Rations and Proportions Worksheet

Solve for $x$:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>$\frac{3}{10} = \frac{x}{20}$</td>
<td>$\frac{2}{5} = \frac{y}{40}$</td>
<td>$\frac{5}{7} = \frac{20}{n}$</td>
<td>$\frac{1}{2} = \frac{5}{k}$</td>
<td>$\frac{s}{100} = \frac{7}{1000}$</td>
</tr>
<tr>
<td>$\frac{21}{a} = \frac{7}{20}$</td>
<td>$\frac{t}{50} = \frac{39}{25}$</td>
<td>$\frac{7}{20} = \frac{49}{p}$</td>
<td>$\frac{24}{100} = \frac{y}{25}$</td>
<td>$\frac{x}{100} = \frac{43}{200}$</td>
</tr>
<tr>
<td>$\frac{758}{1000} = \frac{x}{10}$</td>
<td>$\frac{32}{s} = \frac{128}{2000}$</td>
<td>$\frac{66}{300} = \frac{y}{50}$</td>
<td>$\frac{27}{x} = \frac{18}{40}$</td>
<td>$\frac{250}{365} = \frac{100}{x}$</td>
</tr>
</tbody>
</table>

1. There are 12 boys and 8 girls in a class.
   Find:
   The ratio of boys to girls =
   The ratio of girls to boys =
   The ratio of boys to total students =
   The ratio of girls to total students =

2. There are 6 black beads, 8 red beads, and 4 white beads in a box.
   Find:
   The ratio of black beads to red beads =
   The ratio of white beads to black beads =
   The ratio of red beads to total beads =

3. The composition of a Canadian penny is: 2.209 g steel, 0.03525 g nickel, 0.10575 g copper plating.
   Find:
   The ratio of steel to total mass of a penny =
   The ratio of Nickel to total mass of a penny =
   The ratio of copper to total mass of a penny =

4. Sodium hydrogen carbonate is used in many commercial preparations. Its formula is $\text{NaHCO}_3$.
   Find:
   The mass ratio of sodium to total =
   The mass ratio of Hydrogen to total =
   The mass ratio of carbon to total =
   The mass ratio of oxygen to total =
5. A dog, weight 85 lb, needs 8 pills for 24 hours.

Find:

The ratio of weight of dog to number of pills =

The ratio of number of pills to weight of dog =

The ratio of number of pills to every 6 hours =

6. 4 grams sodium chloride (NaCl) is dissolved in 96 grams water. Find:

The ratio of NaCl to water =

The ratio of NaCl to solution =

Answers:

<table>
<thead>
<tr>
<th></th>
<th>6</th>
<th>16</th>
<th>28</th>
<th>10</th>
<th>0.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>78</td>
<td>140</td>
<td>6</td>
<td>21.5</td>
<td></td>
</tr>
<tr>
<td>7.58</td>
<td>500</td>
<td>11</td>
<td>60</td>
<td>146</td>
<td></td>
</tr>
</tbody>
</table>

1. The ratio of boys to girls = 3 : 2, or 3 to 2, or 3/2
   The ratio of girls to boys = 2 : 3
   The ratio of boys to total students = 3 : 5
   The ratio of girls to total students = 2 : 5

2. The ratio of black beads to red beads = 3 : 4
   The ratio of white beads to black beads = 2 : 3
   The ratio of red beads to total beads = 4 : 9

3. The ratio of steel to total mass of a penny = 47 : 50
   The ratio of Nickel to total mass of a penny = 3 : 200
   The ratio of copper to total mass of a penny = 9 : 200

   [The total mass of penny = 2.209 g + 0.03525 g + 0.10575g = 2.35 g]

4. The mass ratio of sodium to total = 23 : 84
   The mass ratio of Hydrogen to total = 1 : 84
   The mass ratio of carbon to total = 1 : 7
   The mass ratio of oxygen to total = 4 : 7

   [Na= 23 g/mol, H= 1g/mol, C= 12g/mol, O= 16g/mol]

   [1mol NaHCO₃ = 23g + 1g + 12g + (16×3)g = 84 g]

5. The ratio of weight of dog to number of pills = 85: 8
   The ratio of number of pills to weight of dog = 8 : 85
   The ratio of number of pills to every 6 hours = 2 : 6

6. The ratio of NaCl to water = 1 : 24
   The ratio of NaCl to solution = 1 : 25