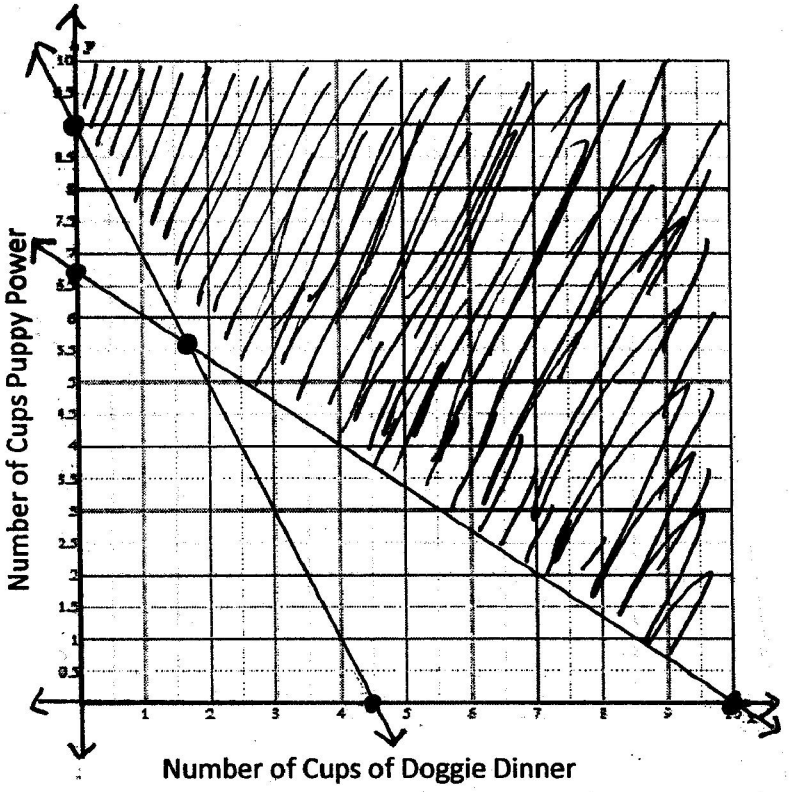
Intermediate Algebra (A) *Name* Key

1.3E Review *Class period* 1 2 3 4 5

1. One cup of Doggie Dinner contains 20 grams of protein and 40 grams of carbohydrates. One cup of Puppy Power contains 30 grams of protein and 20 grams of carbohydrates. Susan's vetrenarian puts her dog on a special diet that contains at least 200 grams of protein and 180 grams of carbohydrates per day. Let D stand for the number of cups of Doggie Dinner and P stand for the number of cups of Puppy Power. If Doggie Dinner costs 16 cents per cup and Puppy Power costs 20 cents per cup, then how many cups of each would satify the conditions of the special diet and minimize the total cost?

	Protein	Carbs	Cost
Doggie Dinner	20 g	40 g	16¢
Puppy Power	30 g	20 g	20¢
Total	200 g	180 g	



WORK SPACE

(x,y)	Objective Function	Value
(0,9)	.16(0)+.20(9)	$1.80
(10,0)	.16(10)+.20(0)	$1.60
(1.75, 5.5)	.16(1.75)+.20(5.5)	$1.38

a.) Use the table on the left to organize the information (this is optional):

b.) Constraints:

$D \geq 0$
$P \geq 0$
$20D + 30P \geq 200$
$40D + 20P \geq 180$

c.) Graph the constraints to answer the following questions.

d.) Objective: C: cost

$C = \$.16D + \$.20P$

e.) Vertices

(0,9) (10,0)
(1.75, 5.5)

f.) Minimum Cost

$1.38

g.) # of cups Doggie Dinner

1.75 cups

h.) # of cups Puppy Power

5.5 cups

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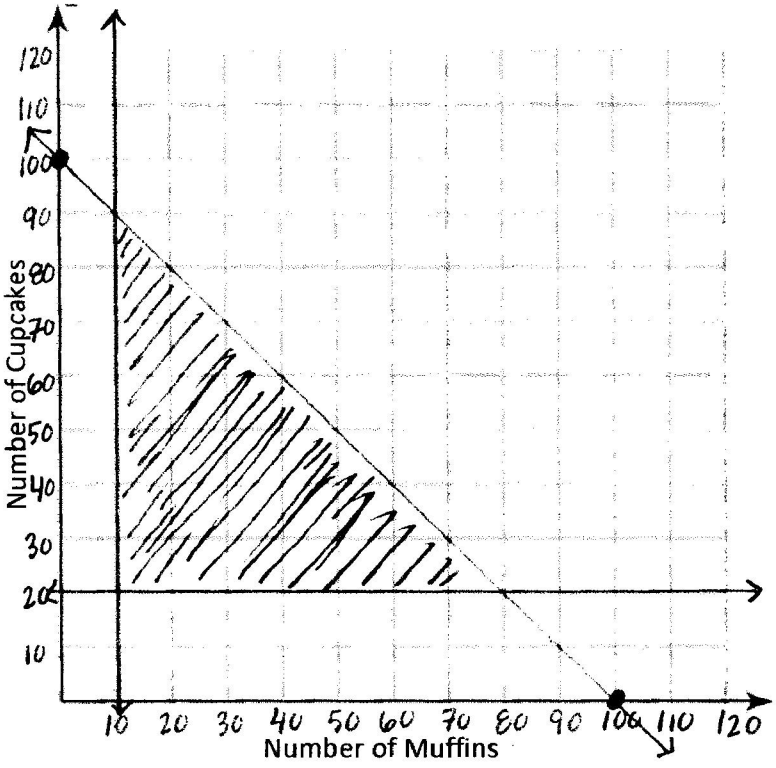
2. A bakery is making muffins and cupcakes, but they can make no more than 100 total items. In order to keep their regulars happy, they make at least 10 muffins and at least 20 cupcakes. Let ***x*** represent the number of muffins and ***y*** represents the number of cupcakes. Find the number of muffins and cupcakes that should be made to maximize profit, assuming that the profit is $2 per muffin and $3 per cupcake?

	# of items		Profit
muffins	10		$2
cupcakes	20		$3
	100		



a.) Use the table on the left to organize the information (this is optional): x: # of muffins y: # of cupcakes

b.) Constraints:

$x \geq 10$
$y \geq 20$
$x + y \leq 100$

c.) Graph the constraints to answer the following questions.

d.) Objective:

$P = \$2x + \$3y$

e.) Vertices

(10, 90) (10, 20) (80, 20)

f.) Maximum Profit

$290

g.) # of Muffins

10 muffins

h.) # of Cupcakes

90 cupcakes

WORK SPACE

(x,y)	Objective Function	Value
(10, 90)	2(10) + 3(90)	$290
(10, 20)	2(10) + 3(20)	$80
(80, 20)	2(80) + 3(20)	$220