1. Letting t, v represent the amount of money Tiffany and Vincent have, we get the following system of equations:

$$\begin{cases} v+3 &= 2(t-3) \\ v-7 &= \frac{1}{3}(t+7) \end{cases}$$ The solution to our system of equations is $(t, v) = (11, 13)$

$\boxed{\text{Tiffany \$11, Vincent \$13}}$

2. $\boxed{\$5.55}$

3. Letting n, d be the numerator and denominator, we get the following system of equations:

$$\begin{cases} \dfrac{22-n}{d} &= \dfrac{1}{3} \\ \dfrac{1}{5}(n+d) &= 8 \end{cases}$$ The solution to our system of equations is $(n, d) = (13, 27)$

$\boxed{\dfrac{13}{27}}$

4. $\boxed{120}$

5. We can let t, u represent the tens and units digits to get the following system of equations:

$$\begin{cases} 10t+u &= 10u+t-54 \\ u &= 3+2t \end{cases}$$ The solution to our system of equations is $(t, u) = (3, 9)$

$\boxed{39}$

6. $\boxed{\text{36 years old}}$

7. $\boxed{85 \text{ cm}^2}$

8. $\boxed{\$32 \text{ and } \$48}$

9. Letting m, n represent the speeds of Matthew and Nicholas, we get the following system of equations:

$$\begin{cases} 4m = 4n-88 \\ m+12 = \frac{6}{7}n \end{cases}$$ The solution to our system of equations is $(48, 70)$

$\boxed{\text{70 mph}}$

10. This problem had a typo.