, and interpret the meaning in the context of the situation being modeled.

|  |
| --- |
|  **Profit per Board Sold ($)** |
| Surfboard |  150 |
| Wakeboard |  200 |

\*You cannot write any equations without this step!\*You cannot graph anything without this step!Image result for coordinate plane quadrant 1\*The question may be difficult to answer without a …\*Did you answer the question being asked yet?! |