

Algebra 1 - Arithmetic and Geometric Sequences - Worksheet

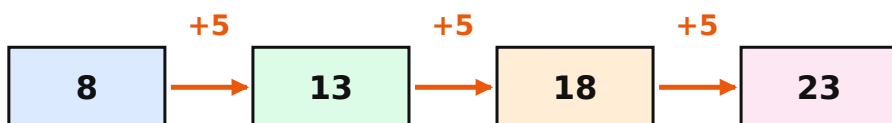
Common Core F-IF.A.3, F-BF.A.1a, F-BF.A.2, F-LE.A.2 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Use these 20 problems to master arithmetic and geometric sequences (Common Core F-IF.A.3, F-BF.A.1a, F-BF.A.2, and F-LE.A.2). You will find common differences and ratios, write recursive and explicit rules, read sequences from graphs and patterns, and model growth in real situations. They move from quick warm-ups to multistep word problems, so slow down on the last six and check that each answer makes sense.

Algebra 1 · Common Core State Standards: **F-IF.A.3, F-BF.A.1a, F-BF.A.2, F-LE.A.2**

Exercise 1 - Next terms



A pattern.

Find the next three terms of the sequence 8,13,18,23.

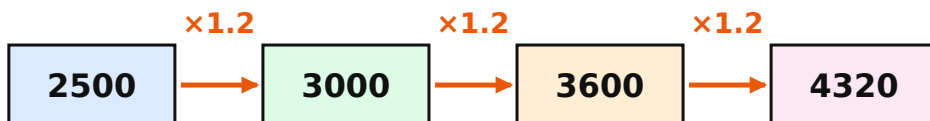
Exercise 2 - Arithmetic or geometric?

Decide whether 3,6,12,24 is arithmetic, geometric, or neither.

Exercise 3 - Common difference

Find the common difference of 40,33,26,19.

Exercise 4 - Common ratio



Population at the start of each decade.

A town's population multiplies by the same factor each decade: 2500,3000,3600,4320. Find the common ratio and the population at the start of the next decade.

Exercise 5 - Explicit rule

Write an explicit rule for 7,12,17,22.

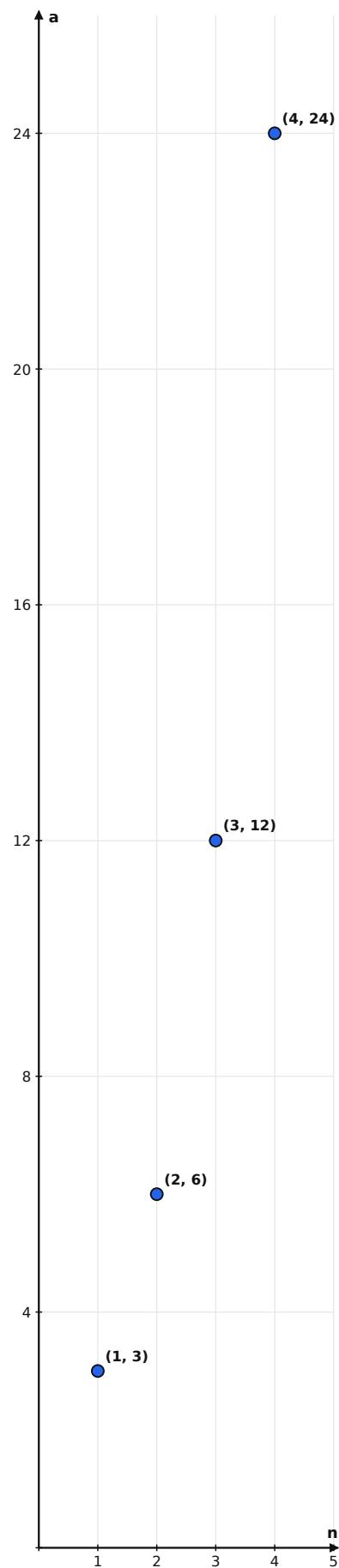
Exercise 6 - A distant term

Find the 20th term of the sequence 4,7,10,13.

Exercise 7 - Recursive rule

Write a recursive rule for 10,6,2,-2.

Exercise 8 - Geometric explicit rule



Terms of a geometric sequence.

Write an explicit rule for 3,6,12,24 and find the 6th term.

Exercise 9 - Fractional ratio

Write an explicit rule for 81,27,9,3 and find the 5th term.

Exercise 10 - Which term?

Which term of 5,10,15,20 equals 95?

Exercise 11 - Two terms given

An arithmetic sequence has $a_2 = 5$ and $a_6 = 21$. Find the common difference and a rule for a_n .

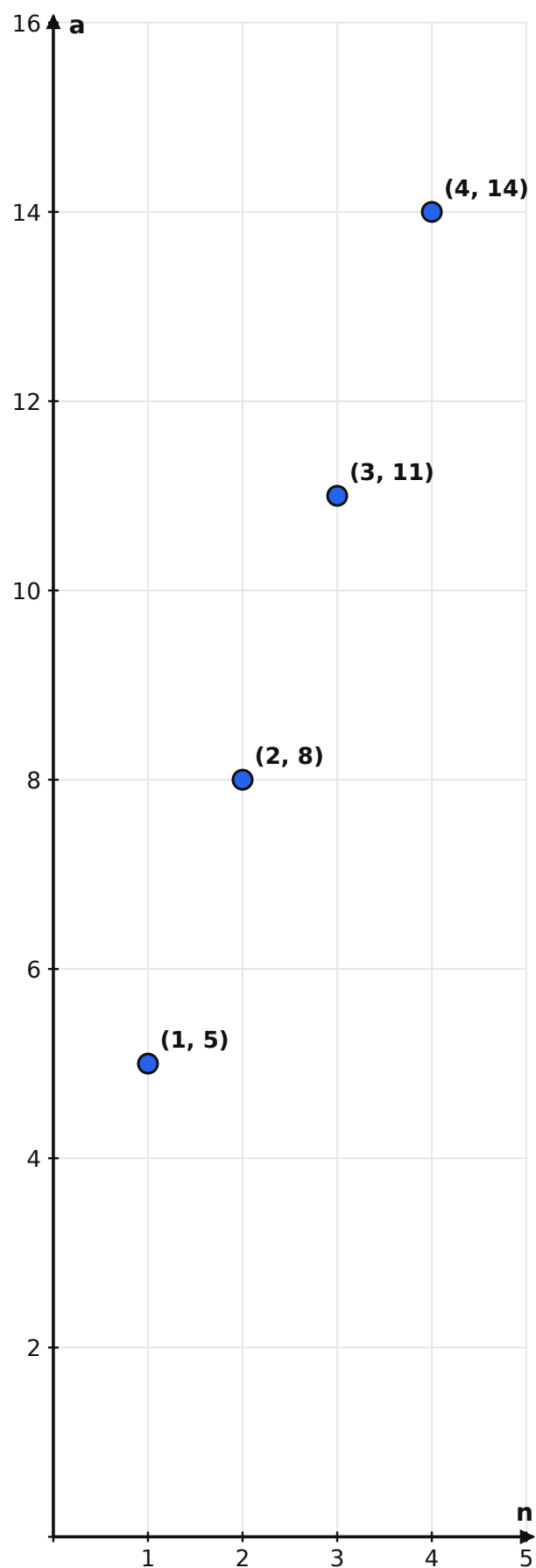
Exercise 12 - Evaluate a recursive rule

A sequence is defined by $a_1 = 2$ and $a_n = 3a_{n-1} - 1$. Find a_4 .

Exercise 13 - Is 100 in the sequence?

Is 100 a term of 7,12,17,22?

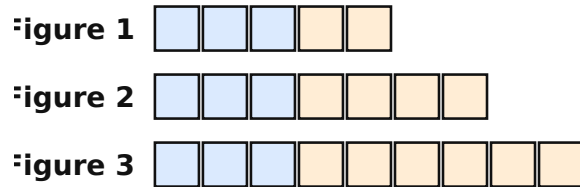
Exercise 14 - Graph of a sequence



Four terms of a sequence.

The graph shows the first four terms of an arithmetic sequence. Write its explicit rule.

Exercise 15 - Pattern of squares



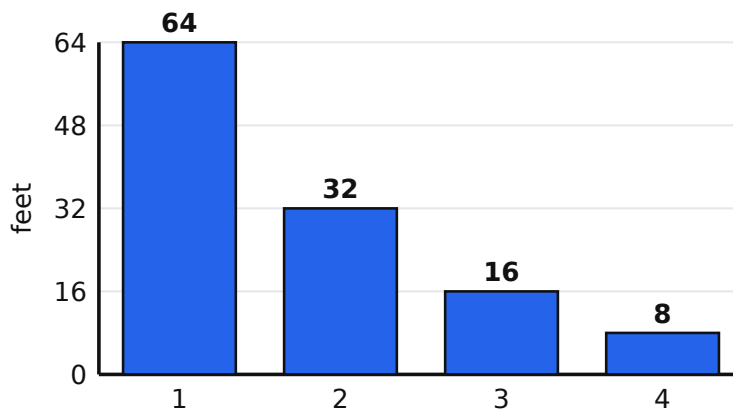
Three figures.

The figures use 5, 7, and 9 squares. Write a rule for the number of squares in Figure n and find Figure 10.

Exercise 16 - Weekly savings

Maya saves \$15 in week 1, \$20 in week 2, \$25 in week 3, and keeps adding \$5 more each week. Write a rule for the amount in week n . Find week 12 and the week in which she saves \$100.

Exercise 17 - Bouncing ball



Bounce heights in feet.

A ball's bounce heights are 64 ft, 32 ft, 16 ft, 8 ft. Write an explicit rule and find the 5th bounce.

Exercise 18 - Bacteria growth

A lab starts with 250 bacteria, and the number doubles every hour. Let $a_1 = 250$ be the count at hour 0. Write an explicit rule and find the count after 5 hours.

Exercise 19 - Stadium seats

Row 1 of a stadium section has 20 seats and each row has 2 more seats than the row before. Write a rule for row n . How many seats are in row 25? Which row has 100 seats?

Exercise 20 - Yearly raise

Liam's job pays \$40,000 in year 1 and gives a 5% raise each year. Write a rule for his pay in year n and find his pay in year 4.

Exercise 21 - Two pay plans

Day	1	2	3	4	5	6
Plan A	2	5	8	11	14	17
Plan B	1	2	4	8	16	32

Daily pay for two plans.

Plan A pays \$2 on day 1 and \$3 more each day. Plan B pays \$1 on day 1 and doubles each day. Write rules for both plans and find the first day when Plan B pays more than Plan A.