1.

Sample: The ratios $\frac{2}{3}$ and $\frac{26}{39}$ are equivalent because when $\frac{2}{3}$ is multiplied by $\frac{13}{13}$, the answer is $\frac{26}{39}$. Or, when $\frac{26}{39}$ is simplified, it is equal to $\frac{2}{3}$.

Sample: The ratios $\frac{7}{12}$ and $\frac{4}{9}$ are not equivalent. The fraction $\frac{7}{12}$ is greater than one half, and $\frac{4}{9}$ is less than one half.

2.

$$\frac{3x}{8} = \frac{x-2}{5}$$
$$(3x)(5) = (8)(x-2)$$
$$15x = 8x - 16$$
$$7x = -16$$
$$x = -\frac{16}{7}$$

3.

$$\frac{x}{x+4} = \frac{12}{18}$$
$$\frac{x}{x+4} = \frac{2}{3}$$
$$(x)(3) = (x+4)(2)$$
$$3x = 2x + 8$$
$$x = 8$$

4.

$$\frac{home}{total} = \frac{3}{(7+3)}$$
$$\frac{3}{10} = \frac{90}{t}$$
$$3t = 900$$
$$t = 300 \text{ total students}$$

5.

$$\frac{flour}{butter}; \quad \frac{2}{\frac{1}{2}} = \frac{5\frac{1}{2}}{x}$$
$$(2)(x) = (\frac{1}{2})(\frac{11}{2})$$
$$2x = \frac{11}{4}$$
$$x = \frac{11}{8}$$
$$x = 1\frac{3}{8} \text{ cup of butter}$$

$1\frac{3}{8}$ cup of butter is needed.

6.

$\frac{4\ Tbsp}{\frac{1}{4}\ cup} = \frac{16\ Tbsp}{1\ cup}$

There are 16 Tbsp in 1 cup.

7.

$(2\text{ L})(\frac{1000\ mL}{1\ L})(\frac{1\ Tbsp}{15\ mL})(\frac{1\ c}{16\ Tbsp})$

$= 8.\overline{3}$ c

≈ 8 c

8.

$7(\frac{1}{4}\text{ cup}) = \frac{7}{4}$ cups of lemon juice

$\frac{7}{4}\text{ cup}\left(\frac{16\ Tbsp}{cup}\right) = 28$ Tbsp lemon juice

$28\text{ Tbsp}\left(\frac{lemon}{2\ Tbsp}\right) = 14$ lemons

Ben needs 14 lemons to make 7 pies.

9.

$\left(\frac{5.2\ mi}{1\ hr}\right)\left(\frac{5280\ ft}{1\ mi}\right)\left(\frac{1\ hr}{60\ min}\right)\left(\frac{1\ min}{60\ sec}\right)$

$= 7.6\overline{2}$ ft/sec

≈ 7.6 ft/sec

10.

$\left(\frac{60\ beats}{min}\right)\left(\frac{60\ min}{hr}\right)\left(\frac{24\ hr}{day}\right)\left(\frac{365\ days}{yr}\right)\left(\frac{25\ years}{lifetime}\right) = 788{,}400{,}000$ beats/lifetime