A changing coolant temperature

Exponential and logarithmic models | threshold model

Instructional alignment F-IF.B; F-LE.B

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. T(0)=100; the long-run level is 20 degrees.

2. 0.8^t<0.375 gives t>about 4.396. T(4)=52.768 and T(5)=46.2144, so minute 5.

3. Measurements are indexed at whole minutes. The two neighboring recorded times determine the first recorded crossing.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Reporting 4.396 as the first whole-minute reading. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Change the recording interval to two minutes and identify the first observed crossing.

Related public evidence

ALG2_2026_08_36 | public question

Official mapping for that example

ALG2_2026_08_9 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A platform that repeats

Periodic functions | sinusoidal model

Instructional alignment F-TF.B

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. Amplitude 3 m, midline 7 m, period 12 s.

2. The first maximum occurs at t=3 s, height 10 m.

3. pi/6 is radians per second. Frequency is 1/12 cycle per second.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Using the sine coefficient as period or treating radians as complete cycles. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Write a model with the same extrema but double the period.

Related public evidence

ALG2_2026_08_34 | public question

Official mapping for that example

ALG2_2026_08_24 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

Exactly one inspection failure

Probability | event comparison

Instructional alignment S-CP.A; S-CP.B

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. 0.2(0.8)+0.8(0.2)=0.32.

2. 1-0.8^2=0.36.

3. At least one includes both failures, probability 0.04. Independence permits the products.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Confusing disjoint cases with independent events. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

If failures share an electrical supply, identify the additional joint information needed.

Related public evidence

ALG2_2026_08_13 | public question

Official mapping for that example

ALG2_2026_08_4 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A randomized tutoring comparison

Inference and study design | simulation result

Instructional alignment S-IC.A; S-IC.B

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. 8/200=0.04. The estimate has Monte Carlo variation.

2. Random assignment supports a causal comparison of the assigned methods under the study conditions.

3. Volunteer selection limits population generalization. A group mean effect does not establish every individual effect.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Treating a tail proportion as the probability the null hypothesis is true. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Replace random assignment with students choosing their method. Revise the permissible inference.

Related public evidence

ALG2_2026_08_35 | public question

Official mapping for that example

ALG2_2026_08_25 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A canceled factor

Rational expressions | domain and equivalence

Instructional alignment A-APR.D

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. f requires x!=3.

2. At 2 both equal 5. f is undefined at 3, while g(3)=6.

3. They agree on all real x except 3. Cancellation preserves the restriction.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Treating a canceled denominator as permission to restore an excluded input. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Represent the distinction with a graph and a marked point.

Related public evidence

ALG2_2026_08_33 | public question

Official mapping for that example

ALG2_2026_06_4 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A mean that hides a mixture

Distribution and model choice | two subgroup summaries

Instructional alignment S-ID.A

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

1. The combined mean is 30 minutes for equal subgroup counts.

2. The data can have two clusters near 10 and 50 with few jobs near 30. A mean alone does not justify a normal shape.

3. Job category and the within-category distribution are useful.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Assuming a calculated mean establishes a bell-shaped distribution. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Make express jobs three times as common and revise the weighted mean and interpretation.

Related public evidence

ALG2_2026_08_17 | public question

Official mapping for that example

ALG2_2026_06_28 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed