Core Content

Cluster Title: Understand ratio concepts and use ratio reasoning to solve problems.

Standard 1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”

MASTERY Patterns of Reasoning:

Conceptual:
- Understand the concept of a ratio as a way of expressing relationships between quantities.
- Distinguish when a ratio is describing part to part or part to whole comparison.

Procedural:
- Describe ratio relationships between two quantities.
- Translate relationships between two quantities using the notation of ratio language (1:3, 1 to 3, 1/3).

Representational:
- Communicate relationships between two quantities using ratio notation and language.

Supports for Teachers

Critical Background Knowledge

Conceptual:
- Understand the relationship between parts and wholes.

Procedural:
- Translate “for every” and other meanings of multiplication into terms.

Representational:
- Experience working with set and measurement models.
### Academic Vocabulary and Notation

- :, /, ratio, terms of ratio (i.e., the numbers used in a ratio are called its terms)

### Instructional Strategies Used

Using a variety of situations, describe relationships using ratio, for example:

1. **Part to part:** Compare the number of girls to boys in the classroom using the different symbols for ratio (girls: boys, girls to boys, \(\frac{\text{girls}}{\text{boys}}\), girls out of boys). Then compare the number of boys to girls in the same way.
2. **Part to whole:** Compare the number of girls to the whole class. Do the same thing for the boys in the class.

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### Assessment Tasks Used

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<th>Skill-based Task:</th>
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<td>There are four dogs and three cats. What is the ratio of dogs to cats and cats to dogs?</td>
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<th>Problem Task:</th>
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<td>The newspaper reported, “For every vote candidate A received, candidate B received three votes.” Describe possible election results using at least three different ratios. Explain your answer.</td>
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