Unit 5: Sequences (and Making Sense of Units)– Assessment

Name Exemplar PER _____ DATE _____

FIFA3	NQA1

Computation

4	3	2	1
Response has no recall errors, *minimal* procedural errors* and no conceptual errors**	**Response has no recall errors, minimal procedural errors and *minimal* conceptual errors**	**Response has no recall errors, but has several procedural errors OR several conceptual errors**	**Recall errors exist OR Steps taken are not related to problem OR Response left blank**

Written Responses

4	3	2	1
Response is written in a complete sentence and uses appropriate academic vocab	**Response is written in a complete sentence, and minimal errors exist in use of academic vocab**	**Response is not written in a complete sentence OR no academic vocab**	**Concept of response is not related to problem OR Response is left blank**

***Procedural errors** are mistakes made in the math
****Conceptual errors** are mistakes made in the steps one take

BOX YOUR ANSWERS!!!

1. (FIFA3) Show your work and answer the questions below.

The cost of a ride in a taxi is $2.50 for the first quarter-mile plus a constant amount per quarter-mile after that. The sequence below shows the pattern of numbers that appear on the driver's screen.

+.25 +.25 +.25

2.50, 2.75, 3.00, 3.25, 3.50, 3.75, . . .

1 2 3 4 5 6

a. Write a recursive function that can be used to determine a_n, the cost in dollars, for a ride in the taxi of *n* quarter-miles.

$a_1 = 2.5$, $a_{n+1} = a_n + 0.25$

b. What is the cost, in dollars, for a 10-mile ride in the taxi?

$2.50 + 0.25(39) =

↑ first quarter mile

↑ 39 more quarter miles

A 10-mile ride will cost $12.25

2. (FIFA3) Answer the question below.

A geometric sequence is shown below.

×−½ ×−½

12, −6, 3, −1.5, . . .

What is an explicit representation for the *nth* term of the sequence?

In the space below, write an equation of the form $a_n = AB^n$ that represents the sequence above.

$a_n = 12\left(-\frac{1}{2}\right)^{n-1}$

$a_1 = 12\left(-\frac{1}{2}\right)^{1-1}$

$= 12\left(-\frac{1}{2}\right)^0$

$= 12(1)$

$= 12$ ✓

V.

3. (FIFA3) Annotate the sequence below and write your answer in the space below.

A sequence is shown below.

52, 45, 38, 31, 24, 17, ... (-7, -7, -7)

Which function defines the n^{th} term of the sequence?

$t(n) = -7n + 52$ OR $t(1) = 45$, $t(n+1) = t(n) - 7$

4. (NQA1) Show your work and box your answer for the problem below.

Light travels at about 300.000,000 meters per second. What is this speed in kilometers per hour? Show your work.

$$\frac{300,000,000 \text{ meter}}{\text{sec}} \times \frac{1 \text{ km}}{1000 \text{ meter}} \times \frac{3600 \text{ sec}}{1 \text{ hr}} = \frac{1.08 \times 12 \text{ km}}{1000 \text{ hr}}$$??

$$= 1,080,000,000 \frac{\text{km}}{\text{hr}}$$

Kathryn and her family moved from the United States to South America and are getting accustomed to using metric measurements in everyday life. Complete the conversion for each situation described in the table. Use the information below for your calculations, and then round any decimals to the nearest whole number for your answers.

1 kg ≈ 2.20 pounds 1 km ≈ 0.62 miles

Situation	Conversion
buys 4 kg apples at the store	4 kg = 9 pounds
sees road sign that says 29 km to the next town	29 km = 18 miles
wants to drive a car at 55 miles/hr	55 miles/hr = 89 km/hr

$4\text{kg} \times \frac{2.2\text{lbs}}{1\text{kg}} = 8.8\text{lbs}$

$29\text{km} \times \frac{0.62\text{mi}}{1\text{km}} = 17.98\text{mi}$

$\frac{55\text{mi}}{\text{hr}} \times \frac{1\text{km}}{0.62\text{mi}} = \frac{55\text{ km}}{0.62\text{ hr}}$ $88.71\ \frac{\text{km}}{\text{hr}}$

6. (NQA1) Annotate the problem below and set up the necessary ratios. Then, choose the best possible answer.

Nancy squeezes lemons to make lemonade. She can squeeze 32 ounces of lemon juice in 20 minutes. Which of these unit rates describes Nancy's average rate of squeezing lemon juice? Choose *ALL* that are correct.

$\frac{32\text{ounces}}{20\text{ min}} = \frac{1.6\text{ ounces}}{\text{min}}$

A. 1.6 ounces per minute
B. 0.625 ounces per minute
C. 1.6 minutes per ounce
D. 96 ounces per hour

$\frac{20\text{ min}}{32\text{ounces}}$ $\frac{0.625\text{ min}}{\text{ounces}}$

$\frac{1.6\text{ ounces}}{\text{min}} \times \frac{60\text{min}}{\text{hr}} = \frac{96\text{ ounces}}{\text{hr}}$

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