Algebra Essentials – Solving Equations with the Variable on Both Sides

Name:_____

Justify each step.

1) $v + 9 = 7v + 9$

$v + 9 - v = 7v + 9 - v$ a. _____

$9 = 6v + 9$ b. _____

$9 - 9 = 6v + 9 - 9$ c. _____

$0 = 6v$ d. _____

$\frac{0}{6} = \frac{6v}{6}$ e. _____

$0 = v$ f. _____

2) $\frac{3m-2}{5} = \frac{7}{10}$

$\frac{3m-2}{5}(10) = \frac{7}{10}(10)$ a. _____

$(3m - 2)2 = 7$ b. _____

$6m - 4 = 7$ c. _____

$6m - 4 + 4 = 7 + 4$ d. _____

$6m = 11$ e. _____

$\frac{6m}{6} = \frac{11}{6}$ f. _____

$m = 1\frac{5}{6}$ g. _____

Solve each equation. Then check your solution.

3) $5t - 9 = -3t + 7$

4) $\frac{1}{4} - \frac{2}{3}y = \frac{3}{4} - \frac{1}{3}y$

5) $6(r+2)-4=-10$

6) $4(f-2)=4f$

7) $\frac{3}{2}y-y=4+\frac{1}{2}y$

8) $\frac{1}{6}(a-4)=\frac{1}{3}(2a+4)$

9) $18-3.8t=7.36-1.9t$

10) $-3(2n-5)=0.5(-12n+30)$

11) $7(m-3)=7$

12) $\frac{3}{4}n+16=2-\frac{1}{8}n$

Complete.

13) When exercising, a person's pulse rate should not exceed a certain limit, which depends on his or her age. This maximum rate is represented by the expression $0.8(220-a)$, where a is age in years. Find the age of a person whose maximum pulse is 152.

14) The rectangle and square shown below have the same perimeter. Find the dimensions of each figure.