A ratio is a comparison between two numbers.

1. a) The ratio of moons to circles is _____ : _____  
   b) The ratio of triangles to moons is _____ : _____  
   c) The ratio of cylinders to squares is _____ : _____  
   d) The ratio of squares to circles is _____ : _____  
   e) The ratio of squares to moons is _____ : _____  
   f) The ratio of squares to figures is _____ : _____  

2. Write the number of vowels compared to the number of consonants in the following words.
   a) apple  2 : 3  
   b) banana  _____ : _____  
   c) orange  _____ : _____  
   d) pear  _____ : _____  

3. Write the ratio of the lengths.
   
<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>2</th>
<th>6</th>
<th>6</th>
<th>4</th>
<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
</tr>
</tbody>
</table>

   a) AB to DE _____ : _____  
   b) BC to CD _____ : _____  
   c) EF to FG _____ : _____  
   d) EF to BC _____ : _____  
   e) AB to GH _____ : _____  
   f) CD to FG _____ : _____  

4. To make punch, you need ...
   • 4 L of ginger ale  
   • 2 L of orange juice  
   • 3 L of mango juice  
   What is the ratio of ginger ale to punch?

5. a) In the above pattern, what does the ratio 2 : 3 describe?

   b) What does the ratio 5 : 10 describe?

6. Build a model or draw a picture that could be described by the ratio 3 : 4.
1. The picture shows that the ratio of apples to bananas on a grocery shelf is:

8 apples to every 6 bananas

OR

4 apples to every 3 bananas.

Group the fruit to show two equivalent ratios.

a) 

_________________ to every ___________________

or ______________ to every ___________________

b) 

_________________ to every ___________________

or ______________ to every ___________________

2. Starting with the ratio 2 triangles to every 3 squares, Talia created a sequence of equivalent ratios.

Fill in the missing figures and ratios.

<table>
<thead>
<tr>
<th>Triangles</th>
<th>△ △</th>
<th>△ △ △</th>
<th>△ △ △ △</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squares</td>
<td>□□□</td>
<td>□□□□□</td>
<td>□□□□□□□</td>
</tr>
<tr>
<td>Ratio</td>
<td>2 : 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Starting with the ratio given, write a sequence of five ratios that are all equivalent.

a) 3 : 4 = 6 : 8 = __________ : __________ : __________ : __________ : __________

b) 2 : 5 =

4. Find the missing terms.  
   a) 3 : 4 = _____ : 8  
   b) 5 : 7 = 10 : _____  
   c) 2 : 5 = _____ : 25

A recipe for granola calls for 2 cups of raisins for every 3 cups of oats.
How many cups of raisins will Eschi need for 12 cups of oats?

She writes a sequence of equivalent ratios to find out.

NOTE: She multiplies both terms in the ratio 2 : 3 by 2, then by 3, then by 4.

Eschi needs 8 cups of raisins.

5. Solve each problem by writing a sequence of equivalent ratios (as in the example above).

   a) A recipe calls for 5 cups of oats for every 3 cups of raisins.  
   How many cups of oats are needed for 12 cups of raisins?

   b) 2 cm on a map represent 11 km.  
   How many km do 8 cm on the map represent?

   c) Six bus tickets cost $5.  
   How much will 18 tickets cost?
There are 3 boys for every 2 girls in a class of 20 children. To find out how many boys are in the class, write a sequence of ratios:

\[
3 \text{ boys} : 2 \text{ girls} = 6 \text{ boys} : 4 \text{ girls} = 9 \text{ boys} : 6 \text{ girls} = 12 \text{ boys} : 8 \text{ girls}
\]

12 boys + 8 girls = 20 students. So there are 12 boys in the class.

1. Write a sequence of ratios to solve each problem. The first one is started for you.
   a) There are 5 boys for every 4 girls in a class of 27 children. How many girls are in the class?
      \[
      5 : 4 = 10 : 8 =
      \]
   b) There are 3 red fish for every 5 blue fish in an aquarium. With 24 fish, how many fish are blue?
   c) A recipe for punch calls for 3 L of orange juice for every 2 litres of mango juice. How many litres of orange juice are needed to make 15 litres of punch?

Five subway tickets cost $4. Kyle wants to know how much 20 tickets will cost. He writes the ratio of tickets to dollars as a fraction. Then, he finds an equivalent fraction by multiplying:

<table>
<thead>
<tr>
<th>Step 1:</th>
<th>Step 2:</th>
<th>Step 3:</th>
<th>Step 4:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{4}{5}) = (\frac{?}{20})</td>
<td>(\frac{4}{5} = \frac{20}{20})</td>
<td>(\frac{4}{5} \times 4 = \frac{20}{20})</td>
<td>(\frac{4}{5} \times 4 = \frac{16}{20})</td>
</tr>
</tbody>
</table>

2. Solve the following ratios. Draw arrows to show what you multiply by.
   a) \(\frac{3}{4} \times 5 = \frac{20}{20}\)
   b) \(\frac{1}{5} = \frac{25}{25}\)
   c) \(\frac{2}{5} = \frac{20}{20}\)
   d) \(\frac{6}{7} = \frac{35}{35}\)
   e) \(\frac{3}{4} = \frac{16}{16}\)
   f) \(\frac{2}{3} = \frac{12}{12}\)
   g) \(\frac{15}{25} = \frac{100}{100}\)
   h) \(\frac{5}{9} = \frac{45}{45}\)

BONUS
NOTE: Sometimes, in the questions below, the arrow may point from right to left.

3. a) \(\frac{15}{5} = \frac{3}{4}\)
   b) \(\frac{10}{5} = \frac{2}{5}\)
   c) \(\frac{9}{3} = \frac{3}{7}\)
   d) \(\frac{10}{15} = \frac{3}{3}\)
   e) \(\frac{4}{5} = \frac{15}{15}\)
   f) \(\frac{2}{3} = \frac{9}{9}\)
   g) \(\frac{45}{2} = \frac{2}{5}\)
   h) \(\frac{20}{7} = \frac{10}{10}\)

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Number Sense 2
Equivalent Ratios

1. $3 : 5 = \_ : 10 = \_ : 25 = 18 : \_ = \_ : 35 = 24 : \_$

2. $3 : 4 = \_ : 8 = \_ : 20 = \_ : 24 = 21 : \_ = \_ : 32$

3. $1 : 2 = 2 : \_ = \_ : 10 = 6 : \_ = 7 : \_ = \_ : 16$

4. $5 : 6 = \_ : 12 = 25 : \_ = \_ : 36 = 35 : \_ = 40 : \_$

5. $2 : 5 = \_ : 10 = 10 : \_ = 12 : \_ = \_ : 35 = 16 : \_$

6. $1 : 2 = 2 : \_ = 5 : \_ = \_ : 12 = \_ : 14 = 8 : \_$

7. $2 : 3 = 4 : \_ = \_ : 15 = 12 : \_ = 14 : \_ = 16 : \_$

8. $2 : 3 = 4 : \_ = \_ : 15 = \_ : 18 = 14 : \_ = 16 : \_$

9. $5 : 9 = 10 : \_ = \_ : 45 = \_ : 54 = 35 : \_ = \_ : 72$