Rate and Ratio

Solution

3. (a)
$$\begin{array}{cccc} a & : & b & : c \\ 3 & : & 5 & \\ & & 4 & : 6 \\ \hline 3\times 4 & : & 5\times 4 & : 6\times 5 \end{array}$$

$\therefore a : b : c = 12 : 20 : 30$
$= 6 : 10 : 15$

(b)
$$\begin{array}{cccc} a & : & b & : c \\ 4 & : & 7 & \\ 3 & : & & : 2 \\ \hline 4\times 3 & : & 7\times 3 & : 2\times 4 \end{array}$$

$\therefore a : b : c = 12 : 21 : 8$

4. (a) $4 : 24 = 1 : 6$

(b) $3.6 \text{ h} : 10 \text{ min}$

$= 3.6 \times 60 \text{ min} : 10 \text{ min}$

$= 108 : 5$

(c) $4.3 \text{ km} : 350 \text{ m}$

$= 4300 \text{ m} : 350 \text{ m}$

$= 86 : 7$

5. (a) The first portion $= 25 \times \frac{2}{2+3}$
$= 10 \text{ kg}$

The second portion $= 25 \times \frac{3}{2+3}$
$= 15 \text{ kg}$

(b) The first portion $= 330 \times \frac{4}{4+7}$
$= 330 \times \frac{4}{11}$
$= 120 \text{ L}$

The second portion $= 330 \times \frac{7}{4+7}$
$= 330 \times \frac{7}{11}$
$= 210 \text{ L}$

6. The fraction of the whole wire that the smaller square gets
$= \frac{9}{9+16} = \frac{9}{25}$

Perimeter of the smaller square

$= \frac{9}{25} \times 100 = 36 \text{ cm}$

$\therefore$ Length of side of the smaller square

$= 36 \div 4 = 9 \text{ cm}$

Perimeter of the larger square

$= 100 - 36 = 64 \text{ cm}$

$\therefore$ Length of side of larger square

$= 64 \div 4 = 16 \text{ cm}$

7. Let the total weight of the pack of candies be y g.

$$y\left(\frac{\frac{4}{5}}{\frac{4}{5}+\frac{2}{3}}\right) = 240$$
$$y\left(\frac{\frac{4}{5}}{\frac{22}{15}}\right) = 240$$
$$y\left(\frac{6}{11}\right) = 240$$
$$y = 440$$

$\therefore$ The total weight of the pack of candies is 440 g.