

# California CCSS Mathematics — 5-Point Pacing & Quiz-Writing Guide (Grades 2–12)

Teacher handout. Each grade/course is divided into 5 pacing points ( $\approx$ 2 months each). Each point lists exact CCSS codes, mastery targets, quiz-writing guidance, and sample items. High school is organized by California's typical pathway: Algebra I, Geometry, Algebra II, and Grade 12 advanced options.

## Grade 2

**Point 1** ( $\approx$ 2-month window): Place value to 100; addition/subtraction foundations

**CCSS codes:** 2.NBT.1–4, 2.OA.1

**What mastery looks like:** Read/write/compare numbers to 100; understand tens/ones; solve 1-step add/sub word problems within 100 using drawings/equations.

**Quiz guidance:** Use base-ten blocks, number lines, and short word problems. Require place-value explanation in 1–2 items.

**Sample quiz items:**

- Write 58 in expanded form ( $50 + 8$ ).
- Which is greater: 73 or 37? Explain using tens/ones.
- Sam has 28 stickers and gets 15 more. How many now? Show a strategy.

**Point 2** ( $\approx$ 2-month window): Fluency within 20; add/sub within 100

**CCSS codes:** 2.OA.2, 2.NBT.5

**What mastery looks like:** Fluently add/sub within 20; add/sub within 100 using strategies (compose/decompose tens).

**Quiz guidance:** Mix light fluency + strategy items. Include one regrouping-in-thinking item.

**Sample quiz items:**

- Compute:  $9+7$ ,  $13-6$ ,  $8+8$ .
- Solve  $46 + 27$  using tens/ones (show steps).
- Solve  $72 - 48$  and explain your method.

**Point 3** ( $\approx$ 2-month window): Place value to 1,000; add/sub within 1,000

**CCSS codes:** 2.NBT.1–3, 2.NBT.6–9

**What mastery looks like:** Read/write/compare to 1,000; add/sub within 1,000 using place value and properties; explain reasoning.

**Quiz guidance:** Use expanded form and place-value charts; include one multi-step story problem.

**Sample quiz items:**

- Write 704 in expanded form.
- Which is larger: 609 or 690? Explain.
- A class has 235 books. They get 178 more. How many total?

**Point 4** (~2-month window): Measurement, time, money, and data

**CCSS codes:** 2.MD.1–8, 2.MD.9–10

**What mastery looks like:** Measure length with standard units; estimate/compare; tell time to nearest 5 minutes; solve money problems; create/read bar graphs (grade-appropriate).

**Quiz guidance:** Use practical contexts: ruler, clocks, coins, simple graphs; include one interpretation question.

**Sample quiz items:**

- Choose which object is about 12 inches long.
- What time is 3:25? Draw the clock hands.
- A toy costs 45¢ and a sticker costs 30¢. How much in all?

**Point 5** (~2-month window): Geometry + arrays + even/odd

**CCSS codes:** 2.G.1–3, 2.OA.3–4

**What mastery looks like:** Identify/classify shapes; partition into equal shares; recognize even/odd; model equal groups/arrays.

**Quiz guidance:** Use visuals and brief explanations.

**Sample quiz items:**

- Is 14 even or odd? Explain.
- Draw an array for 3 rows of 4.
- How many faces does a cube have?

## Grade 3

**Point 1** ( $\approx$ 2-month window): Multiplication meanings + word problems; unknowns

**CCSS codes:** 3.OA.1–4, 3.OA.8

**What mastery looks like:** Interpret products/quotients; solve multiplication/division stories; represent with arrays/number lines; find unknowns.

**Quiz guidance:** Use pictures + equations. Include one unknown-factor item.

**Sample quiz items:**

- Write an equation for 5 groups of 3.
- Solve:  $24 \div 6$ . Show with a drawing.
- Fill in:  $7 \times \blacksquare = 35$ .

**Point 2** ( $\approx$ 2-month window): Fluency and properties

**CCSS codes:** 3.OA.5–7

**What mastery looks like:** Use properties to compute; fluency within 100; connect multiplication and division facts.

**Quiz guidance:** Include one distributive strategy item; small fluency set.

**Sample quiz items:**

- Use distributive property:  $6 \times 7 = 6 \times (5+2)$ . Compute.
- Compute:  $8 \times 6$ ,  $54 \div 9$ ,  $7 \times 7$ .
- If  $4 \times 9 = 36$ , what is  $36 \div 4$ ?

**Point 3** ( $\approx$ 2-month window): Fractions as numbers

**CCSS codes:** 3.NF.1–2

**What mastery looks like:** Understand unit fractions and fractions on number lines; explain fraction meaning.

**Quiz guidance:** Use shaded models + number lines; avoid fraction operations.

**Sample quiz items:**

- Shade  $3/4$  of a rectangle.
- Place  $2/3$  on a number line from 0 to 1.
- Explain what  $1/5$  means in words.

**Point 4** ( $\approx$ 2-month window): Measurement & data: time, mass, volume; graphs

**CCSS codes:** 3.MD.1–4

**What mastery looks like:** Tell time to nearest minute; measure/estimate mass and volume; make and interpret scaled graphs.

**Quiz guidance:** Graph reading includes scale (2s/5s).

**Sample quiz items:**

- A graph uses scale 2. If a bar is at 8, how many items?
- How many minutes from 2:15 to 2:45?
- Is 1 liter more or less than 500 mL?

**Point 5** (~2-month window): Area, perimeter, geometry; fraction compare intro

**CCSS codes:** 3.MD.5–7, 3.G.1–2, 3.NF.3

**What mastery looks like:** Find area as equal squares; distinguish area vs perimeter; classify shapes; partition shapes; compare fractions with same numerator/denominator.

**Quiz guidance:** Use grid paper; include one area vs perimeter item.

**Sample quiz items:**

- Find area of a 4 by 6 rectangle.
- A shape has perimeter 12 units. Give one possible rectangle.
- Which is larger:  $2/6$  or  $2/3$ ? Explain.

## Grade 4

**Point 1** ( $\approx$ 2-month window): Place value, rounding, add/sub; multi-step problems

**CCSS codes:** 4.NBT.1–3, 4.OA.3

**What mastery looks like:** Read/write/compare multi-digit numbers; round; add/sub multi-digit; solve multi-step whole-number problems.

**Quiz guidance:** Include rounding reasoning and one multi-step word problem.

**Sample quiz items:**

- Round 746,219 to nearest thousand.
- Compute  $38,406 - 9,875$ .
- A store sold 1,248 Mon and 2,035 Tue. Total?

**Point 2** ( $\approx$ 2-month window): Multiplication/division; factors; primes

**CCSS codes:** 4.NBT.4–6, 4.OA.1–2, 4.OA.4

**What mastery looks like:** Multiply and divide multi-digit; identify factors/multiples; prime/composite.

**Quiz guidance:** Use area model + standard algorithm; include factor pairs.

**Sample quiz items:**

- Compute  $347 \times 6$  (show method).
- List all factor pairs of 36.
- Is 29 prime? Why?

**Point 3** ( $\approx$ 2-month window): Fraction equivalence and comparison

**CCSS codes:** 4.NF.1–2

**What mastery looks like:** Generate equivalent fractions; compare with reasoning; use models/number lines.

**Quiz guidance:** Focus on equivalence and ordering.

**Sample quiz items:**

- Fill in:  $\frac{3}{4} = \frac{\square}{8}$ .
- Which is larger:  $\frac{5}{6}$  or  $\frac{5}{8}$ ? Explain.
- Place  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$  on number line.

**Point 4** ( $\approx$ 2-month window): Fraction operations; decimals

**CCSS codes:** 4.NF.3–7

**What mastery looks like:** Add/sub like denominators; multiply fraction $\times$ whole; decimals tenths/hundredths; compare decimals.

**Quiz guidance:** Include story problem + decimal-fraction connection.

**Sample quiz items:**

- Compute:  $\frac{5}{8} + \frac{1}{8}$ .
- 3 ribbons of length  $\frac{3}{4}$  yard. Total length?
- Which is greater: 0.3 or 0.27? Explain.

**Point 5** (~2-month window): Measurement, line plots, angles; geometry symmetry

**CCSS codes:** 4.MD.1–7, 4.G.1–3

**What mastery looks like:** Convert units; interpret line plots (incl fractions); measure angles; identify/draw lines/angles; symmetry.

**Quiz guidance:** Use protractor item; include conversion and line plot.

**Sample quiz items:**

- Convert 5 feet to inches.
- Create a line plot for  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1.
- Measure the angle (diagram).

## Grade 5

**Point 1** ( $\approx$ 2-month window): Expressions + decimal place value

**CCSS codes:** 5.OA.1–2, 5.NBT.1–4

**What mastery looks like:** Write/interpret expressions; analyze patterns; understand decimals to thousandths; compare/round decimals.

**Quiz guidance:** One expression item + one decimal rounding.

**Sample quiz items:**

- Evaluate:  $3 \times (4 + 6)$ .
- Round 12.468 to nearest hundredth.
- Write a rule for 2→5, 4→9, 6→13.

**Point 2** ( $\approx$ 2-month window): Whole-number & decimal operations

**CCSS codes:** 5.NBT.5–7

**What mastery looks like:** Multiply multi-digit; divide with 2-digit divisors (grade-level); operate with decimals.

**Quiz guidance:** Include estimation to check reasonableness.

**Sample quiz items:**

- Compute:  $4,238 \times 27$ .
- Compute:  $9.6 \div 0.3$ .
- Estimate then compute:  $31.4 + 7.89$ .

**Point 3** ( $\approx$ 2-month window): Add/sub fractions (unlike denominators)

**CCSS codes:** 5.NF.1–2

**What mastery looks like:** Add/sub unlike denominators using equivalence; solve word problems.

**Quiz guidance:** Model-based item + word problem.

**Sample quiz items:**

- Compute:  $\frac{2}{3} + \frac{1}{6}$ .
- Sara ran  $\frac{3}{4}$  then  $\frac{2}{3}$  mile. Total?
- Explain why  $\frac{3}{5}$  and  $\frac{6}{10}$  are equal.

**Point 4** ( $\approx$ 2-month window): Multiply/divide fractions

**CCSS codes:** 5.NF.3–7

**What mastery looks like:** Multiply fractions/mixed; divide unit fractions by whole numbers and vice versa; apply to problems.

**Quiz guidance:** Include visual model for fraction division.

**Sample quiz items:**

- Compute:  $\frac{3}{4} \times \frac{2}{3}$ .
- How many  $\frac{1}{4}$ -cups are in 2 cups?
- Divide:  $\frac{5}{6} \div 2$ .

**Point 5** (~2-month window): Measurement/volume + coordinate plane + classify shapes

**CCSS codes:** 5.MD.1–5, 5.G.1–4

**What mastery looks like:** Convert units; compute volume; graph points; classify 2D figures.

**Quiz guidance:** Include volume reasoning and coordinate graph.

**Sample quiz items:**

- Find volume:  $5 \times 4 \times 3$  cm.
- Plot (2,5) and (6,1). Which is higher?
- Is every square a rectangle? Explain.

## Grade 6

**Point 1** ( $\approx$ 2-month window): Ratios, rates, percent

**CCSS codes:** 6.RP.1–3

**What mastery looks like:** Use ratio language; compute unit rates; solve ratio/rate/percent problems using tables/diagrams.

**Quiz guidance:** Tables + double number lines; one percent-of item.

**Sample quiz items:**

- Unit rate: 3 cups for 2 batches.
- If 12 is 30% of a number, find the number.
- 180 miles in 3 hours: speed?

**Point 2** ( $\approx$ 2-month window): Fraction/decimal operations; GCF/LCM

**CCSS codes:** 6.NS.1–4

**What mastery looks like:** Divide fractions; divide multi-digit; operate with decimals; apply GCF/LCM.

**Quiz guidance:** One fraction-division model + one LCM context.

**Sample quiz items:**

- $3/4 \div 1/8 = ?$
- Find GCF(24,36).
- Bell every 6 min and 8 min: together when?

**Point 3** ( $\approx$ 2-month window): Integers + coordinate plane

**CCSS codes:** 6.NS.5–8

**What mastery looks like:** Compare/order integers; opposites and absolute value; plot points; interpret coordinates in context.

**Quiz guidance:** Real contexts; one absolute value/distance item.

**Sample quiz items:**

- Order  $-3, 2, -7, 0$ .
- Change from  $-2^{\circ}\text{C}$  to  $5^{\circ}\text{C}$ ?
- Plot  $(-4,3)$  and name quadrant.

**Point 4** ( $\approx$ 2-month window): Expressions/equations/inequalities

**CCSS codes:** 6.EE.1–9

**What mastery looks like:** Write/evaluate expressions; use variables; solve equations; solve inequalities and graph solutions.

**Quiz guidance:** Translate words to algebra + inequality graph.

**Sample quiz items:**

- Expression: 5 more than  $3x$ .
- Solve  $4x=28$ .
- Graph  $y>-2$ .

**Point 5** (~2-month window): Geometry + statistics

**CCSS codes:** 6.G.1–4, 6.SP.1–5

**What mastery looks like:** Area of polygons; surface area/volume; summarize data with center/spread; interpret distributions.

**Quiz guidance:** Nets/dot plots; interpretation emphasis.

**Sample quiz items:**

- Area of triangle base10 height6.
- Surface area of  $4 \times 3 \times 5$  prism.
- From dot plot, find mean and describe spread.

## Grade 7

### Point 1 ( $\approx$ 2-month window): Proportional relationships

CCSS codes: 7.RP.1–2

**What mastery looks like:** Determine proportional relationships; represent with tables/graphs/equations; compute unit rates.

**Quiz guidance:** Include a non-proportional example.

**Sample quiz items:**

- Is  $y=3x$  proportional? Why?
- Graph through (0,0) and (4,10): unit rate?
- Complete table for  $y=2.5x$  when  $x=6$ .

### Point 2 ( $\approx$ 2-month window): Percent applications

CCSS codes: 7.RP.3

**What mastery looks like:** Discounts, tax, tip, percent change, simple interest; solve real-world percent problems.

**Quiz guidance:** Real contexts; require estimation.

**Sample quiz items:**

- \$40 item 25% off: sale price?
- Add 8.25% tax to \$18.
- Simple interest on \$300 at 4% for 2 years.

### Point 3 ( $\approx$ 2-month window): Rational numbers + expressions

CCSS codes: 7.NS.1–3, 7.EE.1–2

**What mastery looks like:** Operate with rational numbers; simplify expressions; combine like terms.

**Quiz guidance:** Sign rules + simplification.

**Sample quiz items:**

- $(-3)+8-12 = ?$
- $(-2.5)(4)= ?$
- Simplify  $3x+5-2x+7$ .

### Point 4 ( $\approx$ 2-month window): Equations and inequalities

CCSS codes: 7.EE.3–4

**What mastery looks like:** Solve multi-step equations/inequalities; model problems with equations.

**Quiz guidance:** Write equation from story; graph inequality.

**Sample quiz items:**

- Solve  $5(2x-1)=35$ .
- Solve  $2x+3 \leq 15$  and graph.
- Gym \$10 + \$3/visit: visits for \$40?

**Point 5** (~2-month window): Geometry + probability + sampling

**CCSS codes:** 7.G.1–6, 7.SP.1–8

**What mastery looks like:** Scale drawings; angle relationships; circles; volume; sampling; probability of compound events.

**Quiz guidance:** Tree diagrams/organized lists.

**Sample quiz items:**

- Scale 1in:5ft; 12ft -> inches?
- Circumference with  $r=7$ .
- Two coins: probability of 1 head.

## Grade 8

**Point 1** ( $\approx$ 2-month window): Irrational numbers; exponents; scientific notation

**CCSS codes:** 8.NS.1–2, 8.EE.1–4

**What mastery looks like:** Understand irrational numbers; exponent rules; scientific notation operations.

**Quiz guidance:** One irrational classification + one sci-notation op.

**Sample quiz items:**

- Is  $\sqrt{2}$  irrational? Why?
- $(2^3)(2^4) = ?$
- 0.00056 in scientific notation.

**Point 2** ( $\approx$ 2-month window): Linear equations and systems

**CCSS codes:** 8.EE.5–8

**What mastery looks like:** Slope and linear models; solve linear equations; solve systems and interpret intersections.

**Quiz guidance:** Slope from tables/graphs; one system context.

**Sample quiz items:**

- Slope between (2,3) and (6,11).
- Solve  $3(2x-5)=21$ .
- Solve  $y=2x+1$  and  $y=-x+7$ .

**Point 3** ( $\approx$ 2-month window): Functions

**CCSS codes:** 8.F.1–5

**What mastery looks like:** Define/evaluate functions; compare functions; interpret linear functions as models.

**Quiz guidance:** Include function/non-function relation.

**Sample quiz items:**

- Is  $\{1 \rightarrow 3, 1 \rightarrow 4, 2 \rightarrow 5\}$  a function?
- For  $f(x)=3x-2$ , find  $f(5)$ .
- Compare  $y=2x$  vs table  $y:0,3,6$ .

**Point 4** ( $\approx$ 2-month window): Transformations; congruence; similarity

**CCSS codes:** 8.G.1–5

**What mastery looks like:** Rigid motions and dilations; congruence/similarity via transformations.

**Quiz guidance:** Coordinate tasks; dilation scale factor.

**Sample quiz items:**

- Reflect  $(3, -2)$  over x-axis.
- Dilate by 1.5: side 8  $\rightarrow ?$
- Describe a sequence of transformations (given).

**Point 5** (~2-month window): Pythagorean theorem; bivariate data

**CCSS codes:** 8.G.6–9, 8.SP.1–4, 8.NS.3

**What mastery looks like:** Use Pythagorean theorem and distance; analyze scatter plots and linear models; interpret association/outliers.

**Quiz guidance:** Right-triangle + scatter plot interpretation.

**Sample quiz items:**

- Hypotenuse of 6 and 8.
- Distance between  $(-1,2)$  and  $(3,5)$ .
- Scatter plot: association and outlier.

# Algebra I (Grade 9 typical)

## Point 1 ( $\approx$ 2-month window): Linear relationships

**CCSS codes:** A-SSE.1a–1b, A-CED.1–2, A-REI.1–3, F-IF.1–6

**What mastery looks like:** Interpret expressions; create and solve linear equations; interpret graphs (intercepts, rate of change).

**Quiz guidance:** Context + solve + interpret.

### Sample quiz items:

- Write equation for  $\$25 + \$0.10/\text{text}$  and graph.
- Solve  $4(2x-3)=28$ ; justify steps.
- From graph, identify slope and intercept meaning.

## Point 2 ( $\approx$ 2-month window): Systems and inequalities

**CCSS codes:** A-CED.3–4, A-REI.5–6, A-REI.10–12

**What mastery looks like:** Solve systems; solve and graph inequalities; interpret solution regions.

**Quiz guidance:** System word problem + region description.

### Sample quiz items:

- Solve system  $2x+y=11$  and  $x-y=1$ .
- Graph  $y \geq -2x+4$  and  $y < x-1$ ; describe overlap.
- Ticket system: 120 tickets, \$960 total.

## Point 3 ( $\approx$ 2-month window): Exponential models

**CCSS codes:** F-LE.1–3, F-IF.7e, A-SSE.3c

**What mastery looks like:** Distinguish linear vs exponential; build exponential functions; interpret parameters.

**Quiz guidance:** Tables + stories.

### Sample quiz items:

- Model doubling every 5 years.
- Interpret 1.08 in  $3(1.08)^x$ .
- Identify which table is exponential.

## Point 4 ( $\approx$ 2-month window): Quadratics

**CCSS codes:** F-IF.7a, F-IF.8a, F-IF.9, A-REI.4, A-SSE.3a–3b

**What mastery looks like:** Graph/interpret quadratics; solve by factoring/completing square/quadratic formula; connect roots to intercepts.

**Quiz guidance:** Mix algebra + graph features.

### Sample quiz items:

- Solve  $x^2-5x+6=0$ .
- Vertex of  $y=(x-2)^2-3$ .
- When does  $h(t)=-16t^2+32t+5$  hit ground?

**Point 5** (~2-month window): Polynomials operations

**CCSS codes:** A-APR.1, A-SSE.2, F-BF.1a, F-IF.4–6

**What mastery looks like:** Add/subtract/multiply polynomials; evaluate functions; connect structure to behavior (intro).

**Quiz guidance:** Short computations + interpretation.

**Sample quiz items:**

- Multiply  $(x+3)(x-5)$ .
- Simplify  $(2x^2-3x+1) - (x^2+4x-6)$ .
- If  $f(x)=x^2-1$ , find  $f(-3)$ .

# Geometry (Grade 10 typical)

**Point 1** ( $\approx$ 2-month window): Transformations & congruence

**CCSS codes:** G-CO.1–5, G-CO.6–8

**What mastery looks like:** Use rigid motions to define congruence; apply triangle congruence criteria.

**Quiz guidance:** Coordinate transform + congruence reasoning.

**Sample quiz items:**

- Congruent by SSS/SAS/ASA?
- Describe transformation mapping A to A'.
- Rotate a point  $90^\circ$  about origin.

**Point 2** ( $\approx$ 2-month window): Proof & triangle theorems

**CCSS codes:** G-CO.9–13

**What mastery looks like:** Prove theorems; use reasoning chains; parallelogram properties.

**Quiz guidance:** Proof scaffolds + one full proof prompt.

**Sample quiz items:**

- Outline proof: base angles in isosceles triangle.
- Find angle using parallel lines.
- Parallelogram angle  $70^\circ$ : find others.

**Point 3** ( $\approx$ 2-month window): Similarity & trig

**CCSS codes:** G-SRT.1–5, G-SRT.6–8

**What mastery looks like:** Similarity; proportions; trig ratios; solve right triangles.

**Quiz guidance:** One similarity + one trig application.

**Sample quiz items:**

- Similar triangles scale factor -> missing side.
- Tree height with angle  $35^\circ$  and distance 20m.
- Verify right triangle with Pythagorean.

**Point 4** ( $\approx$ 2-month window): Circles

**CCSS codes:** G-C.1–5

**What mastery looks like:** Circle theorems, tangents, inscribed angles; circle equations.

**Quiz guidance:** Diagram-based reasoning.

**Sample quiz items:**

- Inscribed angle intercepting  $120^\circ$  arc -> ?
- Tangent-radius angle property.
- Circle center  $(2, -1)$ ,  $r=5$ : equation.

**Point 5** ( $\approx$ 2-month window): Coordinate geometry + volume + modeling

**CCSS codes:** G-GPE.4–7, G-GMD.1–3, G-MG.1–3

**What mastery looks like:** Coordinate proofs; volume; geometric modeling.

**Quiz guidance:** Coordinate proof + volume modeling.

**Sample quiz items:**

- Slopes 2 and  $-1/2$ : perpendicular?
- Volume of cone  $r=3$   $h=10$ .
- Model a constraint problem and explain.

## Algebra II (Grade 11 typical)

**Point 1** ( $\approx$ 2-month window): Polynomials & rational expressions

**CCSS codes:** A-APR.2–7, A-SSE.1–3

**What mastery looks like:** Polynomial identities and division; rational expressions with restrictions.

**Quiz guidance:** Division + restriction.

**Sample quiz items:**

- Divide  $(2x^3+3x^2-5)$  by  $(x-2)$ .
- Simplify  $(x^2-9)/(x-3)$ ; restrictions?
- Expand  $(x+2)^3$ .

**Point 2** ( $\approx$ 2-month window): Functions: transforms, composition, inverses

**CCSS codes:** F-IF.4–9, F-BF.1–4

**What mastery looks like:** Analyze function features; build/compose/invert; transformations.

**Quiz guidance:** Graph interpretation + function writing.

**Sample quiz items:**

- Write  $g(x)=f(x-3)+2$  for  $f(x)=x^2$ .
- Inverse of  $3x-7$ .
- Intervals increasing/decreasing from graph.

**Point 3** ( $\approx$ 2-month window): Exponential & logarithmic

**CCSS codes:** F-LE.1–4

**What mastery looks like:** Growth/decay; logs; solve exponential/log equations; interpret parameters.

**Quiz guidance:** Model + log solve.

**Sample quiz items:**

- Solve  $5(1.2)^t=20$ .
- Solve  $\log_3(x)=4$ .
- 15% per hour model; interpret.

**Point 4** ( $\approx$ 2-month window): Trigonometry

**CCSS codes:** F-TF.1–9

**What mastery looks like:** Unit circle; graphs; identities; trig equations; periodic models.

**Quiz guidance:** Unit circle + identity + modeling.

**Sample quiz items:**

- $\sin(150^\circ) = ?$
- Graph  $y=2\sin(x)$ .
- Simplify  $1-\cos^2(x)$ .

**Point 5** (~2-month window): Statistics & regression

**CCSS codes:** S-ID.1–9

**What mastery looks like:** Correlation, regression, residuals, model fit, interpretation.

**Quiz guidance:** Interpretation-heavy.

**Sample quiz items:**

- Interpret slope in  $y=1.8x+4$ .
- Residual plot: linear appropriate?
- Correlation  $-0.9$  means what?

## Grade 12 (Typical Advanced Pathway)

**Point 1** ( $\approx$ 2-month window): Functions, composition, inverses

**CCSS codes:** F-BF.3–5, F-IF.7–9

**What mastery looks like:** Composition/inverses; function families; end behavior and transformations.

**Quiz guidance:** Composition + inverse + behavior.

**Sample quiz items:**

- $(f \square g)(3)$  with  $f(x)=2x+1$ ,  $g(x)=x^2$ .
- Inverse of  $(x-4)/3$ .
- End behavior of  $-x^3+2x$ .

**Point 2** ( $\approx$ 2-month window): Advanced trig modeling

**CCSS codes:** F-TF.7–9 (and supporting F-TF.1–6)

**What mastery looks like:** Sinusoidal modeling; identities; trig equations on intervals.

**Quiz guidance:** One sinusoid parameter task.

**Sample quiz items:**

- Tide 2–8m every 12h: model.
- Solve  $2\sin(x)=1$  on  $[0,2\pi]$ .
- Rewrite  $\sin(2x)$  using  $\sin x$  and  $\cos x$ .

**Point 3** ( $\approx$ 2-month window): Conditional probability

**CCSS codes:** S-CP.1–9

**What mastery looks like:** Conditional probability and independence; tables/trees; reasoning.

**Quiz guidance:** Independence check + conditional from table.

**Sample quiz items:**

- Given  $P(A)=0.4$ ,  $P(B)=0.5$ ,  $P(A \cap B)=0.2$ : independent?
- Two draws without replacement: prob both red (3R,2B).
- From a two-way table compute  $P(A|B)$ .

**Point 4** ( $\approx$ 2-month window): Expected value & decisions

**CCSS codes:** S-MD.1–7

**What mastery looks like:** Expected value; compare strategies; risk/reward modeling.

**Quiz guidance:** Require explanation.

**Sample quiz items:**

- EV of game: win \$10 (0.2) else 0; cost \$3.
- Compare two plans using expected monthly cost.
- Raffle EV: ticket \$2; prizes \$50 (1/40), \$5 (1/10).

**Point 5** (~2-month window): Inference & study design

**CCSS codes:** S-IC.1–6

**What mastery looks like:** Sampling, experiments, confidence intervals, significance (interpretation).

**Quiz guidance:** Interpretation over computation.

**Sample quiz items:**

- Interpret 95% CI (12,18).
- Explain bias in convenience sample.
- $p=0.03$ : what does it suggest?