Intermediate Algebra

Name_____

Target 1.2 Retest Worksheet

Teacher_____ Period____

**Section 1: Write an inequality that models the situation in each word problem.**

1) You would like to purchase both strawberries and cherries for the toppings of an ice cream sunday. Strawberries are $2.25 per pound and cherries are $4 per pound. You must spend at least $25.

2) Jerry loves nuts. He is going to buy walnuts for $2 per pound and cashews for $8 per pound. Jerry has only $20 to spend on nuts.

3) You need to transport less than 256 people. Busses hold 35 people and vans carry 12 people.

4) Bristol likes fruit and wants to spend more than $10 on apples and pears. Apples cost $2.79 per pound and pears cost $2.19 per pound.

5) Jimmie has a maximum of 4 hours of time to spend on gardening on Monday. It takes .5 hours to weed a section of the garden and 1 hour to pick each section of the garden.

6) A parking lot can hold up to $100m^2$. Busses take up $12m^2$ of space and cars take $6m^2$ of space.

7) A carpenter has a maximum of 60 hours of time per week to work on houses. Each room takes 8 hours to sheet rock and 5 hours to put up the trim boards.

8) An upholsterer can work 10 hours per day. Each chair takes 1.5 hours to finish and each sofa takes 2 hours to finish.

9) Your garden in less than $900 ft^2$. You would like to plant beans and tomatoes. Beans take up $1.5 ft^2$ and tomatoes take up $6 ft^2$.

10) Kim is using a PODS storage space. It is no more than $45 yd^3$. She is packing it with large boxes ($1.5 yd^3$) and small boxes ($0.5 yd^3$).

 Made with Infinite Algebra 2.

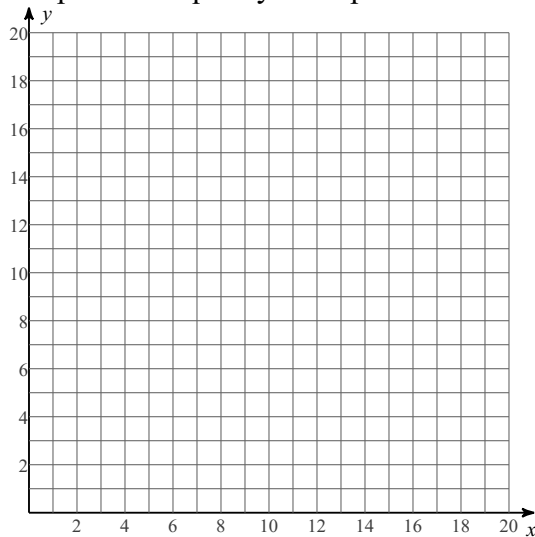**Section 2: Graph the inequalities from the indicated problems.**

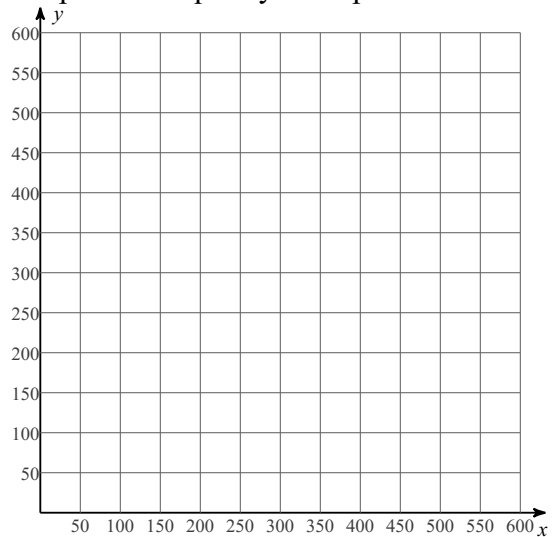11) Graph the inequality from problem #2.
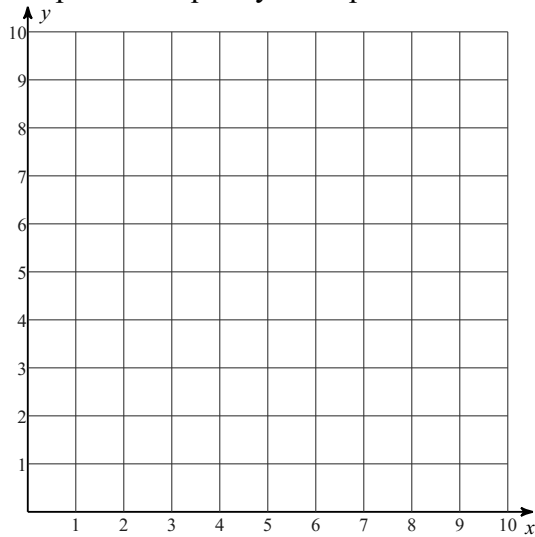
12) Graph the inequality from problem #5.
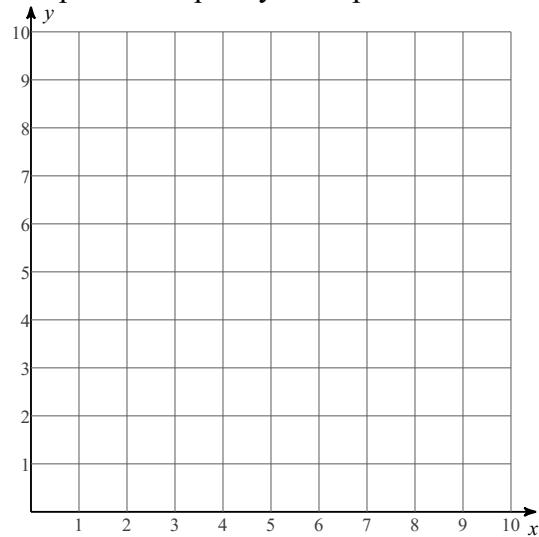
13) Graph the inequality from problem #6.

14) Graph the inequality from problem #9.

Section 3: Complete the question pertaining to the given problem.

15) From your graph in #11, find 1 point that is a solution and explain it in context of the problem. Make sure to use a different point than the example answer.

16) From your graph in #12, find 1 point that is a solution and explain it in context of the problem. Make sure to use a different point than the example answer.

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17) From your graph in #13, find 1 point that is a solution and explain it in context of the problem. Make sure to use a different point than the example answer.

18) From your graph in #14, find 1 point that is a solution and explain it in context of the problem. Make sure to use a different point than the example answer.

**Section 4: Define the variables. Write the objective equation. Write the system of constraints.**

19) A farmer has 7 acres to plant in wheat and rye. However, he has only $1200 to spend and each acre of wheat costs $200 to plant and each acre of rye costs $100 to plant. Moreover, the farmer has to get the planting done in 12 hours and it takes an hour to plant an acre of wheat and 2 hours to plant an acre of rye. If he makes $500 per acre of wheat and $300 per acre of rye how many acres of each should be planted to maximize profits?

20) The liquid portion of a diet is to provide at least 300 calories, 36 units of vitamin A, and 90 units of vitamin C daily. A cup of dietary drink X provides 60 calories, 12 units of vitamin A, and 10 units of vitamin C. A cup of dietary drink Y provides 60 calories, 6 units of vitamin A, and 30 units of vitamin C. Now, suppose that dietary drink X costs $0.12 per cup and drink Y costs $0.15 per cup. How many cups of each drink should be consumed each day to minimize the cost?

21) A gold processor has two sources of gold ore, source A and source B. In order to kep his plant running, at least three tons of ore must be processed each day from source A and B combined. Ore from source A costs $20 per ton to process, and ore from source B costs $10 per ton to process. Costs must be kept to less than $80 per day. Moreover, Federal Regulations require that the amount of ore from source B cannot exceed twice the amount of ore from source A. If ore from source A yields 2 oz. of gold per ton, and ore from source B yields 3 oz. of gold per ton, how many tons of ore from both sources must be processed each day to maximize the amount of gold extracted subject to the above constraints?

22) A farmer has a 320 acre farm on which she plants two crops: corn and soybeans. For each acre of corn planted, her expenses are $50 and for each acre of soybeans planted, her expenses are $100. Each acre of corn requires 100 bushels of storage and yields a profit of $60; each acre of soybeans requires 40 bushels of storage and yields a profit of $90. If the total amount of storage space available is 19,200 bushels and the farmer has only $20,000 on hand, how many acres of each crop should she plant in order to maximize her profit?

23) A fruit grower has 150 acres of land available to raise two crops, A and B. It takes one day to trim an acre of crop A and two days to trim an acre of crop B, and there are 240 days per year available for trimming. It takes 0.3 day to pick an acre of crop A and 0.1 day to pick an acre of crop B, and there are 30 days per year available for picking. Find the number of acres of each fruit that should be planted to maximize profit, assuming that the profit is $140 per acre for crop A and $235 per acre for crop B.

24) A farming cooperative mixes two brands of cattle feed. Brand X costs $25 per bag and contains 2 units of nutritional element A, 2 units of element B, and 2 units of element C. Brand Y costs $20 per bag and contains 1 unit of nutritional element A, 9 units of element B, and 3 units of element C. Find the number of bags of each brand that should be mixed to produce a mixture having a minimum cost per bag. The minimum requirements of nutrients A, B, and C are 12 units, 36 units, and 24 units, respectively.
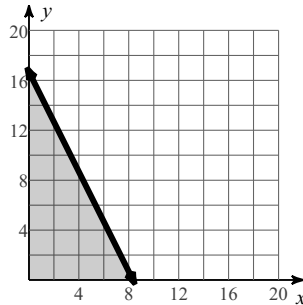
Answers to Target 1.2 Retest Worksheet

1) $2.25S + 4C \geq 25$ 2) $2W + 8C \leq 20$ 3) $35B + 12V < 256$ 4) $2.79A + 2.19P > 10$

5) $0.5W + P \leq 4$ 6) $12B + 6C \leq 100$ 7) $8S + 5T \leq 60$ 8) $1.5C + 2S \leq 10$

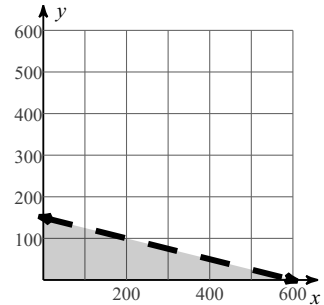9) $1.5B + 6T < 900$ 10) $1.5L + 0.5S \leq 45$ 11)
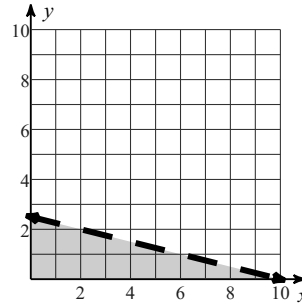
12)
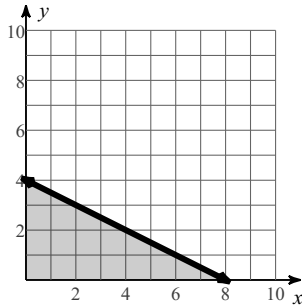
13)

14)

15) $(2, 1)$ which means 2 pounds of walnuts and 1 pound of cashews.

16) $(1, 3)$ which means 1 hour weeking and 3 hours picking the garden.

17) $(4, 6)$ which means 4 busses and 6 cars.

18) $(200, 50)$ which means 200 bean plants and 50 tomato plants.

19) DEFINE VARIABLES: W = # of acres of wheat, R = # of acres of rye, OBJECTIVE: $P = 500W + 300R$, CONSTRAINTS: $W + R \leq 7$, $200W + 100R \leq 1200$, $W + 2R \leq 12$

20) DEFINE VARIABLES: X = # of cups of drink X, Y = # of cups of drink Y, OBJECTIVE: $C = 0.12X + 0.15Y$, CONSTRAINTS: $60X + 60Y \geq 300$, $12X + 6Y \geq 36$, $10X + 30Y \geq 90$

21) DEFINE VARIABLES: A = amount of gold from source A, B = amount of gold from source B, OBJECTIVE: $G = 2A + 3B$, CONSTRAINTS: $A + B \geq 3$, $20A + 10B \leq 80$, $B \leq 2A$

22) DEFINE VARIABLES: C = # of acres of corn planted, S = # of acres of soybeans planted, OBJECTIVE: $P = 60C + 90S$, CONSTRAINTS: $C + S \leq 320$, $50C + 100S \leq 20000$, $100C + 40S \leq 19200$

23) DEFINE VARIABLES: A = # of acres of fruit A, B = # of acres of fruit B, OBJECTIVE: $P = 140A + 235B$, CONSTRAINTS: $A + 2B \leq 240$, $0.3A + 0.1B \leq 30$, $A + B \leq 150$

24) DEFINE VARIABLES: X = # of bags of brand X, Y = # of bags of brand Y, OBJECTIVE: $C = 25X + 20Y$, CONSTRAINTS: $2X + Y \leq 12$, $2X + 9Y \leq 36$, $2X + 3Y \leq 24$

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