

Exponential & Logarithmic Functions: Compound Interest & LN

Tactile Concrete-Pictorial-Abstract (CPA) Station Guide • CCSS.MATH.HSF.LE.A.4

Student Name: _____

Date: _____

Model: SC-32

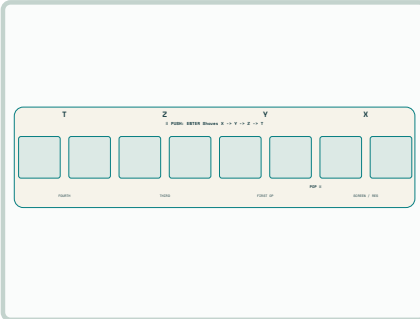
Check Score: ___ / 4

STUDENT SELF-CHECK RULE (NO CHEATING):

Build with blocks and solve on paper first! Use your SC-32 calculator ONLY to verify answers on the 4-line LCD screen.

STATION LAB TUTORIAL: BENCH SCHEMATIC & CPA PROGRESSION

1. 2D Bench Blueprint



Kit: Stack Board

2. Desk Setup (Concrete -> Pictorial)

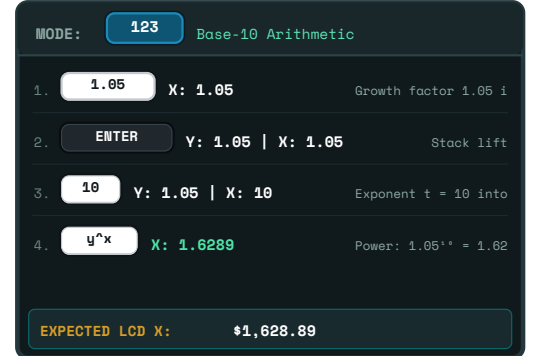
Physical Bench Setup:

Represent exponential doubling by stacking power-of-two tiles (1, 2, 4, 8, 16, 32).

Sketch Model on Paper:

Draw exponential growth curve showing rapid upward curvature.

3. Step-by-Step LCD Stack Trace (SC-32)



1 Calculate \$500 at 6% for 5 years: $500 \times (1.06)^5$.

Manipulative Model & Desk Sketch (Show your work):

Final Math Answer:

☐ Verified on SC-32

2 Calculate \$2,000 at 4% for 8 years: $2000 \times (1.04)^8$.

Manipulative Model & Desk Sketch (Show your work):

Final Math Answer:

☐ Verified on SC-32

3 Evaluate natural log $\ln(100)$ on SC-32: [100] [LN].

Manipulative Model & Desk Sketch (Show your work):

Final Math Answer:

☐ Verified on SC-32

4 Evaluate log base 10 of 10,000 on SC-32: [10000] [LOG].

Manipulative Model & Desk Sketch (Show your work):

Final Math Answer:

☐ Verified on SC-32

Station Diagnostic & Solution Key: Chapter 6

Exponential & Logarithmic Functions: Compound Interest & LN • Manipulative Setup, Diagnostic Rubric & Verification Flow

MANIPULATIVE HARDWARE STATION INVENTORY & 3D PRINT PREPARATION

Station Kit: Stack Stage Rail & Token Tiles

CAD / STL Source File:

Recommended Filaments:

CAD Blueprint: stack_board

Education/build/scad/stack_board.scad

Oceanic Teal 4-Register Rail & White Tiles (PLA)

Target Device: SC-32 Scientific

Standard: Gridfinity 42mm Pitch / 0.6mm Inset Markings

#	Math Problem Prompt	Expected Math Answer	Self-Check Keystrokes & RPN Stack
1	Calculate \$500 at 6% for 5 years: $500 \times (1.06)^5$ Standard: CCSS.MATH.HSF.LE.A.4	\$669.11	[1][.][0][6] [ENTER] [5] [y^x] [5][0][.]
2	Calculate \$2,000 at 4% for 8 years: $2000 \times (1.04)^8$ Standard: CCSS.MATH.HSF.LE.A.4	\$2,737.14	[1][.][0][4] [ENTER] [8] [y^x] [2][0][.]
3	Evaluate natural log $\ln(100)$ on SC-32: [100] Standard: CCSS.MATH.HSF.LE.A.4	4.6052	[1][0][0] [LN]
4	Evaluate log base 10 of 10,000 on SC-32: [10000] Standard: CCSS.MATH.HSF.LE.A.4	4.0000	[1][0][0][0][0] [LOG]

TEACHER DIAGNOSTIC GUIDE: COMMON MISCONCEPTIONS & REMEDIATION

Key Misconception to Target During Station Observation:
Multiply by principal P AFTER computing the exponential power $(1+r)^t$, not before.

How the Manipulatives & Calculator Foster Self-Correction:
Students solve with pencil and physical blocks first. When they self-check on the SC-32, any discrepancy between their written answer and the calculator's 4-line LCD immediately prompts them to re-inspect their physical bench model or regrouping, turning errors into productive struggle without teacher intervention.

Station Facilitation & Pacing Tip:
Keep 3D printed trays docked on standard Gridfinity baseplates to prevent loose parts on student desks. Encourage students to articulate their CPA steps: name the block representation (Concrete), point to their drawn tape/bond model (Pictorial), and verify register values (Abstract).

CLASSROOM SCORING & STATION MASTERY RUBRIC

Exemplary (18–20 pts):

Complete, accurate manipulative sketches; exact math answers; independently verified self-check on LCD stack.

Proficient (14–17 pts):

Correct math answers; minor sketch omissions; verified on calculator with minimal teacher prompting.

Developing (10–13 pts):

Understands problem concept but made computational slips; successfully self-corrected using calculator LCD.

Intervention (<10 pts):

Relied on calculator before solving on paper, or struggled with underlying physical manipulative models.