

map GROWTH[™]

RIT TO CONCEPT

You can enhance the instruction of students who scored within a given range with the following word lists and associated concepts. These word lists and concepts can prepare English language learners for the MAP Growth assessment because they are likely to appear on the test. However, please remember that these word lists aren't comprehensive. Because tests are adaptive, the words aren't guaranteed to appear. For best results, use these lists in conjunction with other vocabulary lists associated with your curriculum.

Relation to Norms

The words within each RIT band represent the difficulty level that MAP Growth measures, regardless of your state standard. To see how the RIT ranges correspond to grade level, see the charts in the <u>Normative Data Overview</u>.

Relation to Learning Statements

These words and concepts correspond directly to the learning statements found in Learning Continuum. If you want more context, especially how these topics evolve across the RIT bands, please refer to the Learning Continuum.

Subjects

- Mathematics Concepts by RIT on page 1
- Reading Concepts by RIT on page 11
- Language Usage Concepts by RIT on page 18
- Physical Science Concepts by RIT on page 28

Mathematics Concepts by RIT

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		Mathematics			
RIT Band	Concepts to Introduce				
131–140	Whole Numbers—Counting a	and Cardinality:			
	number				
141–150	Whole Numbers—Addition/ S	Subtraction:			
	compare quantities				
	sum				
	Length:				
	length				
	height				
	width				
	Identification and Classificat	ion of 2-D Shapes:			
	circles	rectangles	triangles		
	measure	squares			
	Additional Learning Continuum topic: Data Analysis				
151–160	Concepts building on topics	from prior RIT bands:			
	add	octagon	rhombus		
	category	parallelogram	subtract		
	equal parts	pentagon	trapezoids		
	hexagon				
	Number Sentences/Equation	Number Sentences/Equations/Equivalence:			
	difference				
	parts of addition and subtraction problems				
	Time:				
	hour				
	Spatial Concepts and Symmetry:				
	location words				
	Whole Numbers—Compare /	Order:			
	backwards				
	count				
	order				

			Mathematics		
RIT Band	Concepts to Introduce				
	Identification and Clas	ssificat	ion of 3-D Shape	es:	
	cones		cubes		spheres
	corners		cylinders		
	Additional Learning C	ontinu	um Topics:		
	- Fractions: Equivalence		- Whole Number	s: Multiplication/	Division
	- Fractions: Represent/Mo	odel	- Whole Number	s: Represent an	d Solve Word Problems
	- Whole Numbers: Place Value				
161–170	Concepts building on topics from prior RIT bands:				
	digit		hundreds		start, change, end
	fourths		ones		tens
	halves		open or closed s	hape	thirds
	Money:				
	coins				
	dollar				
	Problem Solving with Units:				
	foot	mile		yard	
	inch	ruler		yardstick	
	Data Representation:				
	bar graph		pictograph		
	measurement scale		scale		
	Additional Learning C - Decimals—Addition/Subt - Angle Measurement - Area	Continu traction	um Topics:		

		Mathematics			
RIT Band	Concepts to Introduce				
171–180	Concepts building on topics from prior RIT bands:				
	denominator	hundred thousand	ds	quarter hour	
	edges	line of symmetry		second	
	even	minute		ten thousands	
	faces	model		thousands	
	fraction	numerator		vertices	
	half-past	odd			
	Fractions—Compare/Order:				
	equivalent				
	Numerical Expressions:				
	expanded form				
	parentheses in expressions				
	unknowns in number sentences				
	Whole Numbers;				
	Decimals—Rounding/Estimation:				
	estimation				
	rounds				
	Additional Learning Continuum Topics:				
	- Conversion of Units		- Probability		
	- Coordinate Geometry - Decimals—Represent and Solve	e Word Problems	- Properties a	and Relationships of Operations ibers—Concepts/Properties	
	- Perimeter/Circumference				
181–190	Concepts building on topics	from prior RIT ba	nds:		
	a.m. / p.m.	equations		scatter plot	
	chart	hundred millions		table	
	coordinates	million		ten millions	
	degree	multiples			
	Fractions: Addition/Subtract	ion:			
	mixed number				
	mixed number				

	Mathematics				
RIT Band	Concepts to Introduce				
	Angle Measurement; Points, Lines, Segments, Ray	vs. and Angles:			
	acute angle	narallel	right angles		
	obtuse angle	protractor	nghrangios		
	Additional Learning Continuum Topics: - Decimals—Multiplication/Division - Bivariate Data - Rates/Ratios/Proportions/Percents				
191–200	Concepts building on topics	from prior RIT bands:			
	decimals	likelihood (of event)	perimeter		
	dividend	line segments	points		
	divisor	lines	prime		
	dot plot	positive	rays		
	estimate	proportion	solution		
	equilateral	negative	unit rate		
	isosceles	number line	variable		
	Fractions—Represent and Solve Word Problems:				
	composite	factor	simplest form		
	converts				
	Capacity;				
	Weight/Mass:				
	capacity	liter	pounds		
	cups	ounces	quarts		
	gallons	pints			
	Additional Learning Continue - Decimals—Multiplication/Division - Fractions—Multiplication/Division - Patterns/Sequences/Series - Rational Numbers—Equivalence	um topics:	- Algebraic Expressions - Linear Functions - Sample Spaces		

Mathematics					
RIT Band	Concepts to Introduce				
201–210	Concepts building on topics from prior RIT bands:				
	associative property	kilometer	mode		
	centimeter	liter	nets		
	commutative property	mean	outliers		
	diagonal	median	quadrants		
	distance	meter	scalene		
	distributive property	milliliter	y-intercept		
	inverse	millimeter			
	Decimals—Compare/Order;				
	Decimals—Represent/Model:				
	hundredths				
	tenths				
	thousandths				
	Volume:				
	prism				
	pyramid				
	unit cube				
	Similarity:				
	scale factor				
	Rational Numbers—Solve Real-World and Mathematical Problems:				
	rate				
	simplify				
	Additional Learning Continue	im topics:			
	- Congruence		- Populations/Random Processes		
	- Measures of Center and Spread (Variability)	- Transformations		

		Mathematics		
RIT Band	Concepts to Introduce			
211–220	Concepts building on topics	from prior RIT bands:		
	box plot	outliers	reflection	
	combine terms	perpendicular	rotation	
	complementary	quartiles	rule for patterns or sequences	
	diameter	radius	supplementary	
	improper fractions	range	translation	
	joint probability	reasonableness	vertical angle	
	mixed number			
	System of Equations/Inequal	lities:		
	standard form			
	Rate of Change/Slope:			
	linear			
	Exponents;			
	Scientific Notation:			
	base			
	power / powers			
	square root			
	Additional Learning Continuum topics:			
	- Rational Numbers—Compare/Or	der		
221-230	Concepts building on topics	from prior RIT bands:		
	cube root	histogram	narameters	
	experimental probability	independent events	theoretical probability	
	exponential form	line of best fit		
	Inequalities;			
	Linear Functions:			
	dependent variable	substitution		
	independent variable			

Mathematics				
RIT Band	Concepts to Introduce			
	Relationships involving Line exterior angle interior angle transversal	s, Angles,	and Polygons:	
	Additional Learning Continue - Absolute Value—Concepts/Prop - Rational Numbers—Computation	u m topics: erties 1	- Real/Complex Numb - Quadratic Functions	pers—Concepts/Properties
231–240	Concepts building on topics conditional probability dilation irrational number replacement	from prior	RIT bands:	
	Exponential and Logarithmic Functions; Piecewise/Absolute Value Functions;			
	Properties and Operations of Functions;			
	axis of symmetry	exponenti	al decav	polynomials
	binomial	exponenti	al growth	zeros of a function
	domain	monomial		
	Pythagorean Theorem;			
	Trigonometry; Circles: chord midpoint			
241–250	Trigonometric Functions / Ra	adian Meas	ure	
	cosine	sine		
	radians	tangent		
	Additional Learning Continue	um topics:		
	Rational Functions; Radicals; a	nd Surface	Area	

Mathematics				
RIT Band	Concepts to Introduce			
251–260	Concepts building on topics from prior RIT bands:			
	arc	rotational symmetry		
	inscribed angle	slant height		
	Geometric Proof:			
	postulate			
	theorem			

Reading Concepts by RIT

Reading					
RIT Band	Concepts to Introduce				
Below 161	Base Words, Affixes:				
	base	ending	prefix		
	beginning	ending sound	word		
	beginning sound				
	Inferences, Conclusions,	Predictions; and Locating Infor	mation:		
	where				
	Context Clues—Unknown	n and Multiple-Meaning Words;			
	Picture Vocabulary;				
	Word Relationships;				
	Text Features, Visuals:				
	activity	guess	picture		
	animals	main	same		
	describes	meaning	similar		
	find	paragraph	story		
	Additional Learning Continuum topic: - Academic and Content Vocabulary				
161–170	Concepts building on topics from prior RIT bands:				
	author	hear	sentence		
	chart	hint	smell		
	clue	label	taste		
	contraction	nature	think		
	feel	note	Venn diagram		
	feelings	root	visual		
	graph	see			
	Main or Central Idea, Top	ic, Titles;			
	central	different	problem		
	classify	important	reason		
	compound	lesson	text		
	description	main point	title		
	determine	people	topic		

Reading					
RIT Band	Concepts to Introduce				
	Following Directions:				
	categorize	instructions	order		
	directions	learn	question		
	group	list	set		
	information	locate	sort		
	Additional Learning Continu	um Topics:			
	- Author's Craft—Figurative Lang	uage, Imagery + Description	- Purpose		
	- Characteristics of Genre		- Sequencing		
	—Business, Technical, Proce	dural	- Setting		
	-Literary Nonfiction		- Theme, Moral, Lesson		
	-Persuasive, Argumentative		- Word Categorization		
	- Plot				

Reading						
RIT Band	Concepts to Introduce					
171–180	Concepts building on topics from prior RIT bands:					
	action	locate	predict			
	change	location	sequence			
	conclusion	main character	setting			
	event	plot	suffix			
	illustration					
	Characteristics of Genre—Li	Characteristics of Genre—Literary;				
	Author's Craft—Perspective,	Attitude:				
	fairy tale	poem	short story			
	fiction	poet	speaker			
	make-believe	poetry				
	Characteristics of Genre—Informational:					
	informational	nonfiction	source			
	purpose	reference				
	Facts and Opinions:					
	belief	opinion	true			
	fact	real	truth			
	factual	statement	view			
	Additional Learning Continu - Assertions and Claims - Author's Craft—Persuasive and F	um Topics: Rhetorical Techniques				

Reading				
RIT Band	Concepts to Introduce			
181–190	Concepts building on topics	from prior RIT bands:		
	antonym	graphic organizer	synonym	
	develop	homonym	thesaurus	
	dictionary	realistic	timeline	
	genre	realistic fiction	title page	
	glossary	resource		
	Summarizing, Paraphrasing:			
	in your own words	restate	summary	
	paraphrase	retell	theme	
	related	summarize		
	Mood;			
	Point of View:			
	compare	narrator (perspective, attitude)	third-person	
	differ	point of view	viewpoint	
	effect			
	mood			
	Additional Learning Continue	um Topic: aning		

Reading				
RIT Band	Concepts to Introduce			
191–200	Concepts building on topics	cs from prior RIT bands:		
	author's focus	drama	reference materials†	
	captions†	first-person point of view	resolution	
	character relationship	homophone	rising action	
	claim	index†	subheadings†	
	climax	lead	supporting character	
	conflict	newspaper writing	table of contents†	
	context	characteristics	title (choose the best)	
	contrast			
	definition			
	†purpose of each			
	Supporting Details;			
	Inferences, Conclusions, Predictions:			
	cause-effect	detail	support	
	central idea	main idea	supporting details	
	characterize	reinforce		
	Additional Learning Continu - Author's Craft—Foreshadowing,	um Topic: Flashback		

	Reading			
RIT Band	Concepts to Introduce			
201–210	Concepts building on topics from prior RIT bands:			
	alliteration	exposition	literary element	
	analyze	falling action	metaphor	
	bias	figurative language	persuade	
	character motivation	flashback	onomatopoeia	
	characteristics	foreshadow	persuasive	
	conclude	idiom	resolve	
	comparative	inform	secondary source	
	contribute	library	simile	
	convince	literal description	stereotype	
	evaluate	literary device	superlative	
	evidence			
	Text Structure—Organization:			
	form	structure	white space*	
	organization	varied typeface*		
	*purpose in informational text			
	Dialogue:			
	conversation			
	converse			
	dialogue			
	Additional Learning Continuum Topic: - Author's Craft—Style, Voice, Tone			
211–220	Concepts building on topics	from prior RIT bands:		
	analogy	history	style	
	argue	imagery	summarizing strategies	
	argumentative	intent	technique	
	assumption	intention	tone	
	drama	irony	voice	
	historical document (relationship between two parts)	paradox		

Reading			
RIT Band	Concepts to Introduce		
221–230	Concepts building on topics from prior RIT bands:		
	allegory	fables†	sonnet
	all-knowing	legends†	tales†
	extended metaphor	myths†	
	†distinguish between		
231–240	Concepts building on topics	from prior RIT bands:	
	ironic point of view (effect on me	eaning)	
	stage directions		
	tone		
241–250	Concepts building on topics	from prior RIT bands:	
	satirical passage (understand a	uthor's point)	

Language Usage Concepts by RIT

Language Usage				
RIT Band	Concepts to Introduce			
Below 161	Capitalization–First Word Rules:			
	action	correct / right		incorrect
	capital letter	describe		move
	capitalize	form		sentence
	complete			
	Additional Learning Continuum Topics:			
	- Adjectives		- Pronouns	
	- Agreement		- Sentence Com	pleteness
	- Apostrophe		- Spelling—Com	monly Misspelled Words
	- Coordination, Subordination		- Verbs	
	- Prepositions, Conjunctions, Interj	ections		

Language Usage			
RIT Band	Concepts to Introduce		
161–170	Concepts building on topics from prior RIT bands:		
	base		
	ending		
	pronoun		

	Language Usage			
RIT Band	Concepts to Introduce			
	Capitalization—Proper Noun	s and Titles:		
	date	month	place	
	days of the week	name	title	
	Ending Punctuation:			
	complete sentence	explanation mark	when	
	end mark	period	where	
	excited	question	who	
	exclamation	question mark	why	
	exclamation point	what		
	Drafting;			
	Main Ideas / Topic Sentence / Supporting Details;			
	Prewriting;			
	Revising:			
	add	correct		
	arrange	plan		
	change	topic		
	combine			
	Subject/Predicate:			
	action verb			
	verb			
	Nouns;			
	Phrases;			
	Sentence Meaning:			
	compare	past	subject	
	future	plural	word endings	
	nouns	present	word order	
	passage	singular		

	Language Usage			
RIT Band	Concepts to Introduce			
161–170,	Additional Learning Continue	um Topics:		
continued	 Commas Editing and Proofreading Initials and Abbreviations Sentence Types Spelling—Affixes and Roots 	- Syntax Proofreading - Writing Techniques bbreviations - Figurative and Descriptive Language pes -Literary and Poetic Devices fixes and Roots		
171–180	Concepts building on topics	from prior RIT bands:		
	address (abbreviate)	error	prepositions	
	apostrophe	essay	proper noun*	
	audience	fiction	punctuate	
	book title*	fictional	punctuation	
	collective noun	logical order	restate	
	comma	main idea	sequence	
	command	misspelled	short story	
	common noun	mistake	shorten words to make	
	connect	narrative	contractions	
	conjunctions	organize	steps	
	contraction	paragraph	support	
	description	personal title*#	supporting details	
	details	phrase	surprise	
	directions	possessive	topic sentence	
	*capitalize, #abbreviate			

Language Usage				
RIT Band	Concepts to Introduce			
	Spelling			
	—Compound Words;			
	—Patterns;			
	—Plurals;			
	Initials and Abbreviations:			
	a.m. / p.m.	compound	patterns	
	abbreviate	foot#	shorten	
	abbreviation*	holidays*	time#	
	centimeter#	inch#	vowels	
	combine	measurements#	word list	
	*capitalize, #abbreviate			
	Additional Learning Continue	um Topics:		
	- Adverbs		- Writing Forms—Genres	
	- Introductions / Transitions / Conc	lusions	- Writing Techniques	
	- Multiple Punctuation Rules		—Literary Elements	
	- Organizing Writing		-Voice, Style, Tone,	and Mood
	- Sentence Structure			

	Language Usage			
RIT Band		Concepts to Introduce		
181–190	Concepts building on topics from prior RIT bands:			
	abbreviated title / suffixes*	graphic organizer	prewriting strategy	
	address	greeting*	publish	
	appropriate	heading	purpose	
	brainstorm	helping verb	reinforce	
	caret	image	revise	
	clear	indent	revision	
	closing	inform	rough draft	
	closing*#	informative	run-on sentence	
	compound sentence	introduction	salutation*#	
	compound subject	invitation	semicolon	
	concluding sentence	irregular verb	senses	
	conclusion	items in a series#	signature#	
	coordinating conjunction	linking verb	singular	
	date#	margin	singular noun	
	double consonant	opening	song and poem titles*	
	edit	organizations*	stanza	
	emotion	personal titles and positions*	strengthen	
	entertain	personal writing	suffix	
	explanation	poetry	summarize	
	formal essay	predicate	task	
	format	prefix	tone	
	friendly letter	prewrite	topic sentence	
	geographic location*		transition	
			writing process	
	*capitalize, #comma			
	Additional Learning Continuum Topics: - Capitalization—Quotations and Dialogue			

- Frequently Confused Words
- Quotation Marks and Dialogue

	Language Usage			
RIT Band		Concepts to Introduce		
191–200	Concepts building on topics from prior RIT bands:			
	argue	genre	precise	
	book report	grammar	proofread	
	cause and effect	informational writing	quotation	
	clarify	informative essay	quotation marks	
	clarity	introduction	resume	
	comma rules	literary device	review	
	compare and contrast	memo	sensory language	
	contrasting	modifiers	simile	
	conversation#	modify	slang	
	convince	mood	style	
	creative writing	outline	steps in a process	
	descriptive language	pamphlet	subject-verb agreement	
	descriptive writing	parody	thesis statement	
	dialogue	persuade	viewpoint	
	direct address#	persuasive	visualize	
	direct quote	poetic device	voice	
	drama	point of view		
	future tense			
	#comma			
	Brackets, Dashes, Hyphens,	Ellipses, Parentheses;		
	Underlining:			
	book title*	compound word	hyphen	
	colon	divided quotations#	underline	
	*underline, #comma			
	Additional Learning Continuum Topics: - Clauses - Writing Techniques—Rhetorical Strategies - Writing Techniques—Argument, Counterargument			

	Language Usage			
RIT Band	Concepts to Introduce			
201–210	Concepts building on topics from prior RIT bands:			
	allusion	fragment	parentheses	
	argumentative	free-write	periodical	
	argumentative essay	humor	plural possessive	
	article titles*	imperative sentence	poem titles*	
	autobiography	interrogative sentence	process essay	
	chronological order	introductory phrase or clause#	satire	
	clause	introductory word#	short story titles*	
	cluster	introductory sentence	simple sentence	
	comma splice	literary analysis	singular possessive	
	declarative sentence	language	song titles*	
	direct quotation	literary element	symbolism	
	exclamatory sentence	movie titles#	syntax	
	expository writing	multiple viewpoints	word choice	
	figurative language	mystery	play titles#	
	fluency			
	formal language			
	*quotation marks, #comma			
	Modifiers:			
	antecedent	dependent clause	prepositional phrase	
	complex sentence	direct object	verb phrase	
	compound-complex sentence	indirect object		
	Research Questions, Sources	, Thesis Statement:		
	evaluate sources	plagiarize	research question	
	evidence	primary and secondary sources	visual support	
	plagiarism			
	Additional Learning Continuu - Colons, Semicolons - Writing Techniques—Point of View	m Topics:		

	Language Usage			
RIT Band	Concepts to Introduce			
211–220	Concepts building on topics from prior RIT bands:			
	adjective clause	imagery	pastperfect	
	adjective phrase	independent clause	past progressive	
	adverb clause	irony	persuasive argument	
	analyze	irregular comparative	positive	
	application	irregular spelling patterns	possessive pronoun	
	content-specific vocabulary	limerick	present participle	
	counterargument	main clause	present perfect	
	dangling modifier	metaphor	professional title	
	demonstrative	misplaced modifier	relative clause	
	develop character	movie titles*	rhetorical question	
	future perfect	noun clause	subjective pronoun	
	how-to essay	objective pronoun	subordinate clause	
	hyperbole	onomatopoeia	superlative	
	idiom	participle	verse	
	*underline			
	Parallelism:			
	comparative	maintain	shift in verb tense	
	consistency of verb tense	organization	structure	
	consistent voice/tone	parallel		
221–230	Concepts building on topics	from prior RIT bands:		
	active voice	dash	organizational strategy	
	allegory	epic poem	predicate noun	
	alliteration	foreshadowing	pronoun-antecedent agreement	
	appositive#	formal style	rhyme scheme	
	appropriate tone	infinitive	tragedy	
	conjunctive adverb	literary response		
	consistency of verb voice			
	*underline, #punctuate/abbreviate			

Language Usage			
RIT Band		Concepts to Introduce	
231–240	Concepts building on topics	from prior RIT bands:	
	anticipate	gerund	nonrestrictive phrase or clause*
	colloquialism	indicative mood	reflexive pronoun
	complex list#	italics	single quotation marks
	ellipsis	nominative pronoun	supporting evidence
	*comma, #semicolon		

Physical Science Concepts by RIT

	Physical Science
RIT Band	Concepts to Introduce
181–190	Effects of Force on Motion; Effects of Mass on Motion: cause / effect / force / measurement / model / motion / object / pull / push
	Electric Charges and Forces: static electricity
	Electric Circuits: circuit
	Energy Conversions: conversions / energy / energy from the Sun
	Engineering Problems: problem
	Light: visible
	Magnetism and Electromagnetism: magnet / metal
	Measurement of Physical Properties: height / length / width
	Motion: distance / location / time
	Phase Changes and States of Matter: solid / liquid / temperature
	Sound Waves: loudness / pitch / sound / vibration
191–200	Chemical Properties of Matter: chemical / properties / particles / physical properties / material properties / matter / substances
	Chemical Reactions: mixing substances / new substances
	Conservation of Mass and Matter: mass/weight as a property of matter / conservation of matter
	Effects of Force on Motion: balance forces / claim / direction / evidence / investigation / mass / pattern / speed / strength / unbalanced forces
	Electric Charges and Forces: static charge / electric interactions / objects not in contact
	Electric Circuits: electric current / electrical devices / voltage

Physical Science		
RIT Band	Concepts to Introduce	
	Energy Conversions: convert energy from one form to another	
	Energy Forms: motion energy	
	Engineering Design Solutions: solutions	
	Light: illuminate / shadow / bending	
	Magnetism and Electromagnetism: magnetic	
	Motion: direction / rate / speed	
	Phase Changes and States of Matter: gas / liquid / observation / states of matter	
	Pure Substances, Mixtures, and Solutions: dissolve	
	Wave Properties: amplitude / wavelength	
201–210	Atomic Structure: atoms / compounds / elements	
	Chemical Reactions: chemical change / chemical reaction	
	Conservation of Mass and Matter: conservation / cooling substances / heating substances / mass (amount of matter) / mixing substances	
	Effects of Force on Motion: air resistance / force diagram / friction / macroscopic object / minimize / stability / sum of forces	
	Energy Forms : kinetic energy / stored (potential) energy / temperature as average kinetic energy of particles of matter / thermal energy	
	Engineering Design Solutions: evaluate / minimize / maximize	
	Engineering Problems: constraint / criteria	
	Engineering Solution Optimizations: optimize	

Physical Science		
RIT Band	Concepts to Introduce	
	Gravity: gravity / weight as force due to gravity	
	Light: absorbed / color / reflected / transmitted	
	Machines: mechanical advantage / simple machines	
	Magnetism and Electromagnetism: electromagnet / magnetic field	
	Measurement of Physical Properties: volume	
	Molecular Structure and Bonding: molecules	
	Motion: average speed / distance-time data / velocity	
	Phase Changes and States of Matter: boiling point / condensation / evaporation / freezing point / melting point / phase change	
	Work and Power: power / work	
211–220	Acceleration and Free Fall: free fall	
	Atomic Structure: atomic number / atomic mass / electron / ion / neutron / periodic table / proton	
	Chemical Reactions: combustion / concentration / interaction / oxidation	
	Conservation of Mass and Matter: mathematical representation	
	Effects of Force on Motion: colliding objects / force diagrams / Newton's second and third laws of motion / speed / distance-time data / sum of forces	
	Electric Charges and Forces: electrostatic forces / electric fields / Coulomb's law	
	Electromagnetic Waves: electromagnetic radiation	
	Engineering Design Solutions: analyze / cost-benefit ratio	
	Forces:	

Physical Science		
RIT Band	Concepts to Introduce	
	Newton's third law of motion	
	Information Transfer: analog / digital	
	Molecular Structure and Bonding: chemical formula / oxidation	
	Momentum: momentum as a measure of motion / positive and negative velocity	
	Motion: speed-time data	
	Physical Properties of Matter: density / pressure / physical change	
	Wave Properties: frequency / medium or media / wave energy / wave speed	
221–230	Chemical Properties of Matter: acid / base / chemical properties / neutral	
	Chemical Reactions: bond energy / chemical formula / chemical reactions / reaction rate	
	Effects of Force on Motion: mathematical relationships / momentum / net force / stability / velocity	
	Electric Charges and Forces: Coulomb's law	
	Electric Circuits: electrical resistance / Ohm's law / parallel circuits / series circuits	
	Electromagnetic Waves: radio waves / microwaves / infrared light / visible light / ultraviolet light / X-rays / gamma rays / medium / particle model	
	Gravity: Newton's law of gravitation	
	Heat Transfer: second law of thermodynamics	
	Inertia: mass as a measure of inertia / Newton's first law of motion	
	Molecular Structure and Bonding: valence electron	
	Motion: acceleration / acceleration-time data	

Physical Science		
RIT Band	Concepts to Introduce	
	Nuclear Chemistry: fission / fusion / radioactive decay	
231–240+	Chemical Reactions: energy levels of atoms / endothermic / exothermic / patterns of electrons	
	Effects of Force on Motion: objects in space	
	Physical Properties of Matter: moles	
	Pure Substances, Mixtures, and Solutions: concentration	
	Sound Waves: interference / resonance	

Life Science Concepts by RIT

Life Science		
RIT Band	Concepts to Introduce	
181–190	Adaptation: adapt / survive	
	Behavioral Responses: human senses / external/internal cues / animal behavior / animal response	
	Body Systems—System Components and Functions: external body parts / mimic	
	Characteristics of Living Things: living thing / nonliving thing	
	Classification—Developing and Using Keys: fish / leaves / trees	
	Classification—Taxonomy: mammals	
	Ecosystem Dynamics: habitat / diversity of life	
	Effects of Humans on Habitats and Living Things: recycle / species	
	Group Behavior: behavior	
	Interactions among Organisms: environment / soil	
	Interactions with the Physical Environment: flowering plants / life cycle	
	Needs of Living Things: food / light / water	
191–200	Adaptation: adaptation	
	Behavioral Responses: skin sensitivity / responses / information from the senses	
	Body Systems—Interacting Systems and Homeostasis: external structures	
	Cells—Cellular Processes: cell theory / cellular process	
	Cells—Structures and Functions: function / structure	
	Classification—Taxonomy: invertebrate / vertebrate	

	Life Science
RIT Band	Concepts to Introduce
	Ecosystem Dynamics: ecosystem
	Evolutionary Relationships and Evidence: fossils
	External Body Structures and Functions: plant seeds
	Group Behavior: migration
	Life Cycles: model / unique
	Needs of Living Things: air / sunlight
	Pathways of Energy and Matter in Ecosystems: consumers / decomposers / food chain / food web / movement of matter / producers
	Reproduction, Growth, and Development: birth / death / growth / reproduction
201–210	Adaptation: organism / population / trait
	Behavioral Responses: innate behaviors / migratory behaviors / extend / infer effects / transfer of information from senses to brain
	Body Systems—Interacting Systems and Homeostasis: body systems
	Cells—Structures and Functions: animal cell / cell membrane / cell wall / plant cell
	Classification—Developing and Using Keys: classification
	Genetic Crosses: asexual reproduction / sexual reproduction
	Group Behavior: cooperative behavior / individual behavior
	Microorganisms and Viruses: bacteria / microorganism
	Mitosis: cell division
	Molecular Genetics:

	Life Science
RIT Band	Concepts to Introduce
	neutral effects
	Natural and Artificial Selection: natural selection
	Pathways of Energy and Matter in Ecosystems: cycling of matter / flow of energy
	Photosynthesis and Respiration: photosynthesis / respiration
211–220	Adaptation: environment
	Behavioral Responses: microorganism responses to change
	Biological Molecules, Enzymes, and ATP: biomolecules / protein
	Body Systems—Interacting Systems and Homeostasis: chromosome / offspring
	Body Systems—Organs and Specialized Cells: multicellular organisms
	Body Systems—System Components and Functions: body systems / body subsystems / hierarchical organization
	Cells—Structures and Functions: chloroplast / DNA / gene / mitochondria / organelle
	Ecosystem Dynamics: biodiversity / trade-offs
	Evolutionary Relationships and Evidence: evolutionary relationships
	Genetic Crosses: genetic variation
	Inherited and Acquired Traits: heritable trait / inherited trait
	Microorganisms and Viruses: virus
	Mitosis: mitosis
	Natural and Artificial Selection: artificial selection / genetic modification / selective breeding / synthesize information

	Life Science
RIT Band	Concepts to Introduce
	Pathways of Energy and Matter in Ecosystems: carbon cycle / empirical evidence
	Reproduction and Genetic Variation: genetic variation
	Reproduction, Growth, and Development: development / germination
221–230	Behavioral Responses: plant response to gravity
	Biological Molecules, Enzymes, and ATP: food molecules
	Body Systems—Interacting Systems and Homeostasis: homeostasis / transpiration
	Evolutionary Relationships and Evidence: evolution / genetic variation / mutation
	Extinction and Speciation: extinction / speciation
	Interactions among Organisms: commensalism / mutualism / parasitism / symbiosis
	Pathways of Energy and Matter in Ecosystems: aerobic / conditions / anaerobic conditions / biomass / mathematical representation
	Photosynthesis and Respiration: cellular respiration
231–240+	Classification—Taxonomy: fungi / taxonomy
	Microorganisms and Viruses: unicellular
	Mitosis: gene expression
	Natural and Artificial Selection: advantageous / probability / statistics
	Pathways of Energy and Matter in Ecosystems: nitrogen cycle

Earth and Space Science Concepts by RIT

Earth and Space Science		
RIT Band	Concepts to Introduce	
181–190	Biogeology:Moon / Sun	
	Natural Hazards: natural / hazard	
	Natural Resources: advantage / disadvantage / resource	
	Plate Tectonics: earthquakes / volcanoes	
	Rock Layers and the Fossil Record: fossil	
	Rocks, Minerals, and Soil: mineral / rock / soil	
	Seasons, Days, and Years: sunrise / sunset / visible	
	Weather Conditions, Prediction, and Measurement: clouds / fog / rain / snow / weather / wind	
191–200	Climate: climate / patterns / regions of the world	
	Earth's Layers: atmosphere / biosphere / geosphere / hydrosphere	
	Effects of Humans on Land, Water, and Air: carbon dioxide in the atmosphere	
	Natural Hazards: hurricanes / tornadoes / weather-related hazards	
	Natural Resources: resources / fossil fuel / human consumption / renewable resources / nonrenewable resources / combine information	
	Plate Tectonics: geologic	
	Rock Layers and the Fossil Record: rock formation / sediment	
	Rocks, Minerals, and Soil: cycling of matter / Earth's materials / rock cycle	
	Seasons, Days, and Years: graphical display / night sky / patterns of daily changes / predictable patterns / planets / seasonal appearance / shadows	
	The Solar System:	

	Earth and Space Science	
RIT Band	Concepts to Introduce	
	rotation of Earth / scale properties	
	Weather Conditions, Prediction, and Measurement: air temperature / cloud types / frost / seasonal weather / weather forecast	
	Weathering and Erosion: erosion / rate of erosion / vegetation / weathering	
201–210	Climate: elevation effect on climate / global climate change / greenhouse effect / latitude effect on climate / local climate	
	Earth's Ecosystems: biome	
	Earth's Layers: coevolution / density effect / time and spatial scales	
	Eclipses and Moon Phases: eclipse / cyclic pattern / lunar phase / lunar eclipse / Earth-Moon-Sun model / phases of the Moon / solar eclipse	
	Effects of Humans on Land, Water, and Air: human population growth effects / per-capita consumption / personal choices	
	Engineering Design Solutions: design solutions to reduce human impacts / evaluate design solutions	
	Natural Hazards: catastrophic events / interpret data to forecast future / mitigate effects	
	Natural Resources: explanation with evidence / groundwater resources	
	Plate Tectonics: continents / plate / plate motion / seafloor structures / tectonics	
	Rock Layers and the Fossil Record: geoscience processes / landscapes / mineral formation / patterns of rock formations	
	Rocks, Minerals, and Soil: cycling of Earth's materials / flow of energy / igneous rocks / metamorphic rocks / sedimentary rocks	
	Seasons, Days, and Years: Earth's axial tilt / cyclic pattern of seasons	
	The Solar System: solar system	
	The Universe, Stars, and Galaxies: effects of relative distances / galaxy / life cycle of stars / Milky Way galaxy / seasonal appearance of stars / universe	

Earth and Space Science		
RIT Band	Concepts to Introduce	
	Water on Earth: condensation / evaporation / precipitation / roll of gravity in the cycling of water / transpiration / water cycle	
	Weather Conditions, Prediction, and Measurement: air density / air masses / complex interactions	
	Weathering and Erosion: deposition	
211–220	Biogeology: greenhouse gases / regional climates / unequal heating of Earth	
	Earth's Ecosystems: thermal convection	
	Effects of Humans on Land, Water, and Air: effects of fertilizers + phosphates / frequency of problems / impacts of human activities / pollution	
	Natural Resources: extraction / resource redistribution / sustainability	
	Plate Tectonics: ocean-floor features / plate boundaries / thermal convection	
	Rock Layers and the Fossil Record: crustal rocks / rock strata	
	The Solar System: life span of the Sun / role of gravity within solar systems / scale properties	
	The Universe, Stars, and Galaxies: role of gravity within galaxies	
	Water on Earth: ocean currents	
	Weather Conditions, Prediction, and Measurement: Coriolis effect / predictions	
	Weathering and Erosion: constructive forces / destructive forces / flow of energy	
221–230	Climate: climate models	
	Earth's Layers: atmospheric gases / topographic maps	
	Effects of Humans on Land, Water, and Air: acidification of water / inference vs. fact	
	Natural Resources:	

Earth and Space Science		
RIT Band	Concepts to Introduce	
	computational simulation	
	Plate Tectonics: spatial and temporal scales	
	The Universe, Stars, and Galaxies: big bang theory / light spectra	
	Weather Conditions, Prediction, and Measurement: air pressure	
231–240+	Climate: stability of Earth's climate	