Algebra II

Released form evidence

June and August 2026 had exactly the same broad distribution of credits. Each final task used an applied function, asked for average rate of change with interpretation and included a threshold. The models differed: lung capacity was periodic; tea temperature decayed exponentially.

January 2027 is the first January under this design. Two repeated response demands warrant practice; they provide little information about the next specific function family.

Eligible public forms • January 0 / June 1 / August 1

Worked responses and follow-up questions

1 Explain an interval rate

T(0)=80 and T(20)=35. The average rate is −45/20 = −2.25 °C/min. The exponential term shrinks by a constant factor, so instantaneous cooling is not constant.

If the numerator is 45, ask which temperature is the later value.

2 Read a periodic pattern

Midline 10, amplitude 8, period 12. One model is h = 10 − 8 cos(πt/6) with radian argument. At 15 s the height is 10 m, repeating the 3 s value.

If amplitude is 16, draw the change from the midline to one extreme.

3 Solve an exponential threshold

100(0.9)^t < 50. The real crossing is ln(0.5)/ln(0.9) ≈ 6.58. Hour 6 gives 53.14 and hour 7 gives 47.83, so the first whole hour is 7.

If the inequality reverses incorrectly, test values 6 and 7 directly.

Average mapped multiple-choice slots per released form

Feature	January	June	August
Transform or combine familiar functions	—	4.00	1.00
Rational exponents	—	2.00	1.00
Connect zeros and factors	—	1.00	1.00

A dash marks an unavailable month. Rows can overlap. See seasonal_evidence.csv for counts, uncertainty and the full feature set.

Official design or administration guidance

Algebra II

4 Keep the domain after canceling

For $x \neq 3$, $f(x) = x + 3$. Original denominator is zero at $x = 3$. Domain excludes 3; the graph has a hole at (3,6).

If 6 is given as f(3), substitute 3 in the original denominator.

5 What a simulation supports

4/200 = 0.02. Such an outcome was unusual under the fair model, evidence against fairness in the heads-heavy direction. One small observed run and finite simulation leave uncertainty.

If 16/20 is called the tail probability, distinguish the observed proportion from the proportion of simulations as extreme.

6 Transfer the rate to a new family

Depth rises from 5 to 7, averaging 2/3 m per hour. $\sin(\pi t/6)=1/2$ first at $t=1$. Depth returns to 5 at $t=6$, so zero average rate conceals a rise and fall.

If first time is 5 h, locate the earlier angle with the same sine.

Released practice for each week

Week 1 2026-06 • Q36 • Periodic function in context

Question booklet **Official mapping / guide**

Week 2 2026-06 • Q33 • Interpret a survey

Question booklet **Official mapping / guide**

Week 3 2026-08 • Q36 • Exponential model in context

Question booklet **Official mapping / guide**