1. (a) $\boxed{\frac{1}{9}+\frac{1}{153}}$

   (b) $\boxed{\frac{1}{10}+\frac{1}{190}}$

2. (a) $\boxed{\frac{1}{13}+\frac{1}{156}}$

   (b) $\boxed{\frac{1}{14}+\frac{1}{182}}$

   (c) $\boxed{\frac{1}{15}+\frac{1}{210}}$

3. We will write $\frac{1}{3}$ as the sum of unit fractions, $\frac{1}{4}$ and $\frac{1}{12}$, and then write each unit fraction as another sum of unit fractions:

$$\begin{aligned}\frac{1}{3} &= \frac{1}{4}+\frac{1}{12}\\ \frac{1}{3} &= \boxed{\frac{1}{5}+\frac{1}{20}+\frac{1}{13}+\frac{1}{156}}\end{aligned}$$

4. (a) $\boxed{\frac{5}{6}}$

   (b) $\boxed{\frac{7}{12}}$

   (c) $\boxed{\frac{9}{20}}$

5. (a) $\boxed{\frac{1}{6}}$

   (b) $\boxed{\frac{1}{12}}$

   (c) $\boxed{\frac{1}{20}}$

   (d) $\boxed{\frac{1}{30}}$

6. Notice from #5 that $\frac{1}{n}-\frac{1}{n+1}=\frac{1}{n(n+1)}$.

$$\begin{aligned}\frac{1}{2\times 3}+\frac{1}{3\times 4}+\frac{1}{4\times 5}+\ldots+\frac{1}{9\times 10} &= \frac{1}{2}+\frac{1}{3}+\frac{1}{3}-\frac{1}{4}+\frac{1}{4}-\frac{1}{5}+\ldots-\frac{1}{9}+\frac{1}{9}-\frac{1}{10}\\ &= \frac{1}{2}-\frac{1}{10}=\boxed{\frac{2}{5}}\end{aligned}$$

7. Similar to #6,

$$\begin{aligned}\frac{1}{20}+\frac{1}{30}+\frac{1}{42}+\ldots+\frac{1}{9900} &= \frac{1}{4\times 5}+\frac{1}{5\times 6}+\frac{1}{6\times 7}+\ldots+\frac{1}{99\times 100}\\ &= \frac{1}{4}-\frac{1}{100}=\boxed{\frac{6}{25}}\end{aligned}$$

8. Express $\frac{1}{10}$ as the sum of four distinct unit fractions. $\boxed{\frac{1}{12}+\frac{1}{111}+\frac{1}{132}+\frac{1}{12210}}$

9. Express $\frac{3}{4}$ as the sum of distinct unit fractions. $\boxed{\frac{1}{2}+\frac{1}{7}+\frac{1}{10}+\frac{1}{140}}$

10. Express $\frac{3}{5}$ as the sum of distinct unit fractions. $\boxed{\frac{1}{2}+\frac{1}{10}}$