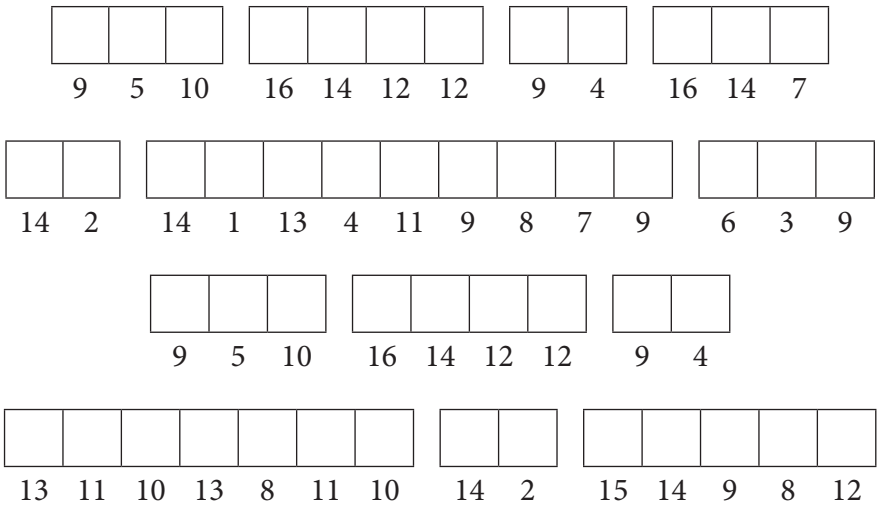
Name: _____

WORKSHEET

# Arithmetic progressions




*Joe Paterno*

## Rule

In an arithmetic progression, the $n$th term $t_n$ can be found by
$t_n = a + (n - 1)d$
where $a$ is the first term and $d$ is the common difference.
The common difference $d$ can be found by
$d = t_n - t_{n-1}$

## Questions

What is the common difference in each of the following arithmetic progressions?

**1** 2, 5, 8, …

**2** 7, 2, −3, …

**3** $1,\ 2\frac{1}{4},\ 3\frac{1}{2},\ \ldots$

**4** −5, −8, −11, …

**5** What is the 10th term of the arithmetic progression −5, −1, 3, …?

**6** What is the 25th term of the arithmetic progression 20, 22, 24, …?

**7** What is the 200th term of the arithmetic progression $2\frac{1}{2},\ -\frac{1}{2},\ -3\frac{1}{2},\ \ldots$ ?

**8** What is the 51st term of the arithmetic progression $21,\ 20\frac{4}{5},\ 20\frac{3}{5}, \ldots$?

How many terms are in each of the following arithmetic progressions?

**9** −12, −7, −2, …, 43

**10** 25, 14, 3, …, −107

**11** −3, 5, 13, …, 189

**12** 7, 1, −5, …, −1445

**13** Find the 33rd term of an arithmetic progression if the 7th term is 1 and the 11th term is 9.

**14** Find the 101st term of an arithmetic progression if the 13th term is $9\frac{3}{4}$ and the 46th term is $-6\frac{3}{4}$.

**15** Find the 78th term of an arithmetic progression if the 41st term is −5 and the 51st term is 25.

**16** Find the 19th term of an arithmetic progression if the 12th term is $12\frac{1}{4}$ and the 30th term is $-82\frac{1}{4}$.

## Solutions

**A** 11

**B** 68

**E** 13

**H** 31

**I** $-34\frac{1}{4}$

**L** 243

**M** 3

**N** $-594\frac{1}{2}$

**O** −3

**P** 53

**R** 25

**S** −5

**T** 12

**U** $1\frac{1}{4}$

**V** 106

**W** $-24\frac{1}{2}$