SELECTED SOLUTIONS AND COMMENTS FOR TASKS
Grade 7 – Number Sense

Tasks are intended to serve different purposes. When appropriate, students are encouraged to make choices, think strategically, and explain their reasoning. This document contains answers to selected problems. When answers vary, we try to offer an example when possible. When not possible, we describe what a student response could look like. The solutions in this document are not meant to represent an exhaustive list of suitable answers.

Exploring Repeating Decimals (number sense – repeating decimals)	
1	$\frac{1}{11} = 0.09090909...$ $\frac{2}{11} = 0.18181818...$ $\frac{3}{11} = 0.27272727...$
2	$\frac{4}{11} = 0.36363636...$ $\frac{5}{11} = 0.45454545...$ $\frac{6}{11} = 0.54545454...$ Other answers can be verified easily on a calculator.
3	Explanations will vary. A pattern that students may see is the product of 9 and the numerator creates a two digit number that repeats in the decimal. For example, 9 time 3 is 27; therefore $\frac{3}{11}$ is ".27 repeating". Students may notice other patterns and use them to make predictions.
4	N/A.
5	Answers can be verified easily on a calculator.
6	N/A.
7	Explanations will vary. Some students may see $\frac{1}{7}$ as 0.142847… and then keep adding that number to itself to find the other sevenths. Students may multiply 0.142847… times the numerator.
8	N/A.
9	This question is tricky and you may consider differentiating your expectations of depth in student responses. As students divide $\frac{1}{7}$ using the standard algorithm, there are only 6 unique remainders that are possible for each iteration of the algorithm. It is impossible to get a remainder 0 or 7 because then the decimal would terminate. It is also impossible to get a remainder of 8 and 9 because they are larger than 7; the remainder cannot be larger than the divisor. That leaves only 6 possible remainders that show up in the long division algorithm. The order of the remainders (not the digits in the quotient) is 3, 2, 6, 4, 5, 1 before they repeat. The cycle repeats after 6 iterations of the long division algorithm.

The Construction Project (number sense – distance and absolute value)	
1	Pictures will vary, but should accurately reflect the information in the problem. David should be 5 feet below 0, and Georgia should be 15 feet above 0. A pipe should be shown 20 feet below the ground (15 feet below David).
2	a. False. Twenty is not greater than twenty because 20 = 20.
	b. True. 15 = 15.
	c. False. David is only 10 feet below the surface and Georgia is 15 feet above. $15 \neq 20$.
	d. True. David will be 10 feet below the surface and 10 feet above the pipe.
3	Answers will vary.

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Division and the Counter Model (integer division with visuals)	
1	The division cases/parts that can be modeled with counters are: a, b, c, and f. The division cases/parts that cannot be modeled with counters are: d, e, g, and h.
2	Both parts of case 4 cannot be performed. Therefore we cannot establish that a positive divided by a negative is a negative using the counter model.
3	Yes.

Geometric Designs (measurement; area; fractions; percent)	
1	The dimensions will vary, but the areas should be relatively consistent with the values below. Rounding and accuracy of measurement are some things to consider. Some students may create these rectangles by folding the paper. Others may be more numerical and use calculations. The following measurements may help you assess the accuracy of student work. The area of the paper is 93.5 square inches. The "25% rectangle" should have an area of 23.375 square inches. The "3/8 rectangle" should have an area of 35.0625 square inches. The "1/8 triangle" should have an area of 11.6875 square inches. The remaining area is 23.375 square inches, or 25% of the total area since 75% of the area was used for the shapes.
2	Answers will vary.

Target Practice (fractions)	
	This task is not about "getting the right answer". This task is about allowing students to think strategically and embody the math practices, particularly Math Practice 1 (for weaker students) and Math Practice 3 (for stronger students). Weaker students can have success by using trial and error and reasoning about sums and differences. Stronger students can go deeper by finding different ways to think strategically and begin to prove that their answer is the best. High expectations for learning and growth should be held for all students.
1-6	Answers will vary. As a reminder, the goal is not to create the greatest or least value possible (although some students should try!). The goal is for all students to think strategically to maximize or minimize the value of mixed numbers and sums and differences.
7	There are several conceptual ideas embedded in this task to look for in student explanations. • The value of a mixed number depends on where we strategically place the numbers 1-9. • The value of a sum depends on the value of addends. Sums with greater addends have a value greater than sums with lesser addends. • Similarly, the value of a difference depends on the value of minuend and subtrahend. The greater the distance on the number line between the minuend (the "first number") and the subtrahend (the "second number"), the greater the value of the difference. The lesser the difference between the minuend and subtrahend, the closer the difference becomes to zero. (As an example: 10 – 3 is greater than 9 – 8 because the distance between 10 and 3 on the number line is greater than the distance between 9 and 8.)

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Create a Game, Puzzle, or Activity (fraction, decimal, percent)	
	Answers will vary.

Fitness Plan for Zig and Zoe (fractions, money, estimation, modeling real life situations)	
1	At 1.25 cans per day for 90 days, they will need 112.5 cans. That means they need to by 38 packs (114 cans) for $190. Note: Cans never need to be thrown away; they are not open for longer than a day.
2	Monthly totals may vary. The three month total is $195.
3	No, they do not the same.