# **Section 1 Assignment (108 points) - Sets**

To receive credit, you must either show your work on the worksheet or explain how you got the answer.

1. (6 points) Cardinality of a set defined by a Cartesian product.
2. (3 pts) What is **|** {1, 2, 4, 5, 7, 8}3 **|**



1. (3 pts) What is **|** {a, b, c, d, e}2 **|**



1. (10 points) Express each set in roster notation. Express the elements as strings, not n-tuples.
2. (5 pts) A3, where A = {a, b}



1. (5 pts) B2, where B = {1, 2, 3}



1. (18 points) Set Properties. Use the following sets to answer the questions.

U = {a, b, c, d, e, f, g, h, i} A = {c, d, e, i, h} B = {a, b, c, d, e, f, i, h} C = {d, {e, f}, g, h}

* 1. (3 pts) T / F {a, b, c, h, i}  U



* 1. (3 pts) T / F {}  C



* 1. (3 pts) T / F {e, f}  C



* 1. (3 pts) T / F {e, f, g, h}  C



* 1. (3 pts) T / F A  U



* 1. (3 pts) T / F A ⊂ B



1. (36 points) Set Operations. Use the following sets to answer the questions.

U = {a, b, c, d, x, y, z} A = {b, c, x, y} B = {a, b, c, z} C = {a, b, d, y}

* 1. (6 pts) What is A **** C?



* 1. (6 pts) What is A ∩ B ∩****C?



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* 1. (6 pts) What is A ∩ C?



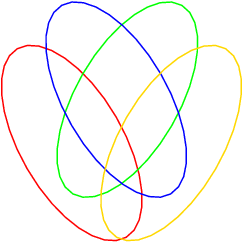
* 1. (8 pts) List all subsets of C ∩ (A  B).



* 1. (10 pts) Draw the Venn diagram for these sets (U, A, B, C).

*U = {a, b, c, d, x, y, z} A = {b, c, x, y} B = {a, b, c, z} C = {a, b, d, y}*







1. (20 points) Set Properties and Operations. Use the following sets to answer the questions.

U = {a, b, c, d, x, y, z} A = {b, c, x, y} B = {a, b, c, z} C = {a, b, d, y}

* 1. (3 pt) Find C – B



* 1. (3 pt) Find B - C



* 1. (6 pt) Find A ⊕ B



* 1. (8 pts) Find



1. (18 points) Cartesian Product of sets. Use the following sets to answer the questions.

A = {1, 2, 3, 4, 5}

B = {x, y, z, w}

C = {q, r, s, t}

* 1. (3 pt) T / F (5, s) A x C



* 1. (3 pt) T / F (q, 5) B x A



* 1. (3 pt) T / F (r, r)  x B



* 1. (3 pt) T / F (t, s, 4) C x B x A



* 1. (6 pt) Find **|** A x B **|**



|  |  |  |  |
| --- | --- | --- | --- |
| (1,x) | (1,y) | (1,z) | (1,w) |
| (2,x) | (2,y) | (2,z) | (2,w) |
| (3,x) | (3,y) | (3,z) | (3,w) |
| (4,x) | (4,y) | (4,z) | (4,w) |
| (5,x) | (5,y) | (5,z) | (5,w) |

