HW (HL) 2C: 2ijkl, 3, 4 (SL) 3ijkl, 4, 5

2i.) $A \cap B' = \{10, 20\}$ 2j.) $A \cup B' = \{10, 11, 12, 13, 14, 15, 16, 17, 19, 20\}$

2k.) $A' \cap B' = \{11, 13, 14, 16, 17, 19\}$ 2l.) $A' \cup B' = \{10, 11, 13, 14, 16, 17, 18, 19, 20\}$

3.) $U = \{2, 3, 4, 5, 6, 7, 8\}$, $A = \{3, 5, 7\}$, $B = \{2, 4, 7, 8\}$

i.) $n(U) = 7$ ii.) $n(A) = 3$ iii.) $n(A') = 4$ iv.) $n(B) = 4$ v.) $n(B') = 3$

b.) Complete and copy: For any set S with a universal set U, $n(S) + n(S')$ $\boxed{= n(U)}$

4.) $n(U) = 15$, $n(P) = 6$, $n(Q') = 4$.

a.) $n(P') = 9$ b.) $n(Q) = 11$

2D HW (HL): 2bdfh*, 3bdfh, 4 (SL): 2beg, 3bdfh, 4

2.) b.) $2/3 \notin \mathbb{Z}$ $\boxed{T}$ (a fraction is not an integer)

d.) $7/9 \in \mathbb{Q}$ $\boxed{T}$ (a fraction is rational)

f.) $\frac{7}{0.31} \in \mathbb{Q}$ $\boxed{T}$ (any number that can be represented as a fraction is rational)

$= \frac{7}{31/100} \Rightarrow \frac{7}{1} \cdot \frac{100}{31} = \frac{700}{31}$

h.) $\sqrt{-9} \in \mathbb{R}$ $\boxed{F}$ ($\sqrt{-9} = 3i$ which is an imaginary #)

3.) b.) $\mathbb{N} \subset \mathbb{Z}$ $\boxed{T}$ (the natural numbers are a proper subset of integers because $\mathbb{N} \neq \mathbb{Z}$ and $\mathbb{N} \subseteq \mathbb{Z}$.)

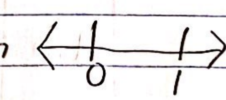
d.) $\mathbb{Z}^- \subseteq \mathbb{Z}$ $\boxed{T}$ (the negative integers are a subset of integers)

f.) $\{0\} \subseteq \mathbb{Z}$ $\boxed{T}$ (0 is an integer and $\therefore$ a subset)

h.) $\mathbb{Z}^+ \cup \mathbb{Z}^- = \mathbb{Z}$ $\boxed{F}$ (0 is an integer but is not positive or negative)

4.) a.) $\boxed{\text{finite}}$ (11, 12, 13, 14, 15, 16, 17, 18, 19) countable

b.) $\boxed{\text{infinite}}$ (this set goes from 6 to ∞)

c.) $\boxed{\text{infinite}}$ (you can continue dividing the section  an infinite number of times)

d.) $\boxed{\text{infinite}}$ (same as c., not countable)

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