2010 Common Core State Standards for Mathematics
Where does 'reasonableness' appear?

Standards for Mathematical Practice

SMP 1 – "Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?"

SMP 3 – "Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning that is flawed, and – if there is a flaw in an argument – explain what it is…Students at all grade levels can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve their arguments."

SMP 4 – "They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose."

SMP 7 – "Mathematically proficient students look closely to discern a pattern or structure…They also can step back for an overview and shift perspective."

SMP 8 – "As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their immediate results."

Content Standards

3.OA.8 – Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.

4.OA.3 – Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

5.NF.2 – Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

7.EE.3 – Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate and assess the reasonableness of answers using mental computation and estimation strategies.

Prompts/Questions to Encourage Students' Reasoning and Sense-Making about Mathematics

acceptable sound
judicious plausible
understandable
proper
legitimate justifiable
reasonable sensible
prudent
sapient rational
feasible