

Grade 7 Mathematics Achievement Level Descriptors



MAJOR CONTENT

The student solves problems involving the Major Content for the course with connections to the Standards for Mathematical Practice.

Major Content				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
Analyze	Analyzes and uses	Analyzes and uses proportional	Uses proportional	Identifies proportional
Proportional	proportional relationships to	relationships to solve real-	relationships to solve real-	relationships to solve
Relationships	solve real-world and	world and mathematical	world and mathematical	mathematical problems,
and Solve	mathematical problems,	problems, including simple	problems, including simple	including ratio/percent
Problems	including multi-step	ratio/percent problems.	ratio/percent problems.	problems.
7.RP.A.1	ratio/percent problems.			
7.RP.A.2	Computes unit rates of	Computes unit rates of	Computes unit rates of	
7.RP.A.3	quantities associated with	quantities associated with	quantities associated with	
	ratios of fractions.	ratios of fractions.	ratios of fractions.	
	Decides whether two	Decides whether two	Decides whether two	Identifies whether two
	quantities are in a	quantities are in a proportional	quantities are in a	quantities are in a
	proportional relationship and	relationship and identifies the	proportional relationship	proportional relationship.
	identifies the constant of	constant of proportionality in	and identifies the constant	
	proportionality in tables,	tables, equations, diagrams,	of proportionality in tables,	
	equations, diagrams, verbal	verbal descriptions, and	equations, diagrams, verbal	
	descriptions, and graphs.	graphs.	descriptions, and graphs.	
	Interprets a point (<i>x</i> , <i>y</i>) on the	Interprets a point (<i>x, y</i>) on the		
	graph of a proportional	graph of a proportional		
	relationship in terms of the	relationship in terms of the		
	situation, with special	situation, with special		
	attention to the points (0, 0)	attention to the points (0, 0)		
	and (1, r) where r is the unit	and (1, <i>r</i>) where <i>r</i> is the unit		
	rate.	rate.		





	Major Content				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
	Represents proportional	Represents proportional	Uses equations		
	relationships with equations	relationships with equations	representing proportional		
	and uses the equations to	and uses the equations to solve	relationships to solve		
	solve mathematical and real-	mathematical and real-world	mathematical and real-		
	world problems, including	problems, including simple	world problems, including		
	multi-step ratio and percent	ratio and percent problems.	ratio and percent problems.		
	problems.				
	Determines when it is				
	appropriate to use a unit rate				
	and understands its				
	limitations.				
Operations	Performs operations on	Performs operations on	Performs operations on	Performs operations on	
with Rational	positive and negative rational	positive and negative rational	positive and negative	positive and negative	
Numbers	numbers in multi-step	numbers in multi-step	rational numbers in	rational numbers in	
7.NS.A.1	mathematical and real-world	mathematical and real-world	mathematical and real-	mathematical problems.	
7.NS.A.2	problems.	problems.	world problems.		
7.NS.A.3	Represents addition and	Represents addition and	Represents addition and	Represents addition and	
7.EE.B.3	subtraction on a horizontal or	subtraction on a horizontal or	subtraction on a horizontal	subtraction on a horizontal	
	vertical number line and	vertical number line and	or vertical number line and	or vertical number line.	
	recognizes situations in which	recognizes situations in which	recognizes situations in		
	opposite quantities combine	opposite quantities combine to	which opposite quantities		
	to make zero.	make zero.	combine to make zero.		
	Determines reasonableness of	Determines reasonableness of			
	a solution and interprets	a solution.			
	solutions in real-world				
	contexts.				





Major Content				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
	Understands subtraction of	Identifies equivalent		
	rational numbers as adding	expressions of positive and		
	the additive inverse and the	negative rational numbers.		
	rules for multiplying/dividing			
	positive and negative			
	numbers.			
Expressions,	Applies properties of	Applies properties of	Applies properties of	Applies properties of
Inequalities,	operations as strategies to	operations as strategies to add,	operations as strategies to	operations as strategies to
and Equations	add, subtract, factor, and	subtract, factor, and expand	add, subtract, and expand	add and subtract linear
7.EE.A.1	expand linear expressions.	linear expressions.	linear expressions.	expressions.
7.EE.A.2	Fluently solves two-step linear	Fluently solves two-step linear	Solves two-step linear	Solves one-step linear
7.EE.B.4	equations with rational	equations with rational	equations with rational	equations with rational
	coefficients.	coefficients.	coefficients.	coefficients.
	In mathematical or real-world	In a mathematical or real-	In a mathematical context,	
	contexts, uses variables to	world context, uses variables	uses variables to represent	
	represent quantities,	to represent quantities,	quantities, construct and	
	construct and solve equations	construct and solve equations	solve equations and	
	and inequalities, and graph	and inequalities, and graph	inequalities, and graph	
	and interpret solution sets.	solution sets.	solution sets.	
	Rewrites an expression in	Identifies equivalent		
	different forms.	expressions in different forms.		
	Describes the relationship	Identifies the relationship		
	between equivalent quantities	between equivalent quantities		
	that are expressed	that are expressed		
	algebraically in different forms	algebraically in different forms		
	in a problem context and	in a problem context.		
	explains their equivalence in			
	light of the context of the			
	problem.			





ADDITIONAL & SUPPORTING CONTENT

The student solves problems involving the Additional & Supporting Content for the course with connections to the Standards for Mathematical Practice.

	Additional & Supporting Content				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
Representing	Identifies triangles with given	Identifies triangles with given	Identifies triangles with		
Geometric	angle and side conditions and	angle and side conditions and	given angle and side		
Figures	notices when those conditions	notices when those	conditions.		
7.G.A.2	determine a unique triangle,	conditions determine a			
7.G.A.3	more than one triangle, or no	unique triangle, more than			
	triangle.	one triangle, or no triangle.			
	Identifies a two-dimensional	Identifies a two-dimensional			
	figure as the result of slicing a	figure as the result of slicing a			
	three-dimensional figure by a	three-dimensional figure by a			
	plane.	plane perpendicular or			
		parallel to a base or face.			
Solve Scale,	Solves mathematical and real-	Solves mathematical and real-	Solves mathematical	Solves mathematical	
Angle, Area,	world problems involving	world problems involving	problems involving	problems involving	
Circumference,	circumference, area, surface	circumference, area, surface	circumference, area,	circumference and area.	
Surface Area,	area, and volume, including	area, and volume.	surface area, and volume.		
and Volume	composite objects.				
Problems	Solves problems involving scale	Solves problems involving	Solves problems involving	Solves problems involving	
7.G.A.1	drawings of geometric figures,	scale drawings of geometric	scale drawings of	scale drawings of	
7.G.B.4	including reproducing a scale	figures, including reproducing	geometric figures.	geometric figures.	
7.G.B.5	drawing at a different scale.	a scale drawing at a different			
7.G.B.6		scale.			
	Represents angle relationships	Represents angle	Uses facts about angle		
	using equations to solve for	relationships using equations	relationships to		
	unknown angles.	to solve for unknown angles.	determine the measure of		
			unknown angles.		





	Additional & Supporting Content				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
	Produces a logical conclusion	Identifies an informal			
	about the relationship between	derivation of the relationship			
	the circumference and area of	between the circumference			
	a circle.	and area of a circle.			
Random	Understands and uses random	Understands and uses	Draws inferences about a		
Sampling and	sampling to draw inferences	random sampling to draw	population from a table		
Comparative	about a population.	inferences about a population.	or graph of random		
Inferences			samples.		
7.SP.A.1	Draws relevant informal	Draws relevant informal	Draws informal	Compares two populations	
7.SP.A.2	comparative inferences about	comparative inferences about	comparative inferences	based on measures of	
7.SP.B.3	two populations, including	two populations, including	about two populations.	center and variability.	
7.SP.B.4	assessing the degree of visual	identifying characteristics of			
	overlap of two numerical data	visual overlap of two			
	distributions with similar	numerical data distributions			
	variabilities.	with similar variabilities.			
	Determines whether a sample	Determines whether a			
	is representative of a	sample is representative of a			
	population.	population.			
Chance	Understands that the	Understands that the	Understands that the	Understands that the	
Processes and	probability of a chance event is	probability of a chance event	probability of a chance	probability of a chance	
Probability	a number between 0 and 1 that	is a number between 0 and 1	event is a number	event is a number between	
Models	expresses the likelihood of the	that expresses the likelihood	between 0 and 1 that	0 and 1 that expresses the	
7.SP.C.5	event occurring.	of the event occurring.	expresses the likelihood of	likelihood of the event	
7.SP.C.6			the event occurring.	occurring.	
7.SP.C.7	Generates a sample space to	Determines probabilities	Determines probabilities		
7.SP.C.8	determine the probability of	when given sample spaces for	when given sample		
	simple or compound events	simple and compound events	spaces for simple events		
	using methods such as	using methods such as	using methods such as		
	organized lists, tables, tree	organized lists, tables, and	organized lists and tables.		
	diagrams. or simulations.	tree diagrams.			





Additional & Supporting Content					
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
	Develops probability models	Develops a model to			
	to determine the probabilities	approximate the probability			
	of events.	of a chance event and			
		predicts approximate			
		frequencies when given the			
		probability or by observing			
		frequencies in data generated			
		from the process.			
	Designs and uses a simulation				
	to generate frequencies for				
	and estimate the probability of				
	compound events.				





EXPRESSING MATHEMATICAL REASONING

In connection with course content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.

	Expressing Mathematical Reasoning				
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
	In connection with the content knowledge and skills described in Major Content, the student clearly constructs and communicates a complete		In connection with the content knowledge and skills described in Major Content, the student constructs and communicates a		
LEAP.II.7.1 LEAP.II.7.2	written response based on properties of operations; and the relationships between addition and subtraction and between multiplication and division				
LEAP.II.7.3 LEAP.II.7.4	response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams, or coordinate plane diagrams				
LEAP.II.7.5	response to a given equation, r	nulti-step problem, proposition o	r conjecture		
LEAP.II.7.6	AP.II.7.6 Responses may include:				
LEAP.II.7.7	a logical approach based on a conjecture and/or stated assumptions	a logical approach based on a conjecture and/or stated assumptions	a logical approach based on a conjecture and/or stated assumptions	a faulty approach based on a conjecture and/or stated assumptions	
	a logical and complete progression of steps	a logical and complete progression of steps	a logical , but incomplete, progression of steps	an incomplete or illogical progression of steps	
	precise of calculation	precise calculation	minor calculation errors	major calculation errors	
	fluent use of grade-level vocabulary, symbols, and labels	fluent use of grade-level vocabulary, symbols, and labels	limited use of grade-level vocabulary, symbols, and labels	limited use of grade-level vocabulary, symbols, and labels	
	complete justification of a conclusion	complete justification of a conclusion	partial justification of a conclusion	partial justification of a conclusion	
	generalization of an argument or conclusion				



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Expressing Mathematical Reasoning					
Content	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
	evaluating, interpreting and	evaluating, interpreting, and	evaluating the validity of		
	critiquing the validity and	critiquing the validity of	approaches and conclusions		
	efficiency of responses,	responses, reasoning,			
	reasoning, approaches, and	approaches, and conclusions			
	conclusions, using				
	mathematical connections				
	and providing counter-				
	examples where applicable				
	identifying and describing	identifying and describing	identifying and describing errors		
	errors in solutions and	errors in solutions and	in solutions		
	presenting correct solutions	presenting correct solutions			
	distinguishing correct	identifying and describing			
	reasoning from flawed and	flaws in reasoning and			
	correcting flawed reasoning	presenting correct reasoning			





MODELING & APPLICATION

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.

Modeling & Application						
	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic		
Content	In connection with the content knowledge, skills, and abilities described in Major Content, the student devises a plan to apply					
	mathematics in solving problems arising in everyday life, society and the workplace by:					
LEAP.III.7.1	using stated assumptions and	using stated assumptions and	using stated assumptions	using stated assumptions		
LEAP.III.7.2	making assumptions and	making assumptions and	and approximations to	and approximations to		
LEAP.III.7.3	approximations to simplify a	approximations to simplify a	simplify a real-world	simplify a real-world		
LEAP.III.7.4	real-world situation	real-world situation	situation	situation		
	analyzing and/or creating	creating limitations and goals				
	limitations, relationships, and	within a model				
	interpreting goals within a					
	model					
	analyzing, justifying and	using models which lead to a				
	defending models which lead	conclusion				
	to a conclusion					
	mapping relationships between	mapping relationships	illustrating relationships	identifying quantities by		
	quantities by selecting	between quantities by	between quantities by using	using provided tools to		
	appropriate tools to create	selecting appropriate tools to	provided tools to create	create models		
	models	create models	models			
	analyzing relationships	analyzing relationships	analyzing relationships	analyzing relationships		
	mathematically between	mathematically between	mathematically between	mathematically to draw		
	quantities to draw conclusions	quantities to draw conclusions	quantities to draw	conclusions		
			conclusions			
	applying proportional	applying proportional	applying proportional	applying proportional		
	reasoning	reasoning	reasoning	reasoning		





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	Modeling & Application					
	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic		
Content	In connection with the content ki	nowledge, skills, and abilities descr	ribed in Major Content, the stud	lent devises a plan to apply		
	mathematics in solving problems arising in everyday life, society and the workplace by:					
	writing/using equations to	writing/using equations to	writing/using equations to	using equations to describe		
	describe how one quantity of	describe how one quantity of	describe how one quantity	how one quantity of interest		
	interest depends on another	interest depends on another	of interest depends on	depends on another		
			another			
	using reasonable estimates of	using reasonable estimates of	using reasonable estimates	using unreasonable		
	known quantities in a chain of	known quantities in a chain of	of known quantities in a	estimates of known		
	reasoning that yields an	reasoning that yields an	chain of reasoning that	quantities in a chain of		
	estimate of an unknown	estimate of an unknown	yields an estimate of an	reasoning that yields an		
	quantity	quantity	unknown quantity	estimate of an unknown		
				quantity		
	interpreting mathematical	interpreting mathematical	interpreting mathematical			
	results in an applied context	results in an applied context	results in a simplified			
			context			
	determining whether results	determining whether results	determining whether			
	make sense	make sense	results make sense			
	improving a model if it has not	improving a model if it has not	altering a model if it has not			
	served its purpose	served its purpose	served its purpose			
	writing a complete, clear, and	writing a complete, clear, and	writing an incomplete	writing an incomplete		
	correct algebraic expression or	correct algebraic expression or	algebraic expression or	algebraic expression or		
	equation to describe a situation	equation to describe a situation	equation to describe a	equation to describe a		
			situation	situation		