Probability:

1.

1. $p(\text{identical twins}/\text{twins})$

$$= \frac{1 \cdot \frac{1}{300}}{\frac{17}{1500}} = \frac{5}{34}$$

2. $\text{p}(bowl \backslash \text{chocolate})$

$$= \frac{\frac{3}{4} \cdot \frac{1}{2}}{\frac{5}{8}} = \frac{3}{5}$$

2. $\text{p}(1994/yellow)$

$$= \frac{\frac{2}{10} \cdot \frac{1}{2}}{0.5^2 \cdot 0.2 \cdot 0.14} = \frac{10}{17}$$

3.

1. $p(\text{positive}/\text{sick})$

$$= \frac{0.99 \cdot \frac{1}{10000}}{0.01} = 0.01$$

2. $\text{p}(\text{positive}/\text{sick})$

$$= \frac{0.99 \cdot \frac{1}{200}}{0.0149} = 0.3322$$

Random variables:

1. $\frac{1}{6} \cdot \frac{1}{6} \cdot 12 = \frac{1}{3}$

Win- $\frac{1}{3} \cdot 6 = 2$ lose- $\frac{2}{3} \cdot 3 = 2$

expected value- 0.

2. more than 12- $\frac{6}{25}$ less than 12- $\frac{15}{25}$

expected value- $-\frac{12}{5}$.

3. Male- $\frac{2}{5}$

mean- $\frac{2}{5} \cdot 8 = 3.2$

standard deviation-

$$\theta = \sqrt{\frac{\Sigma(x-3.2)^2}{9}} = \sqrt{\frac{65.759}{9}} = \sqrt{7.306} = 2.7$$

4. $\mu = 26 \quad std = 2$

$p(26 < x < 30) = p\left(\frac{26-\mu}{std} < x < \frac{30-\mu}{std}\right) = p(0 < x < 2)$

= 0.472

5. $\frac{0.4 \cdot 5}{2} = 100\% \quad \frac{0.4 \cdot 2}{2} = x > 3$

$$p(x > 3) = \frac{\frac{0.4 \cdot 2}{2}}{\frac{0.4 \cdot 5}{2}} = 0.4$$

6. $\frac{6}{10} \cdot \frac{6}{10} \cdot \frac{6}{10} \cdot \frac{4}{10} \cdot 4 = 0.3456$

7. $0.1 \cdot -10 + 0.35 \cdot -5 + 0 \cdot 0.1 + 0.35 \cdot 5 + 0.1 \cdot 10 = 0$