Fractional Parts of a Number
Check Your Understanding

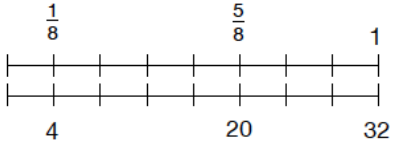
One indicator of how well a student understands fractional parts of a number is to compare a student's work and explanation for a problem with how other students have responded to the same problem. Students, parents, or teachers can use the following problem and sample responses to evaluate understanding.

Directions for the Student:

1) Solve the following problem and explain your work and answer.
2) Compare your work to the sample responses in order to determine if your work indicates deep, partial, or beginning understanding.

Problem:

Mrs. Ubben got a box of chocolates for Valentine's Day. There are 20 chocolates left. She said that was $\frac{5}{8}$ of the entire box. How many chocolates were in the entire box?

Level of Understanding	Sample Student Response	Comments
Deep Understanding	**Student 1:** "I cut the box into 8 parts. Then I colored in 5 parts. Twenty divided by 5 is 4, so each part has 4 chocolates. Then I knew 8 x 4 = 32." 	This student modeled the problem directly, recognized that each eighth is four chocolates, and then used a known multiplication fact, 8 x 4 = 32.
	Student 2: "I drew a double number line. If $\frac{5}{8}$ of the chocolates is 20, then $\frac{1}{8}$ is 20 divided by 5, or 4. Four times 8 is 32." 	This student used a model to help make sense of the problem. The student determined that each eighth equals 4, and $\frac{8}{8}$ (or 1) is equal to 4 times 8, or 32.

Level of Understanding	Sample Student Response	Comments
Partial Understanding	**Student 3:** "I divided 20 into eighths to figure out how much $\frac{1}{8}$ is. There were $\frac{3}{8}$ missing, so I did 3 times 2.5 and added that to 20 to get 27.5 chocolates." $8\overline{)20}$ → 2.5; 16; 40; 40; 0 2.5 × 3 = 7.5 20 + 7.5 = 27.5	This student knew that it was necessary to find how many chocolates there are in $\frac{1}{8}$ of a box. But $\frac{1}{8}$ of a box is not 20 ÷ 8. It is 20 ÷ 5, since five eighths of the box is 20.
	Student 4: "Because if there is a box of chocolates and there are 20 left, it would have to be about 32. I think."	This student knew the answer is bigger than 20. The student may have guessed or used mental math. Further explanation is needed to determine if the student has deep understanding. The "I think." comment makes it seem like the student is not sure.

Level of Understanding	Sample Student Response	Comments
Beginning Understanding	**Student 5:** "Five eighths of the box is 20. So there are 3 more sections of the box left. Each section has 5 chocolates, so that's 15 more. There are 35 chocolates in the box."	This student recognized there were three more sections of the box (eighths). But the student assumed there were five chocolates in each eighth.
	Student 6: "2 Hershey Kiss, 2 Kit Kat, 2 Tootsie, 2 Twixt, 2 M&M, 2 turtle chocolate, and 2 Junior Mints…"	This student does not seem to understand the problem situation.