The Center for Algebraic Thinking

Video Database

VIDEO	DOMAIN	PROBLEM	NOTES	MODULE
			Multiplication is larger than addition. Then thinks could put different numbers in for each.	
Boy 1 2n n+2	Variables & Expressions	Larger? 2n or n+2	Interviewer pushes student to find example of n+2 being larger.	Variables & expressions: representation
				Algebraic Relations: meaning of the equal sign; Variables &
Boy 1 a+b=b	Variables & Expressions	When is a+b=b?	Sometimes. Depends on number. Doesn't understand only number is 0	expressions: representation
Boy 1 frog table	Analysis of Change	Frog table	Speeding up because distance is larger on first segment.	Analysis of Change: Connecting graphs to real world data
			In graph 1 understands no time changing but doesn't understand no distance covered when time continues. In graph 2 mistakes time for distance 'walks backwards'. In graph 3 'slows down'. A good	
Boy 1 journey	Analysis of Change	Journey graphs	video for discussing the difficulties students have with explaining two dimensions simultaneously.	Analysis of Change: Connecting graphs to real world data
Boy 1 n+5	Variables & Expressions	What can n stand for? 4? 3?? 3r+2?		Variables & expressions: representation
			Has a sense of the difference between the two equations but can't articulate g+8 as the answer.	Algebraic Relations: meaning of the equal sign; Variables &
Boy1 e+f+g	Variables & Expressions	If e+f=8, e+f+g=?	Interviewer has some difficulty understanding the two equations as well.	expressions: representation
			Creates first problem easily. Can't create second one. Struggles with third one and subtraction. For	
		Write a story problem using the equations x+5=8, 2x+5=8, 2x-5=8,	both 2&3 struggles to write a story for 2x. Fourth problem he has a bit of sense of the less than	
Boy 1 story problem	Modeling	2x-5<8	aspect of the problem but struggles to create a problem. Struggles to define the variable correctly. No confidence in his work.	Modeling: Translating equations into words
		Person walking from a mark on		
Boy 10 Walk from ma	Analysis of Change	the floor		Analysis of Change: Connecting graphs to real world data
Boy 2 7+a+a+a+10	Variables & Expressions	7+a+a+a+10 a=?	Answers a could be anything	Variables & expressions: representation
Boy 2 h+2=h	Variables & Expressions	Always, sometimes, never true: h+2	Knows the answer but doesn't explain why.	Variables & expressions: representation
Boy 2 plot points	Analysis of Change	Plot points	Struggles with decimals, gets fraction, two points between	Analysis of Change: Axes
				Analysis of Change: Axes; Analysis of Change: Connecting graphs
Boy 2 vacation	Analysis of Change	Ramirez vacation graph	Answers day 2, but says slanted more-not seeing which day is which on the graph.	to real world data
Boy 3 213x+476	Algebraic Relations	213x + 476 + 4	Explains well.	Algebraic Relations: meaning of the equal sign
Boy 3 dots	Functions	Dot patterns	Explains well. X^2+6, mistake on math on last one.	Functions: Formal thinking notation
Boy 3 phone calls	Functions	Jog phone company		Modeling: Translating words into equations: Relevant variables
			Doesn't explain his thinking well. Seems to miss the 'twice as deep' part. Unclear whether he understands all the components of the problem. A good video for asking "What questions might you	Modeling: Translating words into equations; Modeling: Physical
Boy 3 lake	Modeling	Lakes deepness	ask this student to get at his understanding?"	representation
Boy 3 Ling	Modeling	Ling's earnings	Explains the problem well.	Modeling: Translating words into equations: Relevant variables
Boy3 StudentsTeache	Modeling	Six times as many students as teach	T=65. Not explained well.	Modeling: Translating words into equations: Relevant variables
Boy 3 x+x+x=12	Variables & Expressions	x+x+x=12, what is x	"x is the same thing generally"	Variables & expressions: representation
Boy 3 r=s+t	Modeling	If r=s+t, r+s+t=30, r=?	Understands s & t could be different numbers. Doesn't explain why he knows r has to be 15.	Modeling: Translating words into equations: Relevant variables
Boy 3 same graphs	Analysis of Change	Which are same graphs?	Understands different scale but errs with which axis.	Analysis of Change: Axes
Boy 3 tshirts	Analysis of Change	T shirts rate of change	Seems to understand but explanation not clear.	Analysis of Change: Connecting graphs to real world data?
				Algebraic Relations: meaning of the equal sign; Variables &
Boy 4 3m+8-2m-5	Variables & Expressions	simplify 3m+8-2m-5	Uses some understanding of solving equations to solve incorrectly	expressions: representation
Boy 4 c+d=10	Variables & Expressions	If c+d=10, c<d, c=?	Initially picks one number (3), with prodding identifies 1, 2, & 4.	Variables & expressions: representation
Boy 4 7+a+a+a+10	Variables & Expressions	7+a+a+a+10 a=?	Answers 1 for a	Variables & expressions: representation
Boy 4 h+2=h	Algebraic Relations	h+2=h	Doesn't understand equality or stability of variables.	Variables & expressions: representation
Boy 4 pizza	Functions	Divide pizza slices	Ignores lots of information from the problem and creates own problem.	Modeling:Translating words into equations: Numbers
Boy 5 2n n+2	Variables & Expressions	Larger? 2n or n+2	Thinks n by itself is 1	Variables & expressions: representation
Boy 6 2n n+2	Variables & Expressions	Larger? 2n or n+2	Thinks 2 times one bigger because the other 2 has no letter	Variables & expressions: representation
Boy 9 7+a+a+a+10	Variables & Expressions	7+a+a+a+10 a=?	Answers 1 for a	Variables & expressions: representation
Boy 9 pizza	Functions	Divide pizza slices	Gets first problem. Guesses on how to create equation.	Modeling:Translating words into equations: Numbers
				Analysis of Change: Axes; Analysis of Change: Connecting graphs
Boy 9 vacation	Analysis of Change	Ramirez vacation graph	Answers first line but can't explain why	to real world data
Girl 1 2n n+2	Variables & Expressions	Larger? 2n or n+2	Answers can't know because don't know n, but then guesses 2n	Variables & expressions: representation
Girl 1 e+f	Algebraic Relations	e+f=8 e+f+g=?	Answers 16. Thinks g takes the place of e+f	Algebraic Relations: meaning of the equal sign
Girl 1 n+5	Variables & Expressions	What can n stand for? 4? 3?? 3r+2?	Doesn't think one variable can stand for another variable.	Variables & expressions: representation
		Write a story problem using the		
Girl 1 story problems	Modeling	equations x+5=8, 2x+5=8, 2x-5=8, 2x-5<8	Student struggles to make sense of a half answer with her story problems.	Modeling: Translating equations into words
				Algebraic Relations: meaning of the equal sign; Variables &
Girl 1 a+b=b	Variables & Expressions	When is a+b=b?	If a were zero then it would be true, but most likely it wouldn't be true.	expressions: representation
			Speeding up because this is going up more each time while this is going up less each time. Except for	
Girl 1 frog table	Analysis of Change	Frog table	this one. No one can jump at the same rate.	Analysis of Change: Connecting graphs to real world data?
Girl 1 journey	Analysis of Change	3 journey graphs	Gets stumped with straight line over time and going backward in time. Gets last graph.	Analysis of Change: Axes
Girl 2 2n n+2	Variables & Expressions	Larger? 2n or n+2	Multiplication is larger than addition. Interviewer pushes student to find example of n+2 being larger.	Variables & expressions: representation
				Algebraic Relations: meaning of the equal sign; Variables &
Girl 2 a+b=b	Variables & Expressions	When is a+b=b?	Never. Compares to Pythagorean Theorem.	expressions: representation
Girl 2 frog table	Analysis of Change	Frog table	Says speeding up at first then looks at numbers and isn't so sure.	Analysis of Change: Connecting graphs to real world data?
				Algebraic Relations: meaning of the equal sign; Variables &
Girl 2 e+f=8	Variables & Expressions	If e+f=8, e+f+g=?	Student struggles quite a bit to understand the role of g.	expressions: representation
			Mostly gets it here. Gets no time passes on first graph, then 'walks in place'. Second graph 'goes	
			backwards in time but farther in distance', 'walks a ways up' graph pushing student to thiink climbing	
Girl 2 journey	Analysis of Change	Journey graphs	mountain, otherwise gets graph 3.	Analysis of Change: Connecting graphs to real world data
Girl 2 n+5	Variables & Expressions	What can n stand for? 4? 3?? 3r+2?	is okay with variables standing for numbers but not for letters or multiple terms.	Variables & expressions: representation
	Modeling	Write a story problem using the equations x+5=8, 2x+5=8, 2x-5=8,	Has some understanding of first problem and struggles with other three, particularly with inequality.	
Girl 2 story problems		2x-5<8		Modeling: Translating equations into words
			Confused how you could get h if it is h+2, trying to make sense of it because it is algebra.	
			Understanding there is a problem but seems to be convinced other people know better and she	
Girl 3 h+2=h	Variables & Expressions	Always, sometimes, never true: h+2	doesn't understand algebra.	Variables & expressions: representation
Girl 3 3m+8-2m-5	Variables & Expressions	simplify 3m+8-2m-5	Confused and settles on cutting each number in half. Simplify means make numbers smaller.	Variables & expressions: representation
Girl 3 7+a+a+a+10	Variables & Expressions	7+a+a+a+10 a=?	Answers 5 because it is most common number in math	Variables & expressions: representation
Girl 3 pizza	Functions	Divide pizza slices	Misses the fact there are two pizzas in first problem. Struggles with the rest.	Modeling:Translating words into equations: Numbers
			From start to day 1 but not seeing which day is which on the graph, how fast? 75mph because her	Analysis of Change: Axes; Analysis of Change: Connecting graphs
Girl 3 vacation	Analysis of Change	Ramirez vacation graph	family trip to OK	to real world data
Girl 3 c+d=10	Variables & Expressions	If c+d=10, c<d, c=?		Variables & expressions: representation
Girl 3 plot points	Analysis of Change	Plot points		Analysis of Change: Axes
Girl 4 c+d=10	Variables & Expressions	If c+d=10, c<d, c=?	Initially picks one number 5, with prodding identifies 3	Variables & expressions: representation
			Ignores the fact there are two pizzas in first problem. Also, poor multiplication skills. Struggles with	
Girl 4 pizza	Functions	Divide pizza slices	an uneven number of slices.	Modeling:Translating words into equations: Numbers
Girl 4 h+2=h	Variables & Expressions	Always, sometimes, never true: h+2	Says 'always'. Believes that the h on the left is different than the h on the right.	Variables & expressions: representation
			Connects the dots for some reason. 9.2 is a little below 10. Gets fraction. One point between two	
Girl 4 plot points	Analysis of Change	Plot points	points.	Analysis of Change: Axes
				Analysis of Change: Axes; Analysis of Change: Connecting graphs
Girl 4 vacation	Analysis of Change	Ramirez vacation graph	Wednesday fastest. Stayed Tues-Saturday (second section)	to real world data
Girl 5 213x+476	Algebraic Relations	213x + 476 + 4	Explains well.	Algebraic Relations: meaning of the equal sign
Girl 5 dots	Functions	Dot patterns	Explains well. X^2+6	Functions: Formal thinking notation
Girl 5 jog phone	Functions	Jog phone company	Explains the problem in a straightforward way. Understands pretty well.	Modeling: Translating words into equations: Relevant variables
				Modeling: Translating words into equations; Modeling: Physical
Girl 5 lake	Modeling	Lakes deepness	Tries to work "twice as deep" into the problem with a line graph but struggles.	representation
Girl r=s+t	Modeling	If r=s+t, r+s+t=30, r=?	Focuses on second equation and solving for r. Ignores first equation.	Modeling: Translating words into equations: Relevant variables
			Explains the problem well except that she mixes 24 and 42. Struggles with some math mistakes	
Girl 5 Ling	Modeling	Ling's earnings	(dyslexia?) but understands the gist of the problem.	Modeling: Translating words into equations: Relevant variables
			T=65 although she is very hesitant. Tries numbers to check. Seems to have a sense of the problem	
Girl 5 S&T	Modeling	Students & Teachers	with her answer, but ultimately settles for the wrong equation.	Modeling: Translating words into equations: Relevant variables
			Explains pretty well, but relies only on the y-intercept to come up with her answer in spite of the	
Girl 5 same graphs	Analysis of Change	Plot points	interviewer suggesting slope.	Analysis of Change: Axes
Girl 5 tshirts	Analysis of Change	T shirts rate of change	Explains well.	Analysis of Change: Connecting graphs to real world data?
Girl 5 x+x+x=12	Variables & Expressions	x+x+x=12, what is x	Since x has to be the same number, c is the only one.	Variables & expressions: representation
Girl 6 pizza	Functions	Divide pizza slices	Gets first two parts (4 & 9 students) but struggles with the rest.	