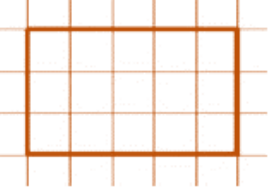

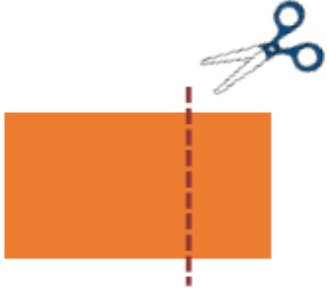
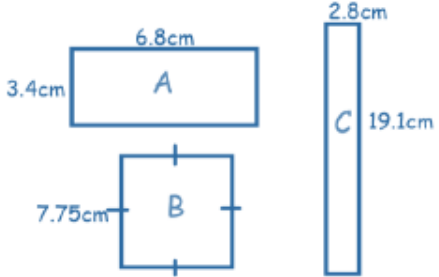
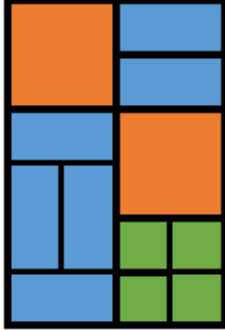

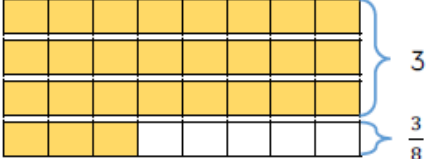










## Area of a rectangle

Fluency Lesson 1	Reasoning lesson 1	Problem solving lesson 1
<p>How many rectangles can you draw with an area of <input type="text"/> cm<sup>2</sup>?</p> <p>What is the area of this shape if:            If each square is 2cm in length, what is the area of the shape?            If each square is 3.5cm in length, what is the area of the shape?</p>  <p>Simon buys a house with a small back garden, which measures 12m<sup>2</sup>. His house lies in a row of terraces, all identical. Simon's house lies in a row of 15 terraced houses. What is the total area of the garden space?</p>	<p>Investigate how many ways you can make different squares and rectangles with the same area of 84cm<sup>2</sup></p> <p>What strategy did you use?</p>  <p>If you cut off a piece from a shape, you reduce its area and perimeter. True or False?</p> <p>Draw 2 examples to prove your thinking.</p> 	 <p>Approximate the area of each shape and then order from largest to smallest.</p> <hr/>  <p>Each orange square has an area of 24cm<sup>2</sup>. Calculate the total orange area. Calculate the blue area. Calculate the green area. What is the total area of the whole shape?</p>


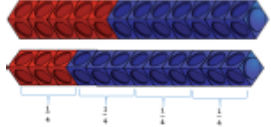

## Improper fractions to mixed numbers

Fluency lesson 3	Reasoning lesson 3	Problem solving lesson 3
<p>Claire converts the improper fraction <math>\frac{14}{5}</math> into a mixed number using cubes. She groups the cubes into 5s, then has 4 left over.</p> <p> <math>\frac{5}{5}</math> is the same as <input type="text"/> <math>\frac{10}{5}</math> is the same as <input type="text"/></p> <p><math>\frac{14}{5}</math> as a mixed number is <input type="text"/> <input type="text"/></p> <p>Use Claire's method to convert <math>\frac{19}{3}</math>, <math>\frac{19}{4}</math>, <math>\frac{19}{5}</math> and <math>\frac{19}{6}</math></p> <p>Steve converts the improper fraction <math>\frac{27}{8}</math> into a mixed number using bar models.</p> <p><math>\frac{27}{8}</math>  <math>3 \frac{3}{8}</math></p> <p>Use Steve's method to convert <math>\frac{38}{8}</math>, <math>\frac{27}{6}</math>, <math>\frac{47}{7}</math> and <math>\frac{32}{4}</math></p>	<p>William says,</p> <p> <math>\frac{28}{3}</math> is less than <math>\frac{37}{5}</math> because 28 is less than 37</p> <p>Do you agree? Explain why.</p>	<p><b>Spot the mistake</b></p> <ul style="list-style-type: none"> <li><math>\frac{27}{5} = 5 \frac{1}{5}</math></li> <li><math>\frac{27}{3} = 8</math></li> <li><math>\frac{27}{4} = 5 \frac{7}{4}</math></li> <li><math>\frac{27}{10} = 20 \frac{7}{10}</math></li> </ul> <p>Can you find the correct answers?</p>

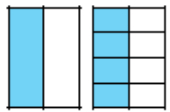
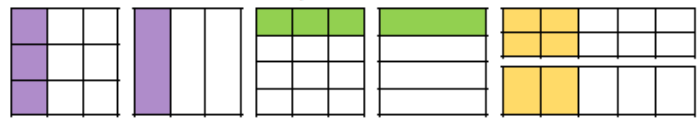
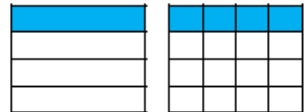

# Compare and order Fractions greater than 1

Fluency lesson 4	lesson 4	Problem solving lesson 4
<p>Use bar models to compare <math>\frac{7}{6}</math> and <math>\frac{5}{3}</math></p> <div style="display: flex; align-items: center;">   <div style="margin-left: 20px;"> <input type="text"/> &gt; <input type="text"/>  <input type="text"/> &lt; <input type="text"/> </div> </div> <p>Use this method to help you compare:  <math>\frac{7}{2}</math> and <math>\frac{9}{4}</math>    <math>\frac{11}{6}</math> and <math>\frac{13}{3}</math>    <math>\frac{9}{4}</math> and <math>\frac{17}{8}</math></p> <p>Use a bar model to compare <math>1\frac{2}{3}</math> and <math>1\frac{5}{6}</math></p> <div style="display: flex; align-items: center;">   <div style="margin-left: 20px;"> <input type="text"/> &gt; <input type="text"/>  <input type="text"/> &lt; <input type="text"/> </div> </div> <p>Use this method to help you compare:  <math>1\frac{3}{4}</math> and <math>1\frac{3}{8}</math>    <math>1\frac{5}{8}</math> and <math>1\frac{1}{2}</math>    <math>2\frac{4}{7}</math> and <math>2\frac{9}{14}</math></p> <p>Order the fractions from greatest to smallest:  <math>\frac{8}{5}</math>, <math>\frac{11}{10}</math> and <math>\frac{17}{20}</math>    <math>1\frac{2}{3}</math>, <math>1\frac{7}{24}</math> and <math>1\frac{5}{12}</math>    <math>1\frac{3}{8}</math>, <math>1\frac{11}{16}</math> and <math>\frac{19}{28}</math></p>	<p>Lucy and Sinead both have two identical pizzas each.</p> <p>Lucy says,</p> <div style="border: 1px solid green; border-radius: 15px; padding: 10px; margin: 10px;">  <p>I have cut each pizza into 6 equal pieces and eaten 8</p> </div> <p>Sinead says,</p> <div style="border: 1px solid purple; border-radius: 15px; padding: 10px; margin: 10px;"> <p>I have cut each pizza into 9 equal pieces and eaten 15</p>  </div> <p>Who ate the most pizza?</p> <p>Use a drawing to support your answer.</p>	<p>Lottie looks at the fractions <math>1\frac{7}{16}</math> and <math>1\frac{3}{4}</math></p> <p>She says,</p> <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; margin: 10px;">  <p><math>1\frac{7}{16}</math> is greater than <math>1\frac{3}{4}</math> because the numerator is larger.</p> </div> <p>Do you agree?</p> <p>Explain why using a model.</p>

## Compare and order Fractions

Fluency lesson 4	lesson 4	lesson 4
<p>Use bar models to compare <math>\frac{5}{8}</math> and <math>\frac{3}{4}</math></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <math>\square &gt; \square</math>  <math>\square &lt; \square</math> </div> </div> <p>Use this method to help you compare:  <math>\frac{5}{6}</math> and <math>\frac{2}{3}</math>      <math>\frac{2}{3}</math> and <math>\frac{5}{9}</math>      <math>\frac{7}{16}</math> and <math>\frac{3}{8}</math></p> <p>Use cubes to help you compare <math>\frac{1}{4}</math> and <math>\frac{5}{12}</math></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <math>\square &gt; \square</math>  <math>\square &lt; \square</math> </div> </div> <p>Use this method to help you compare:  <math>\frac{6}{7}</math> and <math>\frac{15}{21}</math>      <math>\frac{4}{9}</math> and <math>\frac{11}{27}</math>      <math>\frac{9}{16}</math> and <math>\frac{7}{8}</math></p> <p>Order the fractions from greatest to smallest:  <math>\frac{3}{12}, \frac{3}{4}</math> and <math>\frac{3}{16}</math>      <math>\frac{2}{3}, \frac{5}{6}</math> and <math>\frac{7}{12}</math>      <math>\frac{4}{7}, \frac{13}{14}</math> and <math>\frac{19}{28}</math></p>	<p>Ash makes <math>\frac{3}{4}</math> and <math>\frac{3}{8}</math> out of cubes.</p>  <p>He thinks that <math>\frac{3}{8}</math> is equal to <math>\frac{3}{4}</math></p> <p>Do you agree? Explain your answer.</p>	<p><b>Always, sometimes, never</b></p> <p>If one denominator is a multiple of the other you can simplify the fraction with the larger denominator to make the denominators the same.</p> <p>E.g. <math>\frac{1}{4}</math> and <math>\frac{9}{12}</math> can be simplified to <math>\frac{1}{4}</math> and <math>\frac{3}{4}</math></p> <p>Prove it.</p>

## Equivalent Fractions

Fluency lesson 2	Reasoning lesson 2	Problem solving lesson 2
<p>Take two pieces of paper the same size. Fold on piece into two equal pieces. Fold the other into eight equal pieces. What equivalent fractions can you find?</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <math display="block">\frac{1}{2} = \frac{4}{8}</math> </div> </div> <p>Use the models to write equivalent fractions.</p> <div style="display: flex; align-items: center;">  </div> <p>Emma uses the models and her multiplication and division skills to find equivalent fractions.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <math display="block">\frac{1}{4} = \frac{4}{16}</math> </div> <div style="margin-left: 10px;"> <p>Use this method to find equivalent fractions to <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math> and <math>\frac{4}{4}</math> where the denominator is 16</p> </div> </div> <p>Emma uses the same approach to find equivalent fractions for these fractions. How will her method change?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math>\frac{4}{12} = \frac{\square}{3}</math> </div> <div style="text-align: center;"> <math>\frac{6}{12} = \frac{\square}{4}</math> </div> <div style="text-align: center;"> <math>\frac{6}{12} = \frac{\square}{2}</math> </div> </div>	<p>Kim says,</p> <div style="display: flex; align-items: center;">  <div style="border: 1px solid purple; border-radius: 15px; padding: 10px; background-color: #e6e6fa; margin-left: 10px;"> <p>Whatever you do to the numerator, you do to the denominator.</p> </div> </div> <p>Here are the equivalent fractions she has found for <math>\frac{4}{8}</math>:</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <math>\frac{4}{8} = \frac{8}{16}</math> </div> <div style="text-align: center;"> <math>\frac{4}{8} = \frac{6}{10}</math> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <math>\frac{4}{8} = \frac{2}{4}</math> </div> <div style="text-align: center;"> <math>\frac{4}{8} = \frac{1}{5}</math> </div> </div> <p>Does Kim's method work? Explain why.</p>	<p>Martin thinks you can only simplify even numbered fractions because you keep on halving the numerator and denominator until you get an odd number.</p> <p>Do you agree? Explain your answer.</p> <hr/> <p>Here are some fraction cards. All of the fractions are equivalent.</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="border: 2px solid red; border-radius: 10px; padding: 10px; text-align: center;"> <math>\frac{4}{A}</math> </div> <div style="border: 2px solid red; border-radius: 10px; padding: 10px; text-align: center;"> <math>\frac{B}{C}</math> </div> <div style="border: 2px solid red; border-radius: 10px; padding: 10px; text-align: center;"> <math>\frac{20}{50}</math> </div> </div> <p>A + B = 16 Calculate the value of C.</p>