Algebra 1 $a_n = a_1 + d(n-1)$ Name Answer Key

Arithmetic Sequences - Explicit Formula

Date _____ Period ____

Find the common difference. Write the explicit formula. Determine the unknown term in the arithmetic sequence.

1) –3, 7, 17, 27, ...
Find a_{33}

$7-(-3) = 7+3 = 10$
$17-7 = 10 \quad d = 10$
$a_{33} = -3 + 10(33-1)$
$a_{33} = -3 + 10(32)$
$a_{33} = -3 + 320$
$a_{33} = 317$

2) 32, 41, 50, 59, ...
Find a_{40}

$41-32 = 9$
$50-41 = 9 \quad d = 9$
$a_{40} = 32 + 9(40-1)$
$a_{40} = 32 + 9(39)$
$a_{40} = 32 + 351$
$a_{40} = 383$

3) 32, 40, 48, 56, ...
Find a_{34}

$40-32 = 8$
$48-40 = 8 \quad d = 8$
$a_{34} = 32 + 8(34-1)$
$a_{34} = 32 + 8(33)$
$a_{34} = 32 + 264$
$a_{34} = 296$

4) –28, –38, –48, –58, ...
Find a_{33}

$-38-(-28) = -38+28 = -10$
$-48-(-38) = -48+38 = -10 \quad d = -1$
$a_{33} = -28 - 10(33-1)$
$a_{33} = -28 - 10(32)$
$a_{33} = -28 - 320$
$a_{33} = -348$

5) −13, −23, −33, −43, ...
Find a_{23}

$-23-(-13) = -23+13 = -10$

$-33-(-23) = -33+23 = -10$

$d = -10$

$a_{23} = -13 - 10(23-1)$

$a_{23} = -13 - 10(22)$

$a_{23} = -13 - 220$

$a_{23} = -233$

6) −19, −17, −15, −13, ...
Find a_{29}

$-17-(-19) = -17+19 = 2$

$-15-(-17) = -15+17 = 2$

$d = 2$

$a_{29} = -19 + 2(29-1)$

$a_{29} = -19 + 2(28)$

$a_{29} = -19 + 56$

$a_{29} = 37$

7) −30, −130, −230, −330, ...
Find a_{38}

$-130-(-30) = -130+30 = -100$

$-230-(-130) = -230+130 = -100$

$d = -100$

$a_{38} = -30 - 100(38-1)$

$a_{38} = -30 - 100(37)$

$a_{38} = -30 - 3700$

$a_{38} = -3730$

8) −12, −17, −22, −27, ...
Find a_{40}

$-17-(-12) = -17+12 = -5$

$-22-(-17) = -22+17 = -5$

$d = -5$

$a_{40} = -12 - 5(40-1)$

$a_{40} = -12 - 5(39)$

$a_{40} = -12 - 195$

$a_{40} = -207$

9) 29, −171, −371, −571, ...
Find a_{32}

$-171-29 = -200$

$-371-(-171) = -371+171 = -200$

$d = -200$

$a_{32} = 29 - 200(32-1)$

$a_{32} = 29 - 200(31)$

$a_{32} = 29 - 6200$

$a_{32} = -6171$

10) −24, −14, −4, 6, ...
Find a_{21}

$-14-(-24) = -14+24 = 10$

$-4-(-14) = -4+14 = 10$

$d = 10$

$a_{21} = -24 + 10(21-1)$

$a_{21} = -24 + 10(20)$

$a_{21} = -24 + 200$

$a_{21} = 176$