

Arithmetic Progression Intro  
Questions  
(Sequence and Series)

# Arithmetic Progression Intro Questions (Sequence and Series)

(This slide so that slides print out nicely as 6-slides-horizontal per page)

1, 3, 5, 7...

$a =$

$d =$

$u_n =$

$u_{10} =$

-6, -6.5, -7, -7.5...

$a =$

$d =$

$u_n =$

$u_{10} =$

1, 3, 5, 7...

$$a = 1$$

$$d = 2$$

$$u_n = a + (n - 1)d = 1 + 2(n - 1) = 2n - 1$$

$$u_{10} = 19$$

-6, -6.5, -7, -7.5...

$$a = -6$$

$$d = -0.5$$

$$u_n =$$

$$a + (n - 1)d = -6 - 0.5(n - 1) = -0.5n - 5.5$$

$$u_{10} = -10.5$$

$$u_1 = 6$$

$$d = -3$$

$$u_n =$$

$$u_7 =$$

$$u_2 = 5$$

$$d = 0.25$$

$$u_n =$$

$$u_{100} =$$

$$u_1 = 6$$

$$d = -3$$

$$u_n = a + (n - 1)d = 6 - 3(n - 1) = 9 - 3n$$

$$u_7 = -12$$

$$u_2 = 5$$

$$d = 0.25$$

$$u_n =$$

$$a + (n - 1)d$$

$$= 4.75 - 0.25(n - 1) = 4.5 + 0.25n$$

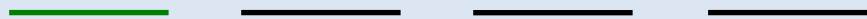
$$u_{100} = 29.5$$

$$u_2 = 7$$
$$u_4 = 15$$

$$u_2 = -1$$
$$u_6 = 15$$

d =  
a =  
u<sub>9</sub> =

d =  
a =  
u<sub>12</sub> =

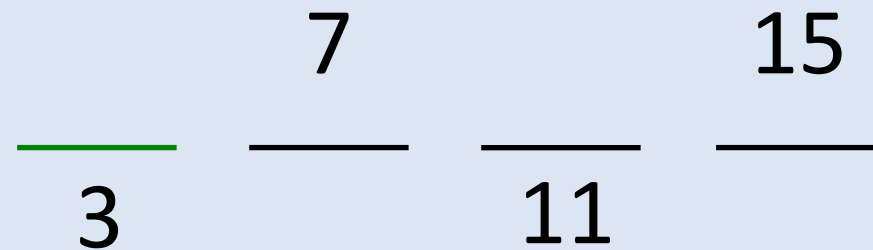


$$u_2 = 7$$
$$u_4 = 15$$

$$d = 4$$

$$a = 3$$

$$u_9 = 35$$

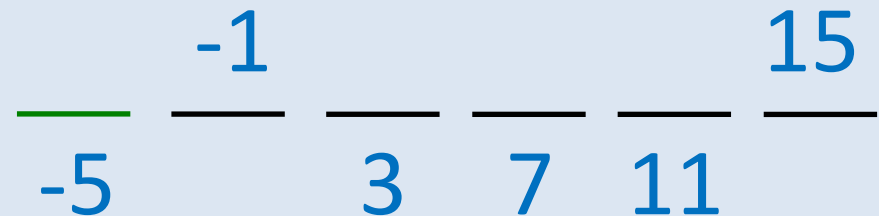


$$u_2 = -1$$
$$u_6 = 15$$

$$d = 4$$

$$a = -5$$

$$u_{12} = 39$$



$$u_3 = -7$$
$$u_8 = -27$$

a =

d =

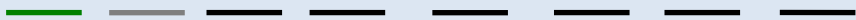
$u_{10} =$

$$u_3 = -7$$
$$u_{10} = -6$$

d =

a =

$u_{12} =$



$$u_3 = -7$$
$$u_8 = -27$$

$$a = 1$$

$$d = \frac{-27 - (-7)}{5} = \frac{-20}{5} = -4$$

$$u_{10} = -35$$

$$u_3 = -7$$
$$u_{10} = -6$$

$$a =$$

$$d = \frac{-6 - (-7)}{7} = \frac{1}{7}$$

$$u_{12} = -5 \frac{5}{7}$$

-7

-27

$$u_1 = 5$$

$$d = -2$$

$$u_5 =$$

$$S_5 =$$

$$u_1 = 5$$

$$d = -2$$

$$u_{25} =$$

$$S_{25} =$$

$$u_1 = 5$$

$$d = -2$$

$$u_5 = 5, 3, 1, -1, -3$$

$$S_5 = 5$$

$$u_1 = 5$$

$$d = -2$$

$$u_{25} = -43$$

$$S_{25} = -475$$

3, 8, 13, 18...

$$a =$$

$$d =$$

$$u_n =$$

$$S_n =$$

$$u_8 =$$

$$S_8 =$$

3, 2, 1, 0...

$$a =$$

$$d =$$

$$u_n =$$

$$S_n =$$

$$u_8 =$$

$$S_8 =$$

3, 8, 13, 18...

$$a = 3$$

$$d = 5$$

$$u_n = a + (n - 1)d = 3 + 5(n - 1) = 5n - 2$$

$$S_n = \frac{1}{2}n[2a + (n - 1)d] = \frac{1}{2}n[6 + 5(n - 1)] = \frac{1}{2}n[5n + 1]$$

$$u_8 = 38$$

$$S_8 = \frac{8}{2}[40 + 1] = 4 \times 41 = 164$$

(easier to use other  
formula?)

3, 2, 1, 0...

$$a = 3$$

$$d = -1$$

$$u_n = 3 + (n - 1)(-1) = 4 - n$$

$$S_n = \frac{1}{2}n[6 + (n - 1)(-1)] = \frac{n}{2}[7 - n]$$

$$u_8 = -4$$

$$S_8 = -4$$

7, 11, 15, 19...

$$u_6 =$$

$$S_6 =$$

6.5, 11, 15.5, 20...

$$u_{10} =$$

$$S_{10} =$$

7, 11, 15, 19...

$$u_6 = 27$$

$$S_6 = 102$$

6.5, 11, 15.5, 20...

$$u_{10} = 47$$

$$S_{10} = 267.5$$

10, 7, 4...

$$u_6 =$$

$$S_n =$$

10, -90, -190...

$$u_6 =$$

$$S_n =$$

10, 7, 4...

$$u_6 = \dots 1, -2, -5$$

$$S_n = \frac{1}{2}n[2a+(n-1)d] = \frac{1}{2}n[20+3(n-1)] = \frac{1}{2}n[3n+17]$$

10, -90, -190...

$$u_6 = \dots -290, -390, -490$$

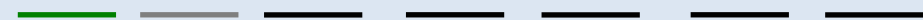
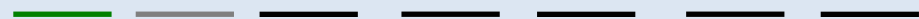
$$S_n = \frac{1}{2}n[20 - 100(n - 1)] = \frac{1}{2}n[19 - 100n]$$

$$u_3 = -5$$
$$u_7 = -21$$

a =  
d =  
 $S_7 =$

$$u_3 = -11$$
$$u_7 = -21$$

a =  
d =  
 $S_7 =$



$$u_3 = -5$$

$$u_7 = -21$$

$$u_3 = -11$$

$$u_7 = -21$$

$$a = 3$$

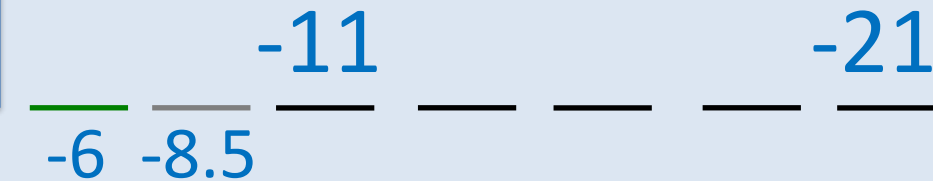
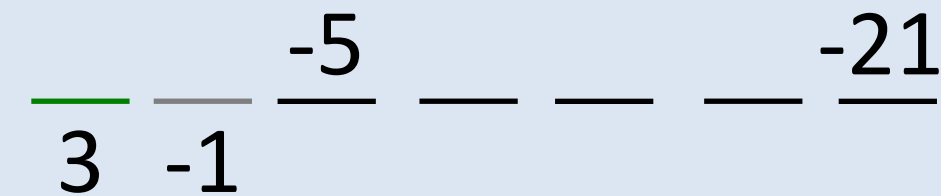
$$d = \frac{-21 - (-5)}{4} = \frac{-16}{4} = -4$$

$$S_7 = \frac{7}{2}(3 - 21) = \frac{-18 \times 7}{2} = -63$$

$$a = -6$$

$$d = \frac{-21 - (-11)}{4} = \frac{-10}{4} = -2.5$$

$$S_7 = \frac{7}{2}(-6 - 21) = \frac{-27 \times 7}{2} = -94.5$$



$$u_{12} = -5$$
$$u_{20} = -13$$

$$S_{20} =$$

$$d =$$

$$a =$$

$$u_{12} = -5$$
$$u_{112} = -105$$

$$S_{20} =$$

$$d =$$

$$a =$$

$$u_{12} = -5$$
$$u_{20} = -13$$

$S_{20} = \dots$ see below

$$d = \frac{-13 - (-5)}{20 - 12} = \frac{-8}{8} = -1$$

$$a = -5 - (11 \times -1) = -5 + 11 = 6$$

$$S_{20} = \frac{20}{2} \times (6 - 13) = 10 \times -7 = -70$$

$$u_{12} = -5$$
$$u_{112} = -105$$

$S_{20} =$

$$d = \frac{-105 - (-5)}{112 - 12} = \frac{-100}{100} = -1$$

$$a = -5 - (11 \times -1) = -5 + 11 = 6$$

$$S_{20} = \frac{20}{2} \times (6 - 13) = 10 \times -7 = -70$$

$$u_{10} = 44$$

$$d = 4$$

$$a =$$

$$S_{10} =$$

$$u_{10} = 44$$

$$d = -3$$

$$a =$$

$$S_{10} =$$

$$u_{10} = 44$$

$$d = 4$$

$$a = 44 - 36 = 8$$

$$S_{10} = \frac{10}{2}(44 + 8) = 5 \times 52 = 260$$

$$u_{10} = 44$$

$$d = -3$$

$$a = 44 + 27 = 71$$

$$S_{10} = \frac{10}{2}(44 + 71) = 5 \times 115 = 575$$

$$S_{10} = 135$$

$$a = 9$$

$$S_5 = 13$$

$$a = 3$$

d =

d =

$$S_{10} = 135$$
$$a = 9$$

$$S_5 = 13$$
$$a = 3$$

d =

$$S_{10} = 135$$
$$= \frac{10}{2}[2 \times 9 + (10-1)d]$$
$$= 5[18 + 9d]$$

$$9d = \frac{135}{5} - 18$$
$$= 27 - 18$$
$$= 9$$

$$d = 1$$

$$u_{10} = a + (n-1)d$$
$$= 9 + 9 \times 1$$
$$= 18$$

d =

$$S_5 = 13$$
$$= \frac{5}{2}[2 \times 3 + (5-1)d]$$
$$= \frac{5}{2}[6 + 4d]$$

$$4d = \frac{13}{2.5} - 6$$
$$= -0.8$$

$$d = -0.2$$

$$u_9 = a + (n-1)d$$
$$= 3 + 8 \times -0.2$$
$$= 1.4$$

$$u_3 = 6$$
$$u_{13} = 41$$

$d =$

$a =$

$S_{10} =$

$$u_3 = 41$$
$$u_{13} = 6$$

$d =$

$a =$

$S_{10} =$

$$u_3 = 6$$
$$u_{13} = 41$$

$$d = \frac{41-6}{13-3} = \frac{35}{10} = 3.5$$

$$S_{10} = \frac{n}{2}(a+l)$$

$$a = -1$$

$$S_{10} = \frac{n}{2}[2a + (n-1)d]$$
$$= \frac{10}{2}[2 \times -1 + (10-1)$$
$$\times 3.5]$$
$$= 5[-2 + 9 \times 3.5]$$
$$= 5 \times 29.5$$
$$= 147.5$$

$$u_3 = 41$$
$$u_{13} = 6$$

$$d = \frac{6-41}{13-3} = \frac{-35}{10} = -3.5$$

$$S_{10} = \frac{n}{2}(a+l)$$

$$a = 48$$

$$S_{10} = \frac{n}{2}[2a + (n-1)d]$$
$$= \frac{10}{2}[2 \times 48 + (10-1)$$
$$\times -3.5]$$
$$= 5[96 + 9 \times -3.5]$$
$$= 5 \times 64.5$$
$$= 322.5$$

$$S_2 = 13$$

$$S_5 = 85$$

a =

d =

$$S_4 = -8$$

$$S_8 = -176$$

a =

d =

$$S_2 = 13$$

$$S_5 = 85$$

$$a = 3$$

$$d = 7$$

$$S_4 = -8$$

$$S_8 = -176$$

$$a = 13$$

$$d = -10$$