2. a): $A = \{RRR, LLL, SSS\}$

A ✓

b): $B = \{RLS, RSL, LRS, LSR, SRL, SLR\}$

c): $C = \{RRL, RRS, RLR, RSR, LRR, SRR\}$

d): $D = \{RRL, RRS, RLR, RSR, LRR, SRR,$
$LLR, LLS, LRL, LSL, RLL, SLL,$
$SSR, SSL, SRS, SLS, RSS, LSS\}$

e): $D' = \{RRR, LLL, SSS, RLS, RSL,$
$SLR, SRL, LSR, LRS\}$. ✗

$C \cup D = D$, $C \cap D = C$

4. a): $\{FFFF, VFFF, FVFF, FFVF, FFFV,$
$VVFF, VFVF, VFFV, FVVF, FVFV, FFVV,$
$FVVV, VFVV, VVFV, VVVF, VVVV\}$

b): $\{VFFF, FVFF, FFVF, FFFV\}$

c): $\{FFFF, VVVV\}$ ✗

d): $\{FFFF, VFFF, FVFF, FFVF, FFFV\}$.

$\{ \overline{F}\overline{F}\overline{F}\overline{F}, \sqrt{F}\overline{F}\overline{F}, \overline{F}\sqrt{F}\overline{F}\overline{F}, \overline{F}\overline{F}\sqrt{F}\overline{F}, \overline{F}\overline{F}\overline{F}\sqrt{F} \}$
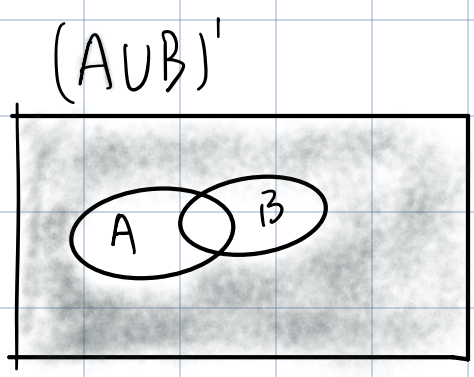
intersection: $\{ \overline{F}\overline{F}\overline{F}\overline{F} \}$.

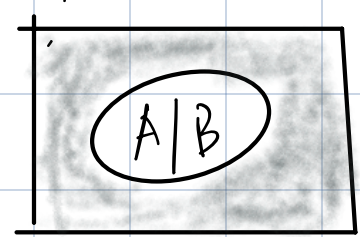f): union: $\{ \overline{F}\overline{F}\overline{F}\overline{F}, \sqrt{F}\overline{F}\overline{F}, \overline{F}\sqrt{F}\overline{F}\overline{F}, \overline{F}\overline{F}\sqrt{F}\overline{F}, \overline{F}\overline{F}\overline{F}\sqrt{V}, \sqrt{V}\sqrt{V} \}$
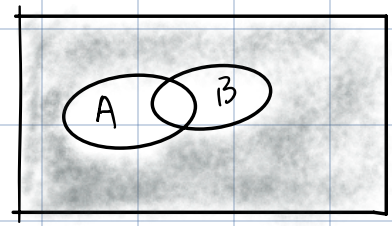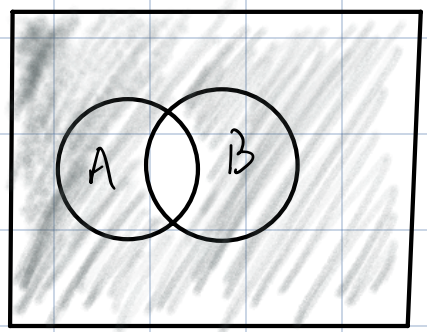
intersection: ϕ

a).

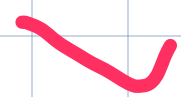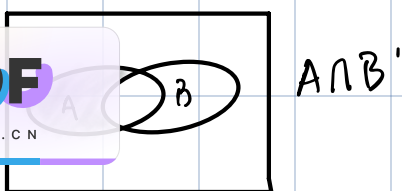$(A \cup B)'$ A'/B' $A' \cap B$

b) $(A \cap B)'$

2.12

12.

a) $P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.65$

b) $P(A' \cap B') = P((A \cup B)') = 1 - P(A \cup B) = 0.35$

c) $P(A \cap B') = P(A) - P(A \cap B) = 0.25$ according to venn diagram

18. A: 75w bulb is selected first: $P(A) = \frac{4}{15}$.

$\therefore P(A') = \frac{11}{15}$.

27. ABCC7

a). $P(A+B) = 1/\binom{5}{2} = \frac{1}{10}$;

b). $P(\text{at least one } C) = \frac{\binom{4}{1} + \binom{4}{1} - 1}{\binom{5}{2}} = \frac{7}{10}$

c). 3 6 7 10 14.

$P(y \ge 14) = P(\{3,14\} \cdot \{6,14\} \{7,14\} \{10,14\} \{6,14\} \{7,10\}$

$= \frac{6}{10} = \frac{3}{5}$.

2.3

30 a) $P_{3,8} = 8 \times 7 \times 6 = 336$ b). $\binom{30}{6} = 593775$

c). $\binom{8}{2} \times \binom{10}{2} \times \binom{12}{2} = 83160$

d). $\frac{83160}{593775} = 0.14$ e. $\frac{\binom{8}{6} + \binom{10}{6} + \binom{12}{6}}{\binom{30}{6}}$

$= \frac{1162}{593775} = 0.002$

a)
$$P(A) = \frac{\binom{6}{2} \times \binom{9}{1}}{\binom{15}{3}} = 0.3$$

b). $$P(B) = \frac{\binom{4}{3} + \binom{5}{3} + \binom{6}{3}}{\binom{15}{3}} = 0.75$$

c). $$P(C) = \frac{\binom{4}{1}\binom{5}{1}\binom{6}{1}}{\binom{15}{3}} = 0.264.$$

d). $$P(D) = \frac{\binom{4+5}{5}}{\binom{15}{5}} = 0.42$$

40. a). $\dfrac{12!}{(3!)^4} = 369600$

b). $P(B) = \dfrac{4!}{369600} = \dfrac{1}{15400}$