

Fractions ~ Tools, Tasks and Talk!

Making Fractions Make Sense

KSDE 2015

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Math Practices

Make sense of problems and persevere in solving them.

Reason abstractly and quantitatively.

Construct viable arguments and critique the reasoning of others.

Model with mathematics.

Use appropriate tools strategically.

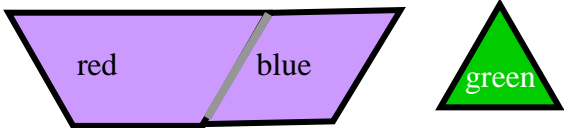
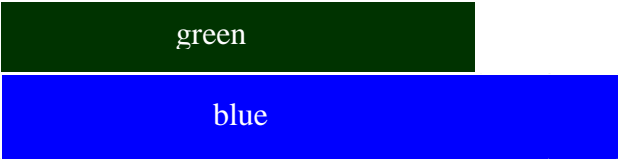
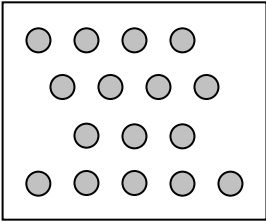
Attend to precision.

Look for and make use of structure.

Look for and express regularity in repeated reasoning.


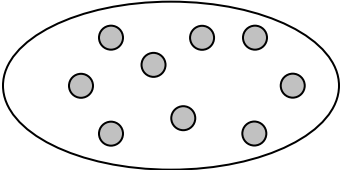
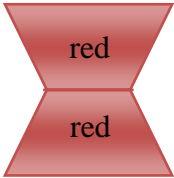
What is the Fraction?

For each question below, use the appropriate tool to determine your response. Explain your thinking using drawings and/or words.

Problem	Answer
<p>What fraction of the shaded figure does the green triangle represent?</p>  <p>The diagram shows a purple trapezoid with a diagonal line from the top-right corner to the bottom-left corner. The area to the left of the line is labeled 'red' and the area to the right is labeled 'blue'. To the right of the trapezoid is a green triangle labeled 'green'.</p>	
<p>If the dark green strip is one whole, what fraction is the blue strip?</p>  <p>The diagram shows two horizontal strips. The top strip is dark green and labeled 'green'. The bottom strip is blue and labeled 'blue'. The blue strip is longer than the green strip.</p>	
<p>These 16 counters are what fraction of a whole set of 12 counters?</p>  <p>The diagram shows a rectangular box containing 16 grey circular counters arranged in four rows: 4 in the first row, 5 in the second, 3 in the third, and 4 in the fourth.</p>	

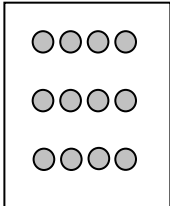


What is the Part?

For each question below, use the appropriate tool to determine your response. Explain your thinking using drawings and/or words.

Problem	Answer
<p>If brown is the whole, find <u>one-fourth</u>.</p> 	
<p>If 9 counters are a whole, how many are in <u>five-thirds</u> of a set?</p> 	
<p>If this hexagon is one whole, find <u>one-third</u>.</p> 	

What is the Whole?

For each question below, use the appropriate tool to determine your response. Explain your thinking using drawings and/or words.

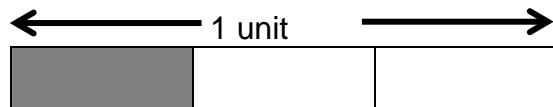
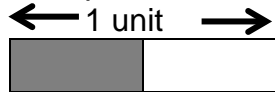
Problem	Answer
<p>If 12 counters are <u>three-fourths</u> of a set, how many counters are in the full set?</p> 	
<p>If dark green is <u>two-thirds</u>, what strip is the whole?</p> 	
<p>If the red trapezoid is <u>three-ninths</u>, what could the whole look like?</p> 	

Fraction Tasks

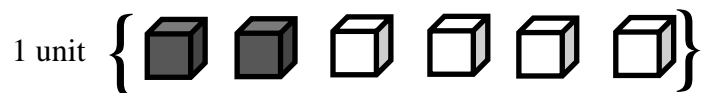
From Developing Essential Understanding of Rational Numbers, NCTM, p. 21

In each example below, which of the two shaded areas represents more?

Example 1



Example 2



Is there more than one way to think about the meaning of this question? Explain.

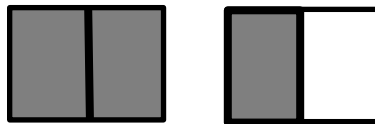
From Putting Essential Understanding of Fractions into Practice, NCTM, p. 33

Read the thinking of the three students for the problem below:

1 brownie



What part is shaded for the brownies below?



Sally – I think $\frac{3}{4}$ of the two brownies is shaded. The brownies are cut into 4 equal parts and 3 are shaded.

Marcus – I think $1\frac{1}{2}$ brownies are shaded. One of the brownies is shaded and $\frac{1}{2}$ of the other brownie is shaded, so $1\frac{1}{2}$ brownies are shaded.

Demetrius – I think that $\frac{3}{2}$ of a brownie is shaded. Each brownie is cut in $\frac{1}{2}$ and 3 of the halves are shaded.

Which student is correct? Explain your thinking.

NOTES: