PRINTABLES
PREMIUM EDUCATIONAL RESOURCES

PREMIUM MATH RESOURCE • SECONDARY LEVEL

Arithmetic Sequences

Task Cards & Scavenger Hunt

Recursive & Explicit Forms

24 TASK CARDS	12 STATIONS	2 RECORDING SHEETS	FULL ANSWER KEY

This dual-format practice activity combines **24 differentiated task cards** with a full-class **Scavenger Hunt** covering both recursive and explicit forms of arithmetic sequences — a Common Core cluster where most resources only address explicit formulas. Includes worked solutions, recording sheets, a Google Slides conversion guide, and a teacher pacing guide.

ALIGNED WITH COMMON CORE HSF.LE.A.2 • HSF.BF.A.1.A • HSF.BF.B.2

ALIGNMENT

Common Core Alignment & Standards

Every component of this resource is mapped to specific Common Core State Standards for Mathematics (High School). The standards below are the targeted learning outcomes; the resource also develops the Standards for Mathematical Practice listed in the second table.

Content Standards

Code	Standard	Where Addressed
HSF.LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Tiers A–D; all 12 scavenger stations
HSF.BF.A.1.a	Determine an explicit expression, a recursive process, or steps for calculation from a context.	Tier B (explicit); Tier C (recursive); Tier D (context); Scavenger stations S1–S12
HSF.BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, and use them to model situations, and translate between the two forms.	Tier D requires both forms; Tier B ↔ Tier C translation via Concept Review
HSF.BF.B.2	Combine standard function types using arithmetic operations.	Tier D6 (taxi fare), Tier D1 (savings plan)
HSN.Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.	Tier D real-world cards: choosing the index n carefully

Standards for Mathematical Practice

Code	Mathematical Practice	Where Addressed
MP1	Make sense of problems and persevere in solving them	All cards; especially Tier D word problems
MP2	Reason abstractly and quantitatively	Translating between recursive & explicit forms
MP3	Construct viable arguments and critique the reasoning of others	Small-group card discussions
MP5	Use appropriate tools strategically	Choosing recursive vs. explicit for a given question
MP6	Attend to precision	Subscript notation, sign errors in d
MP7	Look for and make use of structure	Spotting the $(n - 1)$ pattern in the derivation

REFERENCE

Concept Review — Arithmetic Sequences

Definition

An **arithmetic sequence** is an ordered list of numbers in which the difference between any two consecutive terms is always the same. This constant difference is called the **common difference** and is denoted **d**. If the first term is $\mathbf{a_1}$, then the sequence reads a_1, $a_1 + d$, $a_1 + 2d$, $a_1 + 3d$, … and so on indefinitely. The defining feature is that you can walk from any term to the next by adding the same number every time — whether that number is positive (sequence increases), negative (sequence decreases), or zero (constant sequence).

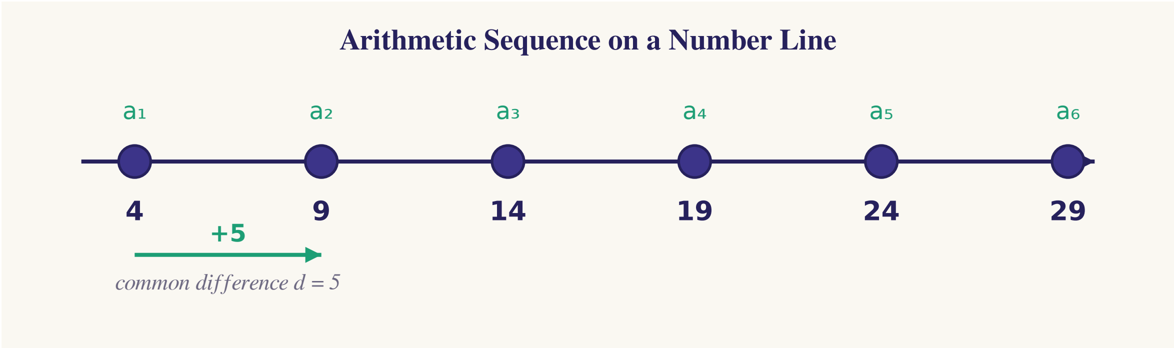

Figure 1. The arithmetic sequence 4, 9, 14, 19, 24, 29 plotted on a number line. Equal spacing between consecutive dots is the visual signature of an arithmetic sequence.

The Common Difference

The common difference d is the heart of an arithmetic sequence. To find it, subtract any term from the term that immediately follows it:

$$d = a_{n+1} - a_n$$

You can subtract *any* consecutive pair — the result is always the same. If you calculate d from three different pairs and get three different numbers, the sequence is *not* arithmetic. Always check at least two pairs before declaring a sequence arithmetic.

The Explicit Formula

The **explicit formula** lets you jump directly to the n^{th} term without computing any of the terms that come before it. Given the first term a_1 and the common difference d, the explicit formula is:

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

Here **n** is the position of the term you want (n = 1 for the first term, n = 2 for the second, and so on). The factor (n − 1) counts how many times you have to add d to get from a_1 to a_n: to reach the 1st term you add d zero times, to reach the 2nd term you add d once, and to reach the n^{th} term you add d exactly (n − 1) times.

REFERENCE

From Recursive to Explicit — The Derivation

Understanding *why* the explicit formula has the shape $a_n = a_1 + (n - 1)d$ is just as important as being able to use it. The derivation below shows how the explicit formula emerges naturally from the recursive one. Walk through it with your students — the moment they see the pattern is the moment the $(n - 1)$ factor stops feeling arbitrary.

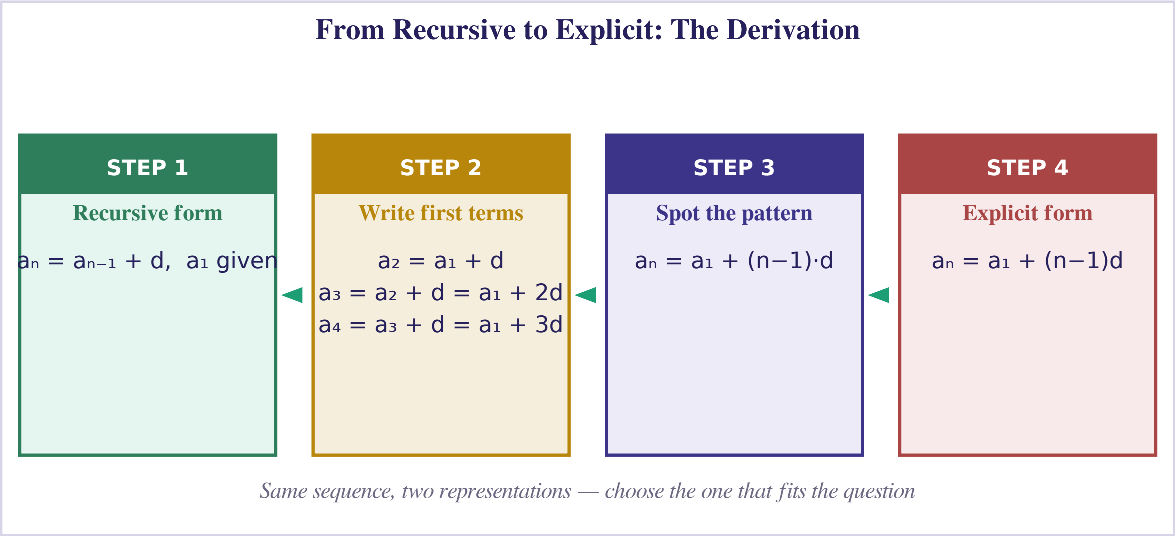

Figure 3. Four-step derivation from the recursive rule to the explicit formula. The $(n - 1)$ factor counts how many copies of d get added by the time we reach the n^{th} term.

Worked Derivation

Suppose a sequence is defined recursively by $a_1 = 4$ and $a_n = a_{n-1} + 5$. Let us write out the first several terms and look for a pattern:

Term	Recursive expansion	Pattern form	Count of d
a_1	$= 4$	$= 4 + 0\cdot5$	*0 copies of 5*
a_2	$= a_1 + 5 = 4 + 5$	$= 4 + 1\cdot5$	*1 copy of 5*
a_3	$= a_2 + 5 = 4 + 5 + 5$	$= 4 + 2\cdot5$	*2 copies of 5*
a_4	$= a_3 + 5 = 4 + 5 + 5 + 5$	$= 4 + 3\cdot5$	*3 copies of 5*
a_n	$= a_1 + (n - 1)$ copies of 5	$= 4 + (n - 1)\cdot5$	*$(n - 1)$ copies of 5*

The bottom row is the explicit formula in disguise: $a_n = a_1 + (n - 1)\cdot d$. For our example with $a_1 = 4$ and $d = 5$, this becomes $a_n = 4 + (n - 1)(5)$, which simplifies to $a_n = 5n - 1$. The explicit formula is therefore a *compressed* version of the recursive rule — it tells you, in one line, the result of applying the recurrence $(n - 1)$ times.

ACTIVITY

Task Cards — Tier A: Find the Next Three Terms

A

Tier A — Find the Next Three Terms

Given an arithmetic sequence, extend it by computing the next three terms. Focus: identifying d.

Each card shows five terms of an arithmetic sequence. Students identify the common difference d, verify it with at least two consecutive pairs, and extend the sequence by three more terms. Recording happens on the Student Recording Sheet (page 29).

CARD A1 **TIER A**

4, 9, 14, 19, 24, …

Task: Find the next three terms in the sequence.

SHOW YOUR WORK

FINAL ANSWER: ____________________

CARD A2 **TIER A**

12, 8, 4, 0, −4, …

Task: Find the next three terms in the sequence.

SHOW YOUR WORK

FINAL ANSWER: ____________________

CARD A3 **TIER A**

−3, 1, 5, 9, 13, …

Task: Find the next three terms in the sequence.

SHOW YOUR WORK

FINAL ANSWER: ____________________

CARD A4 **TIER A**

ACTIVITY

Task Cards — Tier D: Real-World Applications

D

Tier D — Real-World Applications

Savings, ladder rungs, temperature, reading, log stacks, taxi fares — both forms required.

Tier D cards situate arithmetic sequences in real contexts. Each card asks for **both** the explicit and recursive forms and a specific value, requiring students to decide which form is more efficient for the computation. Discuss the choice explicitly in class — the reasoning is the learning. The diagrams below (Figures 4–7) match cards D1, D2, D3, and D5 and can be projected during instruction or printed for students who benefit from visual support.

CARD D1 **TIER D**

Maya's Savings Plan

Maya is saving money each week. She saves \$15 the first week, \$22 the second week, \$29 the third week, and \$36 the fourth week.

Task: (a) Write the explicit formula. (b) Write the recursive formula. (c) How much will Maya save in week 12?

SHOW YOUR WORK

FINAL ANSWER: ____________________

CARD D2 **TIER D**

Ladder Rungs

A ladder has its bottom rung 30 cm above the ground. Each rung above it is 25 cm higher than the rung directly below.

Task: (a) Write the explicit formula for the height of rung n. (b) Write the recursive formula. (c) How high is the 10th rung?

SHOW YOUR WORK

FINAL ANSWER: ____________________

CARD D3 **TIER D**

ACTIVITY

Scavenger Hunt — 12 Stations

Print these 12 station cards, laminate, and post around the room. The displayed station numbers do not need to be sequential. Cut along the outer border of each card.

PREVIOUS ANSWER: 28 **STATION S1**

SOLVE:

An arithmetic sequence has $a_1 = 5$ and common difference $d = 4$. Find the 8th term, a_8.

YOUR WORK:

YOUR ANSWER: ____________________

PREVIOUS ANSWER: 33 **STATION S2**

SOLVE:

Given the sequence 33, 28, 23, 18, … find the 7th term.

YOUR WORK:

YOUR ANSWER: ____________________

ANSWER KEY

Task Cards — Worked Solutions

Every card below has a fully worked solution. Use this key to spot-check student work during the activity, to guide a whole-class debrief, or as a self-study reference for absent students. The solution steps model the reasoning we want students to internalise — not just the final answer.

A Tier A Solutions

Find the next three terms

CARD A1 — SOLUTION
ANSWER: 29, 34, 39

4, 9, 14, 19, 24, …

WORKED SOLUTION

- Identify the first term: $a_1 = 4$.
- Find the common difference: $d = 9 - 4 = 5$. (Check: $14 - 9 = 5$, $19 - 14 = 5$, $24 - 19 = 5$ ✓)
- Add $d = 5$ repeatedly to extend the sequence:
- $24 + 5 =$ **29**
- $29 + 5 =$ **34**
- $34 + 5 =$ **39**
- Answer: **29, 34, 39**

CARD A2 — SOLUTION
ANSWER: −8, −12, −16

12, 8, 4, 0, −4, …

WORKED SOLUTION

- First term: $a_1 = 12$.
- Common difference: $d = 8 - 12 = -4$. (Check: $4 - 8 = -4$, $0 - 4 = -4$ ✓)
- Subtract 4 repeatedly (the difference is negative, so terms decrease):
- $-4 + (-4) =$ **−8**
- $-8 + (-4) =$ **−12**
- $-12 + (-4) =$ **−16**
- Answer: **−8, −12, −16**

CARD A3 — SOLUTION
ANSWER: 17, 21, 25

ANSWER KEY

Scavenger Hunt — Loop Sequence & Solutions

The 12 stations form a single closed loop. The table below shows the order in which a student starting at Station S1 will visit each station, the problem at that station, the answer they should get, and the station they will travel to next (the station whose “Previous Answer” header matches their answer). The same loop applies no matter where a student starts — they simply enter the cycle at a different point.

Step	At Station	Problem (abbreviated)	Answer	Go to
1	**S1**	An arithmetic sequence has a1 = 5 and common difference d...	**33**	**S2**
2	**S2**	Given the sequence 33, 28, 23, 18, … find the 7th term.	**3**	**S3**
3	**S3**	A sequence has a1 = 3 and d = 6. Find the 15th term.	**87**	**S4**
4	**S4**	Consider the sequence 87, 78, 69, 60, … What is the commo...	**−9**	**S5**
5	**S5**	An arithmetic sequence starts at −9 and each term increas...	**99**	**S6**
6	**S6**	Given the sequence 99, 90, 81, 72, … find the 6th term.	**54**	**S7**
7	**S7**	An arithmetic sequence has a1 = 54 and common difference ...	**5**	**S8**
8	**S8**	Find the 20th term of the sequence 5, 8, 11, 14, …	**62**	**S9**
9	**S9**	An arithmetic sequence has a1 = 62 and a5 = 38. Find the ...	**−6**	**S10**
10	**S10**	Find the 12th term of the sequence −6, −2, 2, 6, …	**38**	**S11**
11	**S11**	An arithmetic sequence starts at 38 and decreases by 5 ea...	**−12**	**S12**
12	**S12**	Find the 9th term of the sequence −12, −7, −2, 3, …	**28**	**S1**

Worked Solutions for Each Station

S1 — SOLUTION **Answer: 33**

An arithmetic sequence has $a_1 = 5$ and common difference $d = 4$. Find the 8th term, a_8.

SOLUTION

$a_8 = a_1 + (8 - 1)d = 5 + 7(4) = 5 + 28 = \mathbf{33}$

Next: find the station whose Previous Answer is 33 → that station is S2.

S2 — SOLUTION **Answer: 3**

PRINTABLES

PREMIUM EDUCATIONAL RESOURCES

PREMIUM MATH RESOURCE • WHAT'S INSIDE

Arithmetic Sequences

Task Cards & Scavenger Hunt

Recursive & Explicit Forms • 66 Pages Total

66	24	12	100%
TOTAL PAGES	TASK CARDS	SCAVENGER STATIONS	ANSWER KEY

EVERYTHING INCLUDED IN THE FULL RESOURCE

TEACHER SUPPORT

- Teacher information & 5 delivery models
- Common Core alignment (HSF.LE.A.2, etc.)
- Concept review with 9 labelled diagrams
- Recursive → explicit derivation walkthrough
- Vocabulary glossary
- Misconceptions table + teaching moves

24 TASK CARDS (4 TIERS)

- Tier A — Find the next 3 terms
- Tier B — Write the explicit formula
- Tier C — Write the recursive formula
- Tier D — Real-world applications
- Savings, ladder, temperature, logs, taxi
- Both forms required on every Tier D card

SCAVENGER HUNT

- 12 self-checking station cards
- Closed loop — zero teacher grading
- Previous-answer matching system
- Loop sequence answer key included
- Per-station worked solutions
- Student recording sheet

EXTRAS & DIGITAL

- 2 student recording sheets
- Full answer key with worked solutions
- Editable Google Slides conversion guide
- Teacher pacing guide (3 schedule options)
- Time-per-component table
- Grading recommendations

WHY TEACHERS LOVE THIS RESOURCE

Covers BOTH recursive and explicit forms — a Common Core cluster most TPT resources skip. Self-checking scavenger hunt means zero grading during the activity. Worked solutions model the reasoning, not just the answers.