

# Warmup

\*Reminder - HW is due tomorrow - no late HW's accepted

Write out the explicit and recursive formulas for each sequence

1) -19, -21, -23, -25...  $d = -2$   
 $A_1 = -19$

Exp  
 $A_n = -19 - 2(n-1)$

$-19 - 2n + 2$

$-17 - 2n$

Recursive  
 $A_1 = -19$   
 $A_n = A_{n-1} - 2$

2)  $a_1 = 45$   $d = 3$

Recursive  
 $A_1 = 45$   
 $A_n = A_{n-1} + 3$

Exp  
 $A_n = 45 + 3(n-1)$   
 $45 + 3n - 3$   
 $42 + 3n$

3) Write the following in function notation:  $A_n = -3n - 7$

$f(n) = -3n - 7$

$f(x) = -3x - 7$

# Something to Chew On

## A Solidify Understanding Task

The Food-Mart grocery store has a candy machine like the one pictured here. Each time a child inserts a quarter, 7 candies come out of the machine. The machine holds 15 pounds of candy. Each pound of candy contains about 180 individual candies.



1. Represent the number of candies in the machine for any given number of customers. About how many customers will there be before the machine is empty?  $\approx 386$  people

$180 \times 15 = 2700$  candies

Exp  
 $A_n = 2693 - 7(n-1)$   
 $2693 - 7n + 7$   
 $2700 - 7n$

Rec  
 $A_1 = 2693$   
 $A_n = A_{n-1} - 7$

$A_1 = 2693$   
 $d = -7$

# peeps	candy left over
0	2700
1	2693
2	2686
3	2679
4	2672

2. Represent the amount of money in the machine for any given number of customers.

Empty machine = \$96.50 =  $386 \times 0.25$

Exp  
 $A_n = 0.25 + 0.25(n-1)$   
 $0.25 + 0.25n - 0.25 = 0.25n$

Rec  
 $A_1 = 0.25$   
 $A_n = A_{n-1} + 0.25$

# peep	\$
0	0
1	0.25
2	0.50
3	0.75

3. To avoid theft, the store owners don't want to let too much money collect in the machine, so they take all the money out when they think the machine has about \$25 in it. The tricky part is that the store owners can't tell how much money is actually in the machine without opening it up, so they choose when to remove the money by judging how many candies are left in the machine. About how full should the machine look when they take the money out?

Rec  
 $A_1 = 0.25$   
 $A_n = A_{n-1} + 0.25$

How do you know?  $\frac{\$25}{0.25} = 100$  people  $7 \times 100 = 700$  eaten

$25 \times 4 = 100$

$\frac{1}{4}$  eaten  
 $\frac{3}{4}$  left over

$2700 - 700 = 2000$  (left over)  
 $\frac{2000}{2700}$  (total)

$0.74 \times 100 = 74\% \approx 75\%$  full

Try these on the back of your paper

1) 3, 5, 7, 9... Find the explicit and recursive formulas. Then find the 65th term.

2) The value of the 9th term is 70. The sequence is decreasing by 5 each time. Write the explicit and recursive formulas.

3) Find the explicit and recursive for the following:

$$a_4 = 17 \quad d = -2$$

4) Find the explicit and

$$a_7 = 10.5 \quad d = 3$$