Name: _____ Date: _____

UNIT 5 **LESSON 4**

Do Now: Given the diagram of the sequences of cars:

a. Write an explicit formula.

b. Determine the 15th term in this sequence.

AIM: HOW CAN WE USE THE EXPLICIT FORMULA TO SOLVE FOR ARITHMETIC SEQUENCE WORD PROBLEMS?

Arithmetic Sequence Formula: $a_n = a_1 + (n-1)d$ → **ON Reference Sheet**

Arithmetic Recursive Formula: _____ → **NOT ON Reference Sheet**

1. A carnival games awards a prize if Max can shoot a basket. The charge is $5.00 for the first shot, then $2.00 for each additional shot. Max needed six shots to win a prize.
   a. Write the explicit formula.
   b. What is the total amount Max spent to win a prize?

2. A theater has 60 seats in the first row, 68 seats in the second row, 76 seats in the third row, and so on in the same increasing pattern.
   a. Write the explicit formula.
   b. How many seats are in the 7th row?

3. A gym club charges $21 the first month of membership. The gym charges $13 for each additional month.
   a. Write the explicit formula.
   b. How much is the total cost for 8^{th} months?
   c. How much is the total cost for two years?

4. The price to send a large envelope first class mail is 88 cents for the first ounce and 17 cents for each additional ounce. The table below shows the cost for weights up to 5 ounces.

   a. Write the explicit formula
   b. What is the weight of a large envelope if it costs $2.07?

Weight (ounces)	1	2	3	4	5
Postage (cents)	0.88	1.05	1.22	1.39	1.56

Source: United States Postal Service

5. The total costs for ordering one to five chess pizzas from Luigi's Pizza Palace are shown.

a. Write an explicit formula for the sequence.
b. What is the cost of 24 pizza pies?
c. If you paid $73 dollars, how many pizza pies did you purchase?

Total Number of Pizzas Ordered	Cost
1	$7.00
2	$12.50
3	$18.00
4	$23.50
5	$29.00

6. Carly has a movie rental card worth $175. After she rents the first movie, the card's value is $172.25. After she rents the second movie, its value is $169.50. After she rents the third movie, the card is worth $166.75.

a) Assuming the pattern continues, write an explicit formula to define $A(n)$, the amount of money on the rental card after n rentals. Carly rents a movie every Friday night.

b) How many weeks in a row can she afford to rent a movie, using her rental card only? Explain how you arrived at your answer.

Name: _____ Date: _____

UNIT 5 HW_____ **LESSON 4**

1) A theater has 20 seats in the first row, 22 in the second row, 24 in the third row, and so on for 25 rows. How many seats are in the last row?

2) A pile of bricks has 97 bricks in the first row, 91 bricks in the second row, 85 bricks in the third row, and so on until there is only one brick in the top row.

3) Dren is downloading episodes of his favorite TV show to play on his personal media device. The cost of one episode is $1.99. The cost to download two episodes is $3.98. The cost to download three episodes is $5.97. Write an explicit formula to represent the arithmetic sequence.

4) Each day Tori records the height of a plant for her science lab. Her data are shown in the table below. The plant continues to grow at a constant daily rate. Write an explicit formula to represent $h(n)$, the height of the plant on the nth day.

Day (n)	1	2	3	4	5
Height (cm)	3.0	4.5	6.0	7.5	9.0

5) In an arithmetic sequence of numbers $a_1 = -4$ and $a_6 = 46$. Which of the following is the value of a_{12}?

(1) 120 (3) 92

(2) 146 (4) 106

_____

6) Given the equation $4(2x - 7) = 3x - 5$
   a. Solve the equation
   b. List the property used in each step.