Rubric and Sample Responses

Question 1
RUBRIC

Score	Description
4	Response demonstrates a thorough understanding of adding and subtracting rational numbers. • Student correctly finds Patient M's weight after six months using one method. (1 point) • Student thoroughly explains or shows how to find the weight using the first method. (1 point) • Student correctly finds Patient M's weight after six months using a second method. (1 point) • Student thoroughly explains or shows how to find the weight. (1 point)

SAMPLE RESPONSE

$230 + (-5) + (-1\frac{1}{2}) + (-3) + 1 + (-4) + 2\frac{1}{4} = 219\frac{3}{4}$ pounds

With this method I added all the numbers, in order, whether they are positive or negative.

$230 - 5 - 1\frac{1}{2} - 3 + 1 - 4 + 2\frac{1}{4} = 219\frac{3}{4}$ pounds

With this method I used only positive integers, but subtracted those numbers that were negative and added those that were positive

Question 2
RUBRIC

Score	Description
3	Response demonstrates thorough understanding that subtracting a rational number is adding the inverse. • Student correctly shows the distance between the two integers on a number line (1 point). • Student correctly calculates the range of pounds and explains -8 to 2 represents that range (2 points).

SAMPLE RESPONSE

The distance between -8 and 2 on a number line is 10. To find the distance, add the absolute value of -8 to 2.

Question 3

RUBRIC

Score	Description
2	Response describes situations in which the quantities combine to make 0. • Student correctly identifies the weight change in Year Three. (1 point) • Student thoroughly explains or shows how to find the number of pounds. (1 point)

SAMPLE RESPONSE

-4.8 pounds + -3.2 pounds = -8 pounds

To remain the same weight as the initial weight of 151.5, Patient B must have gained 8 pounds in year three, because the sum of weight loss in year one and two is 8 pounds.

Question 4

SAMPLE RESPONSE

B and D

Question 5

RUBRIC

Score	Description
3	Response demonstrates the ability to divide and multiply rational numbers. • Student correctly identifies the calories burned per day. (1 point) • Student correctly identifies the calories burned in 20 days. (1 point) • Student thoroughly explains or shows how to find the number of calories burned in 20 days. (1 point)

SAMPLE RESPONSE

$$\frac{1850 calories}{1 week} \div \frac{7 days}{1 week} = 264\frac{2}{7} \text{ calories / 1 day}$$

20 days x $(264\frac{2}{7}$ calories / 1 day) $\approx$ 5286 calories in 20 days

I first found how many calories are burned per day, then I multiplied that number by 20 days.

Question 6
RUBRIC

Score	Description
2	Student demonstrates the ability to convert a rational number to decimal form. • Student correctly identifies the number of milligrams per meal as a fraction. (2 points each) • Student correctly identifies the number of milligrams per meal as a decimal. (2 points)

SAMPLE RESPONSE

$\frac{1300mg}{3meals}$ = 433$\frac{1}{3}$ mg per meal ≈ 433.3 mg per meal

Question 7
RUBRIC

Score	Description
3	Student demonstrates understanding of how to divide integers. • Student correctly identifies the number of servings. (1 point) • Student thoroughly explains or shows how to find the number of servings. (2 points)

SAMPLE RESPONSE

$-\frac{336grams}{1week} + -\frac{16grams}{1serving} = \frac{21servings}{1week} + \frac{7days}{1week}$ = 3 servings per day

I took the total number of grams and divided it by the grams per serving and found that over the course of the week the patient eats 21 servings. I then divided 21 servings by 7 days, seeing that the patients eats fewer servings per day.

Question 8
RUBRIC

Score	Description
3	Response demonstrates the ability to solve a real-world mathematical problem with rational numbers. • Student correctly identifies the number of pounds (1 point). • Student thoroughly explains or shows how to find the number of pounds (2 points).

SAMPLE RESPONSE

120 pounds + 3 pounds + $\frac{1}{2}$(3 pounds) - $\frac{1}{2}$pound - 2($\frac{1}{2}$pounds) = 123 pounds

Question 9
RUBRIC

Score	Description
3	Response demonstrates an understanding of converting a ratio to a decimal. • Student correctly calculates the ratio (1 point). • Student thoroughly explains or shows how to calculate the ratio of two numbers. (2 points).

SAMPLE RESPONSE

$\frac{3000 calories}{2000 calories}$ = 1.5 times the number of calories

Question 10
RUBRIC

Score	Description
12	Response demonstrates the ability to solve real-world and mathematical problems involving the four operations with rational numbers. • Student creates a meal plan within the desired caloric range. (4 points, deduct 1 point for each error) • Student creates an exercise plan that burns the desired number of calories. (3 points, deduct 1 point for each error.) • Student correctly explains or shows how to find the number of calories for scaled portions. (5 points)

SAMPLE RESPONSE

Answers will vary.

Type of Food	Serving Size	Number of Calories
Breakfast		
Eggs	*3*	*210*
Avocado	*3/4*	*120*
Wheat Toast	*2.5*	*170*
Snack		
Whole Wheat Crackers	*5 crackers*	*85*
Lunch		
White Bread	*2 slices*	*140*
Turkey	*6 ounces (1.5 servings)*	*150*
Cheese	*1 slice*	*75*
Peach	*1*	*40*
Snack		
Watermelon	$4\frac{1}{2}$ *wedges*	*475*
Yogurt	*1 cup*	*150*
Dinner		
Salmon	*1 filet*	*200*
Potato	*1*	*110*
Butter	*1 tablespoon*	*100*
Asparagus	*10 spears*	*40*
Ice Cream	$\frac{1}{2}$ *cup*	*135*
		Total Calories: 2200

Exercise	Duration	Number of Calories
Swimming	2 hours	-960
Yoga	1 hour	-170
Running	1 hour	-780
		Total Calories: -1910

Wheat Bread: 70 calories per slice (2.5 slices)

70 x 25 = 175

Avocado: 160 calories per whole (3/4 of an avocado)
$160 \times \frac{3}{4} = 120$

Turkey: 100 calories per 4 ounces (1.5 servings)
100 x 15 = 150

Watermelon: 100 calories per wedge (4¾ wedges)

$100 \times 4\frac{3}{4} = 475$

Ice Cream: 270 per cup (½ of a serving)

$270 \times \frac{1}{2} = 135$