

- Question 1

5 points

How Did I Do?

The Consumer Reports rating for cereals is created using numerous factors[†] and indicates how healthy a cereal is for you. An instructor at Yale used a "Healthy Breakfast" dataset to analyze how the Consumer Reports rating for various cereals is related to the nutrition information on the cereals' packages.[‡] In particular, the instructor looked at the amount of fat, sugar, and fiber in the cereal. He found that the following was the best model for how these nutritional components related to the Consumer Reports rating, where fat, fiber, and sugar are all in grams per serving:

$$\text{Rating} = 53.4 - (3.48 * \text{Fat}) + (2.95 * \text{Fiber}) - (1.96 * \text{Sugar})$$

[†]<http://www.consumerreports.org/cro/cereals.htm>, accessed May 16, 2017.

[‡]<http://www.stat.yale.edu/Courses/1997-98/101/linmult.htm>, accessed May 16, 2017.

Maria wanted to know what the Consumer Reports rating for her three favorite cereals would be, but all she had was the nutrition labels from the cereal boxes. She decided to use the equation above to calculate the rating. The information from the cereal boxes is shown in the table below.

	Cereal 1	Cereal 2	Cereal 3
Fat	2	11	3
Fiber	3	12	2
Sugar	1	4	9
Rating	Number	Number	Number

Make sure that you fill in each answer area before checking "How Did I Do?"

- Calculate the rating for each cereal and enter it into the table.
- If Maria wanted to eat the most healthy cereal (the cereal with the highest rating), which cereal should she choose?

- ☐ (i) Cereal 1
- ☐ (ii) Cereal 2
- ☐ (iii) Cereal 3

c. Interpret the coefficient for Fiber in the model above.

[illegible]

- Question 2

2 points

How Did I Do?

In class, you saw examples of weighted averages using *relative* weights.

Calculate the weighted averages for two additional used cars using the weights given in the table below.

	New weights		Car 4 Ratings	Car 5 Ratings
Reliability	5		7	6
Gas Mileage	6		5	7
Interior Features/Comfort	10		8	7
Cargo Space	4		6	8

Make sure that you fill in each answer area before checking "How Did I Do?".

a. Weighted average for Car 4: Number

b. Weighted average for Car 5:

- Question 2

2 points

How Did I Do?

In class, you saw examples of weighted averages using *relative* weights.

Calculate the weighted averages for two additional used cars using the weights given in the table below.

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Interior Features/Comfort	10		8	7
Cargo Space	4		6	8

Make sure that you fill in each answer area before checking "How Did I Do?".

a. Weighted average for Car 4:

b. Weighted average for Car 5:

- Question 3

24 points

How Did I Do?

Weighted averages can also be created using *percentages* as weights.

Make sure that you fill in each answer area before checking "How Did I Do?".

a. In your weighted average equations in the problem above, how many total weights are used?

b. For each category, what percent of the total weights are represented by the category weights? Enter your answers in the table.

	New Weights as a Percentage of Total Weights	
Reliability	Number	%
Gas Mileage	Number	%

Submit Assignment

Quit & Save

- Question 3

24 points

How Did I Do?

Weighted averages can also be created using *percentages* as weights.

Make sure that you fill in each answer area before checking "How Did I Do?"

- a. In your weighted average equations in the problem above, how many total weights are used?

Number

- b. For each category, what percent of the total weights are represented by the category weights? Enter your answers in the table.

	New Weights as a Percentage of Total Weights	
Reliability	Number	%
Gas Mileage	Number	%
Interior Features/Comfort	Number	%
Cargo Space	Number	%

- c. In the tables below, multiply each category's percentage weight by its rating, and add up the four amounts.

	Percentage Weights (written as a decimal)		Car 4 Ratings		
Reliability	Number	×	7	=	Number
Gas Mileage	Number	×	5	=	Number
Interior Features/Comfort	Number	×	8	=	Number
Cargo Space	Number	×	6	=	Number
Total					Number

Percentage

	Percentage Weights (written as a decimal)		Car 5 Ratings		
Reliability	Number	×	6	=	Number
Gas Mileage	Number	×	7	=	Number
Interior Features/Comfort	Number	×	7	=	Number
Cargo Space	Number	×	8	=	Number
Total					Number

- d. Write an equation for the weighted average using the percentage weights as decimals. Use the following variables to represent the individual rating in each category: R = Reliability; G = Gas Mileage; I = Interior Features/Comfort; C = Cargo Space.

Weighted average =



- Question 4

1 point

How Did I Do?

A Grade Point Average (GPA) is another kind of weighted average. Letter grades are assigned a number value in order to calculate a numerical average. This table shows typical point values:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	1.3	1.0	0.7	0

When calculating a GPA, some grades have a higher impact than others because when calculating a GPA, the weights of the grades for each courses are determined by the number of credit hours in the course.

Jose gets the following grades in his courses his first term in college. What would his Grade Point Average (GPA) be for that term? (Hint: You will need to change each letter grade into a point value and then use the number of credits as the weight for each grade. Remember that you need to use the total number of weights [credits] in your calculation.)

Class	Credits	Grade
Precalculus	5	A
Spanish I	5	A-
Chemistry I (with	6	B+

Submit Assignment

Quit & Save

Qu

Jose gets the following grades in his courses his first term in college. What would his Grade Point Average (GPA) be for that term? (Hint: You will need to change each letter grade into a point value and then use the number of credits as the weight for each grade. Remember that you need to use the total number of weights [credits] in your calculation.)

Class	Credits	Grade
Precalculus	5	A
Spanish I	5	A-
Chemistry I (with lab)	6	B+
Archery	1	A

Round your answer to the nearest hundredth (2 decimal places).

Jose's GPA would be

- Question 5

1 point

How Did I Do?

To calculate a GPA after several terms, you can think of the current GPA as being weighted by the total number of credits taken in previous terms, since the credit-hour weights of the courses the student has taken previously have already been used in the calculation of the GPA from previous terms. For example, suppose another student currently has a GPA of 3.15 after 40 credits and now completes four new courses. Then that student's GPA can be calculated from this information:

Class	Credits	Grade	Point Value
Precalculus	5	B	3.0
Spanish I	5	A-	3.7
Chemistry I (with lab)	6	B+	3.3
Archery	1	A	4.0
Credits taken in previous terms	40	--	3.15
Total	57		

Calculate this student's GPA.

Round to the nearest hundredth (2 decimal places).

Round to the nearest hundredth (2 decimal places).

Number

Question 6

1 point

How Did I Do?

Suppose Alex wants to get a $C+$ or better in his math class and his instructor says a $C+$ is 75%-77% for that course. Below are Alex's grades and his teacher's weightings of different assessments. Calculate the minimum grade (as a percent) Alex must earn on the final to get a 75% or higher in the class. Assume that the percent on the final exam must be a whole number. (Hint: One approach is to set up an equation using the grades and the weighted percentages, then use a variable to represent the unknown final exam that grade Alex needs in order to earn a $C+$ (74.5%, which will round to 75%, or higher) in the the class.)

Assessment	Grade	Percentage Weight
Homework	76% (average)	10%
Quizzes	82% (average)	20% (total)
Midterms (3)	73%, 60%, 72%	10% each
Final Exam	???	40%

Alex must get at least a grade of % on the final exam to get a $C+$ or better in his math class.

Question 7

1 point

How Did I Do?

A college student, Laura, wants to apply for a scholarship. The scholarship requires a minimum GPA of 2.5. Andrea has a GPA of 2.2 after completing 70 college credits. She is taking 16 credits this term. What is the lowest GPA that Laura can earn this term in order to be eligible for the scholarship at the end of this term?

Round to two decimal places.

Number