

Name: Key

Date: _____

Arithmetic Sequences

Explicit and Recursive Notation:

 Explicit: $a_n = a_1 + d(n-1)$ Recursive: $a_n = a_{n-1} + d; a_1 = \underline{\hspace{2cm}}$

If you look at both equations, they both rely on a_1 and d . We need to find those, then plug them in to the other equation.

Convert from explicit to recursive:

$a_n = 3n + 8$

$d = \uparrow = 3$

$a_1 = 3(1) + 8$

$a_1 = 3 + 8$

$a_1 = 11$

$a_n = a_{n-1} + d; a_1 = \underline{\hspace{2cm}}$

$a_n = a_{n-1} + 3; a_1 = 11$

Convert from recursive to explicit

$a_n = a_{n-1} - 3; a_1 = 5$

$d = \uparrow \uparrow d = -3$

$a_1 = \underline{\hspace{2cm}} a_1 = 5$

$a_n = a_1 + d(n-1)$

$a_n = 5 - 3(n-1)$

$a_n = 5 - 3n + 3$

$a_n = -3n + 8$

Check:

$a_1 = -3(1) + 8$

$a_1 = -3 + 8$

$a_1 = 5 \checkmark$

You try:

a) $a_n = a_{n-1} + 6; a_1 = -2$

$d = 6 \quad a_n = -2 + 6(n-1)$

$a_1 = -2 \quad a_n = -2 + 6n - 6$

$a_n = 6n - 8$

check!

$a_1 = 6(1) - 8$

$a_1 = -2 \checkmark$

b) $a_n = 8n - 5$

$d = 8$

$a_1 = 8(1) - 5$

$= 3$

$a_n = a_{n-1} + 8; a_1 = 3$

c) $a_n = -7n - 5$

$d = -7$

$a_1 = -7(1) - 5$

$= -7 - 5$

$= -12$

$a_n = a_{n-1} - 7; a_1 = -12$

d) $a_n = a_{n-1} - 1; a_1 = 13$

$d = -1$

$a_n = 13 - 1(n-1)$

$a_1 = 13$

$a_n = 13 - n + 1$

$a_n = -n + 14$

Check:

$a_1 = -(1) + 14$

$a_1 = 13 \checkmark$