



# IXL Skill Alignment

Integrated 3 alignment for Carnegie Integrated Math



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# Module 1

## Analyzing Structure

### Topic 1: Exploring and Analyzing Patterns

#### Textbook section

#### IXL skills

**Lesson 1.1:** Patterns: They're Grrrrrowing!

**Lesson 1.2:** The Cat's Out of the Bag!

**Lesson 1.3:** Samesies

**Lesson 1.4:** True to Form

#### Characteristics of quadratic functions

1. Characteristics of quadratic functions: graphs WMS
2. Characteristics of quadratic functions: equations L8C

#### Graph quadratic functions

3. Graph a quadratic function S9G
4. Match quadratic functions and graphs QCE

#### Write quadratic functions

5. Write a quadratic function from its zeroes G2Q
6. Write a quadratic function from its vertex and another point URV

**Lesson 1.5:** The Root of the Problem

#### Square roots

1. Solve a quadratic equation using square roots FG7

#### Zero product property

2. Solve a quadratic equation using the zero product property TRU

#### Factoring

3. Factor quadratics UB5
4. Solve a quadratic equation by factoring CJC

#### Complete the square

5. Complete the square 9MW

6. Solve a quadratic equation using the quadratic formula YQH

### Systems of equations

7. Solve a system of linear and quadratic equations: parabolas HVZ

## Topic 2: Composing and Decomposing Figures and Functions

Textbook section	IXL skills
<b>Lesson 2.1:</b> You Spin Me Round	1. Solids of revolution LKT
<b>Lesson 2.2:</b> Any Way You Slice It	1. Cross sections of three-dimensional figures 7Z4
<b>Lesson 2.3:</b> Blame It on the Rain	
<b>Lesson 2.4:</b> Folds, Turns, and Zeros	1. Dilations of functions NNY
<b>Lesson 2.5:</b> Planting the Seeds	
<b>Lesson 2.6:</b> The Zero's the Hero	1. Fundamental Theorem of Algebra YS8

## Topic 3: Characteristics of Polynomial Functions

Textbook section	IXL skills
<b>Lesson 3.1:</b> So Odd, I Can't Even	
<b>Lesson 3.2:</b> Math Class Needs a Makeover	1. Function transformation rules R7X
<b>Lesson 3.3:</b> Poly-Wog	1. Match polynomials and graphs XJU
<b>Lesson 3.4:</b> Function Construction	1. Add, subtract, multiply, and divide functions CLF
<b>Lesson 3.5:</b> Level Up	1. Average rate of change PHD
<b>Lesson 3.6:</b> To a Greater or Lesser Degree	

# Module 2

## Developing Structural Similarities

### Topic 1: Relating Factors and Zeros

Textbook section	IXL skills
<b>Lesson 1.1:</b> Satisfactory Factoring	<p><b>Factor polynomials</b></p> <ol style="list-style-type: none"> <li>Factor out a monomial NMZ</li> <li>Factor using a quadratic pattern QKF</li> <li>Factor by grouping HVT</li> <li>Factor polynomials A2W</li> </ol> <p><b>Roots of polynomials</b></p> <ol style="list-style-type: none"> <li>Find the roots of factored polynomials PVM</li> </ol>
<b>Lesson 1.2:</b> Divide and Conquer	<p><b>Polynomial vocabulary</b></p> <ol style="list-style-type: none"> <li>Polynomial vocabulary DYB</li> </ol> <p><b>Roots of polynomials</b></p> <ol style="list-style-type: none"> <li>Solve polynomial equations ZCH</li> <li>Complex conjugate theorem 5WU</li> <li>Conjugate root theorems EYD</li> </ol> <p><b>Write a function from its roots</b></p> <ol style="list-style-type: none"> <li>Write a quadratic function from its zeroes G2Q</li> <li>Write a polynomial from its roots BTU</li> </ol> <p><b>Polynomial division</b></p> <ol style="list-style-type: none"> <li>Divide polynomials using long division YN5</li> <li>Divide polynomials using synthetic division D6D</li> <li>Evaluate polynomials using synthetic division CHC</li> </ol>
<b>Lesson 1.3:</b> Closing Time	<ol style="list-style-type: none"> <li>Add and subtract polynomials 9A3</li> <li>Multiply polynomials 8GN</li> </ol>
<b>Lesson 1.4:</b> Unequal Equals	<ol style="list-style-type: none"> <li>Solve quadratic inequalities 56V</li> </ol>

## Topic 2: Polynomial Models

Textbook section	IXL skills
<b>Lesson 2.1:</b> Not a Case of Mistaken Identity	1. Factor sums and differences of cubes NJV
<b>Lesson 2.2:</b> Elegant Simplicity	1. Pascal's triangle G7Y 2. Pascal's triangle and the Binomial Theorem A7M 3. Binomial Theorem I CWS 4. Binomial Theorem II NEU
<b>Lesson 2.3:</b> Modeling Gig	

## Topic 3: Rational Functions

Textbook section	IXL skills
<b>Lesson 3.1:</b> There's a Fine Line Between a Numerator and a Denominator	
<b>Lesson 3.2:</b> Approaching Infinity	
<b>Lesson 3.3:</b> There's a Hole in My Function!	1. Rational functions: asymptotes and excluded values 7JJ
<b>Lesson 3.4:</b> Must Be a Rational Explanation	1. Simplify rational expressions 37N 2. Multiply and divide rational expressions MG2 3. Add and subtract rational expressions FEX
<b>Lesson 3.5:</b> Thunder. Thun- Thun- Thunder.	1. Solve rational equations CHP
<b>Lesson 3.6:</b> 16 Tons and What Do You Get?	

# Module 3

## Inverting Functions

### Topic 1: Radical Functions

Textbook section	IXL skills
<b>Lesson 1.1:</b> Strike That, Invert It	
<b>Lesson 1.2:</b> Such a Rad Lesson	<p><b>Composition of functions</b></p> <ol style="list-style-type: none"> <li>1. Composition of linear functions: find a value MFV</li> <li>2. Composition of linear functions: find an equation RSP</li> <li>3. Composition of linear and quadratic functions: find a value P9T</li> <li>4. Composition of linear and quadratic functions: find an equation EKJ</li> </ol> <p><b>Inverse functions</b></p> <ol style="list-style-type: none"> <li>5. Find inverse functions and relations ZRQ</li> </ol>
<b>Lesson 1.3:</b> Making Waves	<ol style="list-style-type: none"> <li>1. Domain and range of radical functions HR9</li> <li>2. Function transformation rules R7X</li> </ol>
<b>Lesson 1.4:</b> Keepin' It Real	<p><b>Simplify radical expressions</b></p> <ol style="list-style-type: none"> <li>1. Simplify radical expressions with variables I LQX</li> <li>2. Simplify radical expressions with variables II QGZ</li> <li>3. Nth roots U42</li> </ol> <p><b>Operations with radical expressions</b></p> <ol style="list-style-type: none"> <li>4. Multiply radical expressions PUM</li> <li>5. Divide radical expressions CCU</li> <li>6. Add and subtract radical expressions L46</li> <li>7. Simplify radical expressions using the distributive property QAX</li> <li>8. Simplify radical expressions using conjugates FX7</li> </ol>
<b>Lesson 1.5:</b> Into the Unknown	<ol style="list-style-type: none"> <li>1. Solve radical equations EHE</li> </ol>

## Topic 2: Exponential and Logarithmic Functions

Textbook section	IXL skills
<b>Lesson 2.1:</b> Half-Life	<ol style="list-style-type: none"> <li>Evaluate exponential functions <small>LWE</small></li> <li>Solve exponential equations using factoring <small>YQY</small></li> </ol>
<b>Lesson 2.2:</b> Pert and Nert	<ol style="list-style-type: none"> <li>Match exponential functions and graphs <small>PCX</small></li> <li>Exponential growth and decay: word problems <small>TYQ</small></li> <li>Compound interest: word problems <small>YJW</small></li> <li>Continuously compounded interest: word problems <small>5GU</small></li> </ol>
<b>Lesson 2.3:</b> Return of the Inverse	<ol style="list-style-type: none"> <li>Domain and range of exponential and logarithmic functions <small>GLL</small></li> </ol>
<b>Lesson 2.4:</b> I Like to Move It	

## Topic 3: Exponential and Logarithmic Equations

Textbook section	IXL skills
<b>Lesson 3.1:</b> All the Pieces of the Puzzle	<ol style="list-style-type: none"> <li>Convert between exponential and logarithmic form: rational bases <small>TPA</small></li> </ol>
<b>Lesson 3.2:</b> Mad Props	<ol style="list-style-type: none"> <li>Identify properties of logarithms <small>N59</small></li> <li>Product property of logarithms <small>CW9</small></li> <li>Quotient property of logarithms <small>ZNT</small></li> <li>Power property of logarithms <small>7T3</small></li> <li>Properties of logarithms: mixed review <small>5LL</small></li> <li>Evaluate logarithms using properties <small>RNH</small></li> </ol>
<b>Lesson 3.3:</b> More Than One Way to Crack an Egg	<p><b>Exponential equations</b></p> <ol style="list-style-type: none"> <li>Solve exponential equations using common logarithms <small>9F2</small></li> <li>Solve exponential equations using natural logarithms <small>KVL</small></li> </ol> <p><b>Change of base formula</b></p> <ol style="list-style-type: none"> <li>Change of base formula <small>J2R</small></li> </ol>

**Lesson 3.4:** Logging On

1. Solve logarithmic equations I BXU
2. Solve logarithmic equations II RLX

**Lesson 3.5:** What's the Use?**Topic 4: Applications of Growth Modeling****Textbook section****IXL skills****Lesson 4.1:** Series Are Sums

1. Find the sum of a finite geometric series 9KQ

**Lesson 4.2:** Paint By Numbers**Graph functions**

1. Graph a linear function LSG
2. Graph a quadratic function S9G
3. Graph an absolute value function 23W

**Match functions and graphs**

4. Match polynomials and graphs XJU
5. Match exponential functions and graphs PCX

**Asymptotes and excluded values**

6. Rational functions: asymptotes and excluded values 7JJ

**Lesson 4.3:** This Is the Title of This Lesson



# Module 4

## Investigating Periodic Functions

### Topic 1: Trigonometric Functions

Textbook section	IXL skills
<b>Lesson 1.1:</b> The Deriving Force	<p><b>Law of Sines and Law of Cosines</b></p> <ol style="list-style-type: none"> <li>1. Law of Sines BSY</li> <li>2. Law of Cosines ZQB</li> </ol> <p><b>Area of a triangle</b></p> <ol style="list-style-type: none"> <li>3. Area of a triangle: sine formula LNQ</li> <li>4. Area of a triangle: Law of Sines 5NP</li> </ol> <p><b>Solve a triangle</b></p> <ol style="list-style-type: none"> <li>5. Solve a triangle YPP</li> </ol>
<b>Lesson 1.2:</b> A Sense of Déjà Vu	
<b>Lesson 1.3:</b> The Knights of the Round Table	<ol style="list-style-type: none"> <li>1. Convert between radians and degrees EDC</li> <li>2. Radians and arc length UA5</li> </ol>
<b>Lesson 1.4:</b> What Goes Around	<p><b>Sine and cosine functions</b></p> <ol style="list-style-type: none"> <li>1. Graph sine functions 9NS</li> <li>2. Graph cosine functions KXG</li> <li>3. Graph sine and cosine functions A7V</li> </ol> <p><b>Coterminal and reference angles</b></p> <ol style="list-style-type: none"> <li>4. Coterminal angles 7CV</li> <li>5. Reference angles BRP</li> </ol> <p><b>Symmetry and periodicity</b></p> <ol style="list-style-type: none"> <li>6. Symmetry and periodicity of trigonometric functions YBJ</li> </ol>
<b>Lesson 1.5:</b> The Sines They Are A-Changin'	<p><b>Sine functions</b></p> <ol style="list-style-type: none"> <li>1. Find properties of sine functions 2EK</li> <li>2. Write equations of sine functions from graphs FGW</li> </ol>

- Write equations of sine functions using properties JDH

### Cosine functions

- Find properties of cosine functions F8Y
- Write equations of cosine functions from graphs 4G8
- Write equations of cosine functions using properties N6X

### Translations of sine and cosine functions

- Graph translations of sine functions LCN
- Graph translations of cosine functions M5K
- Graph translations of sine and cosine functions 9D7

### Lesson 1.6: Farmer's Tan

- Sin, cos, and tan of special angles 6H8

## Topic 2: Trigonometric Equations

### Textbook section

#### Lesson 2.1: Chasing Theta

### IXL skills

#### Unit circle

- Find trigonometric ratios using the unit circle ZF7

#### Inverses of functions

- Inverses of sin, cos, and tan JVB

#### Solve trigonometric equations

- Solve trigonometric equations I CQB
- Solve trigonometric equations II SNX

#### Lesson 2.2: Wascally Wabbits

#### Lesson 2.3: The Wheel Deal

#### Lesson 2.4: Springs Eternal

# Module 5

## Relating Data and Decisions

### Topic 1: Interpreting Data in Normal Distributions

Textbook section	IXL skills
<b>Lesson 1.1:</b> Recharge It!	1. Variance and standard deviation V5H
<b>Lesson 1.2:</b> The Form of Norm	1. Find probabilities using the normal distribution I QA9
<b>Lesson 1.3:</b> Above, Below, and Between the Lines	1. Find z-values PAJ 2. Find values of normal variables 9B3
<b>Lesson 1.4:</b> Toh-May-Toh, Toh-Mah-Toh	1. Choose the better bet 5YW

### Topic 2: Making Inferences and Justifying Conclusions

Textbook section	IXL skills
<b>Lesson 2.1:</b> Data, Data Everywhere	1. Identify biased samples CH7 2. Experiment design BKR
<b>Lesson 2.2:</b> Ample Sample Examples	
<b>Lesson 2.3:</b> A Vote of Confidence	1. Find confidence intervals for population means JVK 2. Find confidence intervals for population proportions QAD
<b>Lesson 2.4:</b> How Much Different?	1. Interpret confidence intervals for population means MNM
<b>Lesson 2.5:</b> DIY	1. Analyze the results of an experiment using simulations RLB