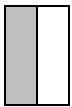
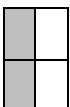
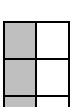
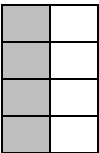


## Mathematics: Number and Operations- Fractions

<b>4.NF.1</b>	<p><b>Cluster Heading:</b> 4.NF.A Extend understanding of fraction equivalence and ordering</p> <p><b>Content Standard(s):</b> 4.NF.1 Explain why a fraction <math>\frac{a}{b}</math> is equivalent to a fraction <math>\frac{(n \times a)}{(n \times b)}</math> by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.</p> <p><b>Practice Standard(s):</b> MP.4 Model with Mathematics, MP.8 Look for and express regularity in repeated reasoning.</p>
<div style="display: flex; justify-content: space-between;"> <span><b>Problem/Task Suggestions</b></span> <span><b>Formative Assessment Suggestions</b></span> </div>	
<p><b>Equivalent Fractions</b></p> <p>Students can use visual models or applets to generate equivalent fractions. Students create 4 equal fractions using models. Then have students discuss the connections between the models and the fractions in the way both parts and wholes are counted. Students can begin generating a rule for writing equivalent fractions.</p> <p>Example: Let area models show <math>\frac{1}{2}</math></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <math display="block">\frac{1}{2}</math> </div> <div style="text-align: center;">  <math display="block">\frac{2}{4} = \frac{2 \times 1}{2 \times 2}</math> </div> <div style="text-align: center;">  <math display="block">\frac{3}{6} = \frac{3 \times 1}{3 \times 2}</math> </div> <div style="text-align: center;">  <math display="block">\frac{4}{8} = \frac{4 \times 1}{4 \times 2}</math> </div> </div> <p><b>Differentiation</b></p> <p><b>Support</b> Provide students with visual models of equivalent fractions and let them work in pairs to generate a rule for writing equivalent fractions.</p> <p><b>Extensions</b> Have students compare two fractions with different denominators by creating common denominators or numerators. Have students use benchmark fractions such as <math>\frac{1}{2}</math> to compare two fractions.</p> <p><b>Solution:</b> <a href="http://illuminations.nctm.org/activitydetail.aspx?id=80">http://illuminations.nctm.org/activitydetail.aspx?id=80</a></p>	<p><b>Observations of Students</b></p> <ul style="list-style-type: none"> <li>• Is the student able to make a drawing?</li> <li>• Can the student generate a rule for writing equivalent fractions?</li> <li>• Is the student able to explain his/her reasoning?</li> </ul> <p><b>Questions to Guide Student Thinking</b></p> <ul style="list-style-type: none"> <li>• How can you model this fraction?</li> <li>• What does it mean to be equivalent?</li> <li>• Why are these fractions equivalent? How do you know?</li> </ul> <p><b>Misconceptions</b> Students may</p> <ul style="list-style-type: none"> <li>• think they need to multiply or divide either the numerator or denominator to generate equivalent fractions, not both.</li> <li>• not understand they are multiplying a fraction by 1 in the form <math>\frac{a}{a}</math>.</li> <li>• struggle using applet or drawing visual models because they do not understand equivalent fractions.</li> </ul> <p><b>Vocabulary Considerations</b> Equivalent fractions, numerator, denominator, unit fraction</p>
<p><b>Source:</b> <a href="http://www.azed.gov/azcommoncore/files/2012/11/4flipbookedited.pdf">http://www.azed.gov/azcommoncore/files/2012/11/4flipbookedited.pdf</a></p>	