Characteristics of an Alternative Approach to Fraction Division

* Builds upon what students know about the division of whole numbers (NCTM, 2000; NGACBP & CCSSO, 2010;Sharp & Adams, 2002).
* Lends itself to a visual interpretation and to visual modeling of the operation (NCTM, 2000; NGACBP & CCSSO, 2010; Van de Walle, et al, 2014; Fosnot & Dolk, 2002).
* Allows students to make use of multiple representations and Mathematical Practices (NGACBP & CCSSO, 2010; Sharp & Adams, 2002; Leinwand, 2009).
* Connects to the other algorithms and methods students use to operate with fractions (Cramer, et al., 2010; NCTM, 2000).
* Allows students to use it when interpreting both measurement and partition division (Van de Walle, et al, 2014; Tirosh, 2000).

Problem Strings for Purposeful Development of an Alternative Approach

(Hypothetical Learning Trajectory)

|  |  |  |
| --- | --- | --- |
| **Problem String 1** | **Problem String 2** | **Problem String 3** |
| $$1÷\frac{1}{3}$$$$2÷\frac{1}{3}$$$$2÷\frac{2}{3}$$$$2÷\frac{3}{4}$$ | $$\frac{1}{2}÷\frac{1}{8}$$$$\frac{1}{3}÷\frac{1}{6}$$$$\frac{4}{3}÷\frac{1}{6}$$$$\frac{3}{4}÷\frac{3}{8}$$ | $$\frac{1}{2}÷\frac{2}{3}$$$$\frac{2}{3}÷\frac{3}{4}$$$$\frac{5}{6}÷\frac{1}{4}$$$$\frac{3}{8}÷\frac{2}{3}$$ |