



Shedletsky's Self-Checking Formula Cabinet



COMPLETE TO COLLECT

Telamon's Other
Crafting Jewel

Unique Jewel · 8 Glints

THE CABINET

In Roblox, Shedletsky built a cabinet with sixteen formula drawers and a three-wheel combination lock. Every drawer label determines one whole-number value. Some labels are single expressions; others show two equal expressions or use definitions from the brass reference plate.

One matched pair of notation marks has been replaced by a different valid pair. Every digit, letter, operation, decimal point, and drawer position is still correct. The damaged expression is still valid mathematics and still has a whole-number value.



THE CABINET KEEPS ITS OWN KEY.

Do not decide which label is damaged merely because it looks unusual. Use the numerical structure of the cabinet.

BRASS REFERENCE PLATE

FUNCTION

$$f(x) = \begin{cases} x^2 + 2, & x < 0 \\ 2x + 2, & x \geq 0 \end{cases}$$

DETERMINANTS AND DOT PRODUCTS

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc, \quad \langle a, b \rangle \cdot \langle c, d \rangle = ac + bd$$

COMPLEX NUMBERS

$$i^2 = -1, \quad |a + bi| = \sqrt{a^2 + b^2}$$

COMBINATIONS AND FACTORIALS

$$\binom{n}{r} = \frac{n!}{r!(n-r)!}, \quad 0! = 1, \quad n! = \prod_{k=1}^n k$$

RANDOM VARIABLE

$$P(X = k) = \begin{cases} \frac{1}{183}, & k \in \{1, 2, \dots, 183\} \\ 0, & \text{otherwise} \end{cases}$$

$$E[X] = \sum_{k=1}^{183} kP(X = k)$$

CONVENTIONS

$m\angle ABC$ is the numerical angle measure in degrees.
Trigonometric limits use radians.
 $1 \text{ m} = 10^3 \text{ mm}$. If units cancel, use the remaining numerical value.



A

$$\begin{vmatrix} 10 & 2 \\ 2 & 10 \end{vmatrix} = \langle 10, 2 \rangle \cdot \langle 10, -2 \rangle$$

B

$$|\{n \in \mathbb{Z} : |n| \leq 21\}|$$

C

$$\log_{\sqrt[3]{5}}(5^{13})$$

D

$$f(-9)$$

E

$$|24 + 45i|$$

F

$$\lceil 50\sqrt{2} \rceil$$

G

$$\left. \frac{d}{dx}(x^3 + x) \right|_{x=5}$$

H

$$70\% m\angle ABC$$

 where $AB \perp BC$

I

$$\sum_{r=0}^2 \binom{11}{r}$$

J

$$\lceil \sqrt{3026} \rceil$$

K

$$58.\overline{9}$$

L

$$\int_0^4 (x^3 + 4) dx$$

M

$$\frac{2.35 \times 10^4 \text{ mm}}{\frac{1}{2} \text{ m}}$$

N

$$E[X]$$

O

$$\lim_{x \rightarrow 0} \frac{\sin(44x) + \sin(43x)}{\sin x}$$

P

$$f\left(16\frac{1}{2}\right)$$



VALUE RECORD

Copy each printed drawer value into the corresponding position.

A _____	B _____	C _____	D _____
E _____	F _____	G _____	H _____
I _____	J _____	K _____	L _____
M _____	N _____	O _____	P _____

EVIDENCE RECORD

Check	Drawers or structure checked	What fails
1		
2		
3		

Printed label: _____

Corrected label: _____

Corrected value: _____

QUESTIONS

Use separate paper for calculations and the four-place proof.

- **Read every label**
Evaluate all sixteen labels exactly and record their values in the matching 4×4 grid.
- **Find the damaged drawer**
Identify the one corrupted drawer. Give at least **three independent numerical checks** that all implicate it; visual suspicion is not evidence.
- **Repair the notation**
Replace exactly one matched pair of notation marks. Record the printed label, corrected label, and value; change nothing else.
- **Open the cabinet**
Find the three-digit combination and show it in at least **four structurally different places** after repair.

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