CISP 440

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Homework 3

**A** = {1, 4, 7, 10} **B** = {1, 2, 3, 4, 5} **C** = {2, 4, 6, 8} **U** = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

1. We denote an empty set with Ø. Thus, Ø = { }.

**U – C = {1, 3, 5, 7, 9, 10}**

1. A *union* is a set which consists of all of the elements of either one set (X or Y) or both of the sets (X and Y) which were combined to form it. It is denoted X U Y = { x | x € X or

x € Y }

B U C = {1, 2, 3, 4, 5, 6, 8}

**A ∩ (B U C) = {1, 4}**

1. A *difference* is a set which consists of all of the elements in one set X which are not in another set Y. It is denoted X - Y = { x | x € X and x ¢ Y }

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**A – B = {6, 8, 9}**

B

A

1. A *universal set* U is a set of which all sets being dealt with are a subset.

B

A

B – A = {2, 3, 5}

**B U (B – A) =**

**{1, 2, 3, 4, 5}**

1. It is at this point that I realized we were meant to do the exercises and not the section review.

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C

B – C = {2, 4}

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B – A = {1, 4}

C U B = {1, 2, 3, 4, 5, 6, 8}

A

B

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(B – A) ∩ (C U B) = {Ø}

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**(B – C) U ((B – A) ∩ (C U B)) = {2, 4}**

1. U = {1… 151} MESS = {1…68} Leave it to Seaver = {1…61} Yuppie Hour = {1…51}

None = {125…151}

M U L = 16

M U Y = 25

L U Y = 19

U ∩ M = 83 🡪 (U ∩M) ∩ N = 57 && (U ∩ M) ∩ N = (M U L U Y) U (L U Y)

Translation: 57 people are either watching Leave it to Seaver, Yuppie Hour, and MESS OR are watching Leave it to Seaver and Yuppie Hour, but not MESS

57 – (L U Y) = **38 = (M U L U Y); 38 people watched all three shows**

1. A collection of non-empty sets *S* belonging to a set X are said to be a *partition* of X if every element in X belongs to exactly one member of *S*.

Set: {1, 2}

***SPartition* = {{1}, {2}}, {{1, 2}}**

1. **{1, 2, 2, 3} = {1, 2, 3}**
2. **{1, 1, 3} ≠ {3, 3, 1}**
3. Member but not Proper subset: {{a, b, c, d}, {Ø}}

**Proper subsets: {{a, b, c}, {a, b, d}, {a, c, d}, {b, c, d}, {a, c}, {a, b}, {b, c}, {a}, {b}, {c}}**

1. *P(X)* will have 210 = **1024 members** if *X* has 10 elements.

Of those members, **1022 will be Proper subsets**

1. **True, according to the Distributive law**
2. **B must be a proper subset of A for A U B = A to be true**

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1. A ∩ U = Ø is **true if A = U**