Matthew Macauley **clemson-math4190**
Assignment HW_01_basic_set_theory due 01/18/2019 at 11:59pm EST

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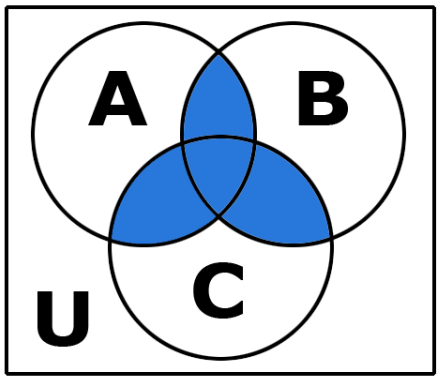
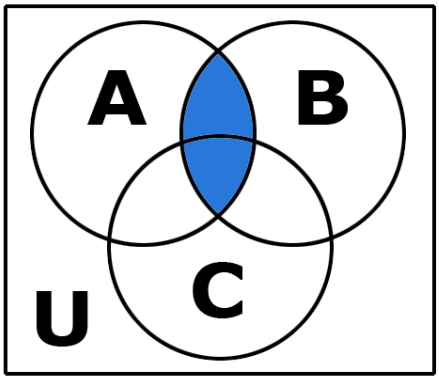
1. **(2 points)** Library/SDSU/Discrete/Sets/VennA1/VennA1.pg
Which of the following Venn diagrams corresponds to $A \cap B$?

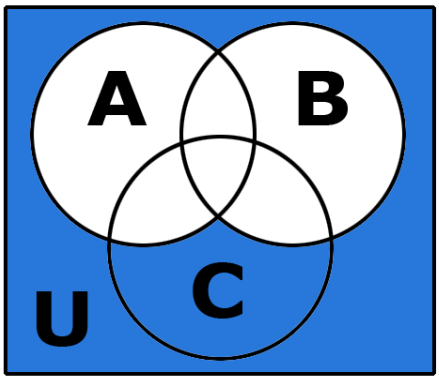
- A.



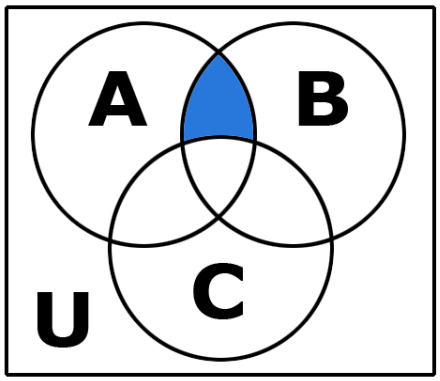
- B.



- C.



- D.



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2. **(2 points)** Library/CollegeOfIdaho/setAlgebra_04_02_CompoundIneq/42IntAlg_01_CompoundIneq.pg
Let $A = \{0,4,6,9,10\}$, $B = \{0,5,9,10\}$.
Find the following sets in list form. Separate elements with commas. If there are no elements in the set, enter "NONE".
a) $A \cap B =$ _____
b) $A \cup B =$ _____

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3. **(4 points)** Library/ASU-topics/setSets/ur_st_1_2.pg

Let $A = \{2,3,6,7,8\}$, $B = \{4,6,7,8\}$, $C = \{0,1,3,4,5,7\}$.
List the elements of the following sets. If there is more than one element write them separated by commas.

$A \cap B = \{$ _____ $\}$

$A \cup B = \{$ _____ $\}$

$(B \cup C) \cap A = \{$ _____ $\}$

$B \cup (C \cap A) = \{$ _____ $\}$

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4. **(3 points)** Library/NAU/setSet/Sets_3.pg

Let U = Universal set $= \{ a,b,c,d,e,1,2,3 \}$, $A = \{d,e,c,b,a\}$, and $B = \{3,e,1\}$.
List the elements of the following sets. If there is more than one element write them separated by commas.

$\overline{A} = \{$ _____ $\}$

$\overline{A \cup B} = \{$ _____ $\}$

$\overline{A} \cap \overline{B} = \{$ _____ $\}$

5. **(2 points)** Library/NAU/setSet/Sets_4.pg

Let
U = Universal Set= { All college students }
M = { All male students }
S = { All students who smoke }
F = { All Freshmen }

Give a description of "all male students who smoke" in terms of a set

- A. $M \cap S$
- B. $M \cup S$
- C. $F \cap S \cap M$
- D. $\overline{M} \cap \overline{S}$

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6. **(2 points)** Library/SDSU/Discrete/Sets/subsetB3.pg

Let $R = \{\text{numbers divisible by } 2\}$

Determine which of the following sets are subsets of R

- A. $\{-82, 104, 16\}$
- B. $\{1\}$
- C. $\{0\}$
- D. $\{44, 221, 90\}$
- E. $\{integers\}$

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7. **(4 points)** Library/MontanaState/Sets/1.2B39Sets1.pg

True or False?
$\emptyset \in \{0, 2, 6\}$

- A. True
- B. False

True or False?
$\emptyset \in \emptyset$

- A. True
- B. False

True or False?
$\emptyset \subset \{0, 2, 6\}$

- A. True
- B. False

True or False?
$\emptyset \subset \emptyset$

- A. True
- B. False

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8. **(3 points)** Library/NAU/setFoundations/MAT320_0301.pg

Enter T or F depending on whether the statement is true or false. (You must enter T or F – True and False will not work.)

___1. $\{\emptyset\} \subseteq \{\emptyset, \{\emptyset\}\}$
___2. $\emptyset \subseteq \{\emptyset\}$
___3. $\{\emptyset\} \subseteq \{\emptyset\}$

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9. **(4 points)** Library/Rochester/setSetTheory1/ur_st_1_6.pg

What is the cardinality of each of the following sets?

(a) $\emptyset$

_____

(b) $\{\emptyset\}$

_____

(c) $\{\emptyset, \{\emptyset\}\}$

_____

(d) $\{\emptyset, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}\}$

_____

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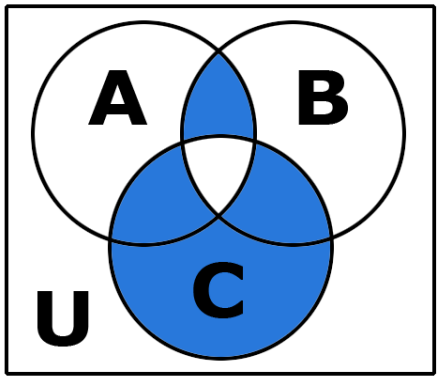
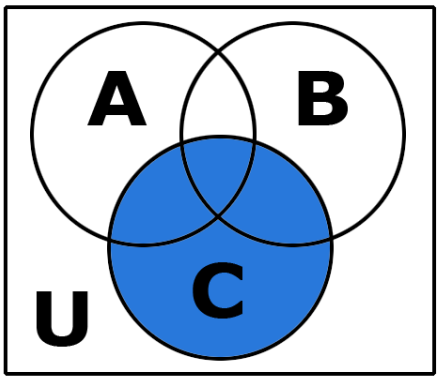
10. **(2 points)** Library/SDSU/Discrete/Sets/VennB9/VennB9.pg

Which of the following Venn diagrams corresponds to $C \cap U$?

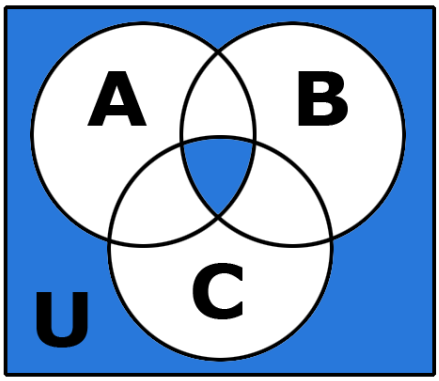
- A.



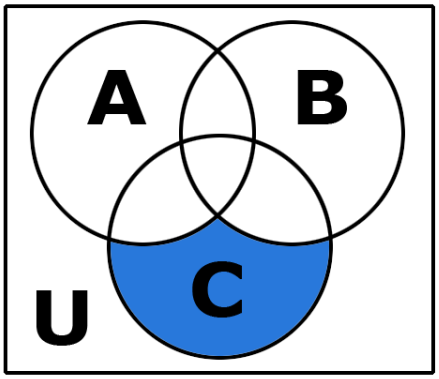
- B.



- C.



- D.



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11. **(2 points)** `Library/SDSU/Discrete/Sets/complementA2.pg`

Suppose the set $A = U$.

How many elements are in A^c? _____

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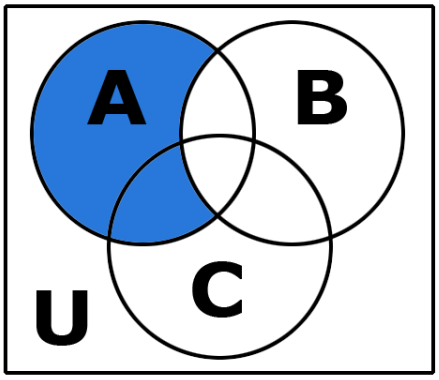
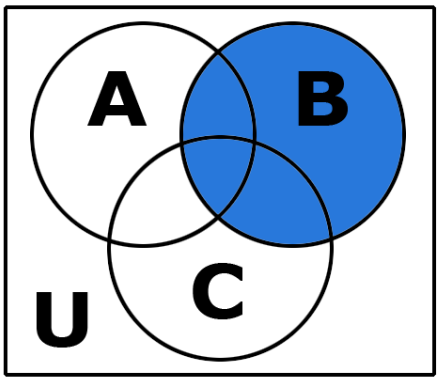
12. **(2 points)** `Library/SDSU/Discrete/Sets/VennA2/VennA2.pg`
Which of the following Venn diagrams corresponds to $A - B$?

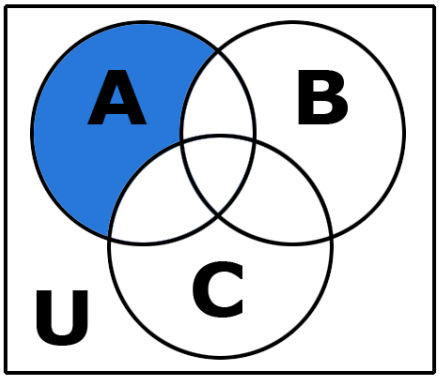
- A.



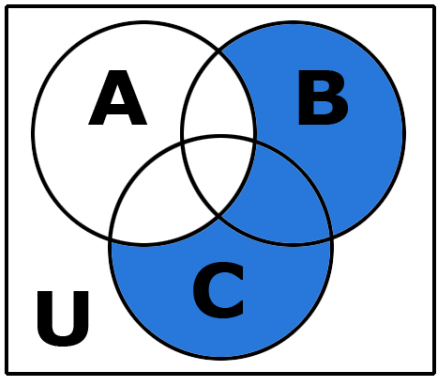
- B.



- C.



- D.



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13. **(4 points)** `Library/SDSU/Discrete/Sets/cartesianprodB5.pg`
Let $A = \{5, 8\}$,
$B = \{p, q\}$,
$C = \{r, v\}$

How many elements are in $A \times B$? ___

How many elements are in $B \times C$? ___

How many elements are in $A \times B \times C$? ___

Determine $A \times B \times C$
[Note: Enter your answer as a comma-separated list. Pairs should be denoted with parentheses.]

{_____}

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14. **(5 points)** Library/ASU-topics/setDiscrete/katie1.6_1.pg

Let A be the following set. A = $\{\emptyset, 1, \{1,2\}\}$. Mark each of the following true T or false F.

___1. $\{\emptyset\} \in P(A)$
___2. $\{\{1,2\}\} \subseteq A$
___3. $\{1,2\} \subseteq A$
___4. $\{\{1,2\}\} \in P(A)$
___5. $\{\emptyset,1\} \in P(A)$

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15. **(6 points)** Library/NAU/setFoundations/MAT320_0402.pg

Determine whether the given statement is true or false. Write T for true and F for false.

___1. $\mathcal{P}(A \cap B) \subseteq \mathcal{P}(A) \cap \mathcal{P}(B)$
___2. $\mathcal{P}(A \setminus B) \subseteq \mathcal{P}(A) \setminus \mathcal{P}(B)$
___3. $\mathcal{P}(A \cup B) \subseteq \mathcal{P}(A) \cup \mathcal{P}(B)$

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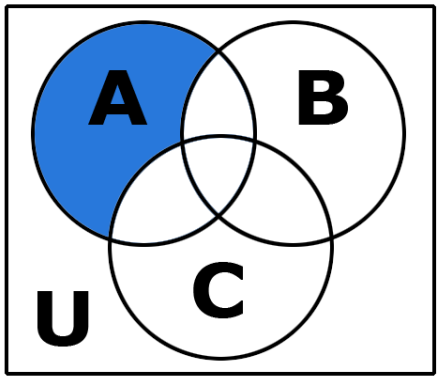
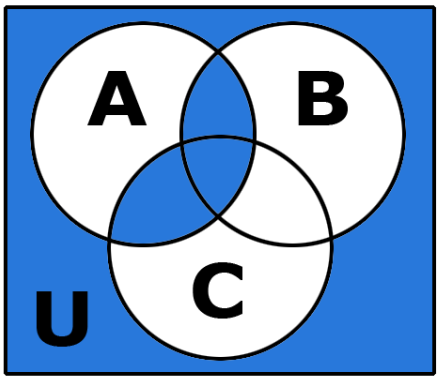
16. **(2 points)** Library/SDSU/Discrete/Sets/VennB12/VennB12.pg
Which of the following Venn diagrams corresponds to $(A \cap B^c) - C$?

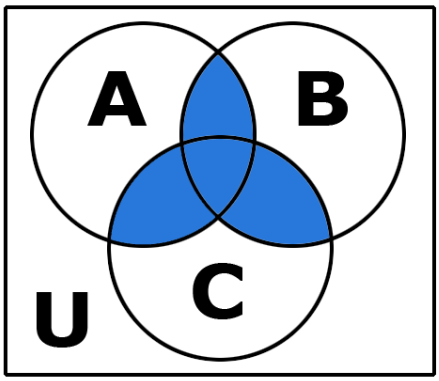
- A.



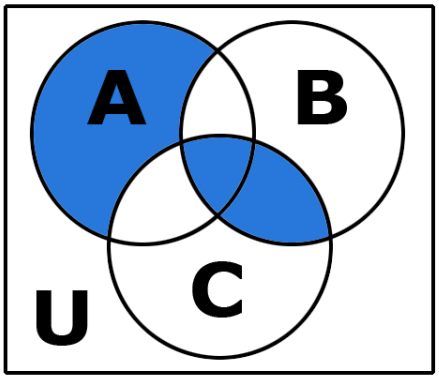
- B.



- C.



- D.



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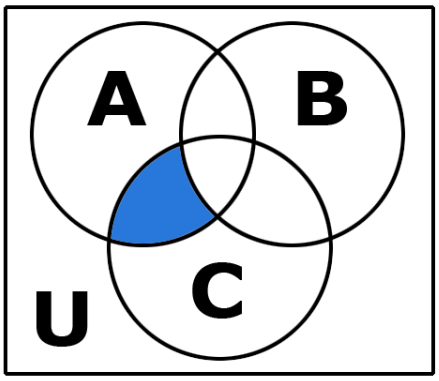
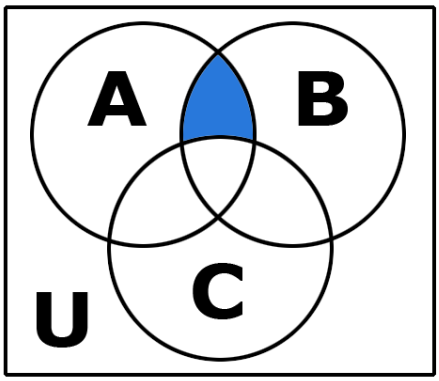
17. **(2 points)** Library/SDSU/Discrete/Sets/VennB3/VennB3.pg
Which of the following Venn diagrams corresponds to $(A \cap B) - C$?

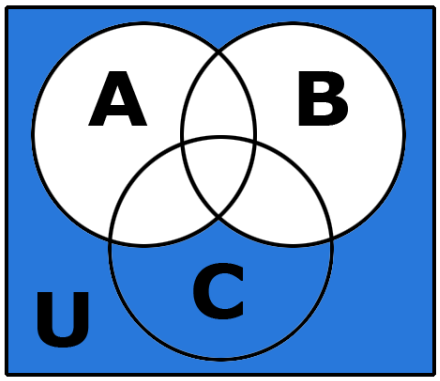
- A.



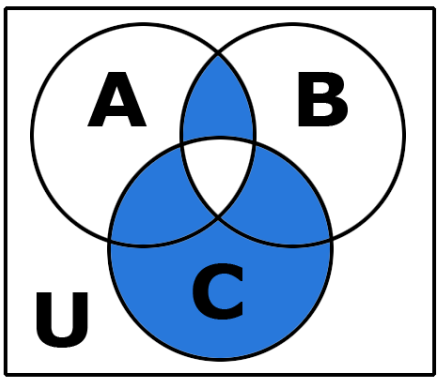
- B.



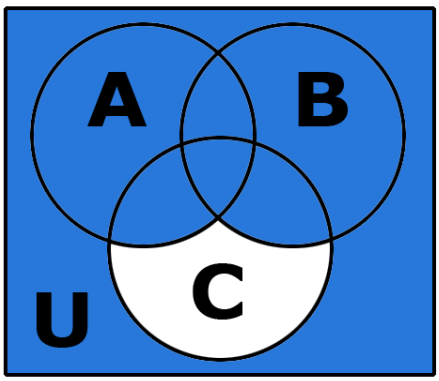
- A.



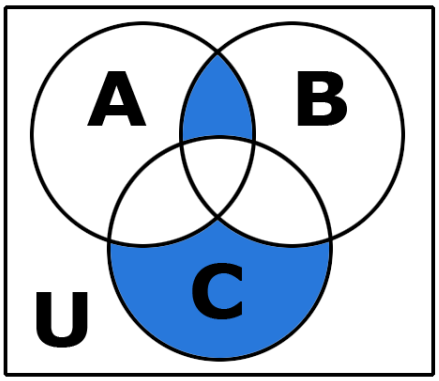
- C.



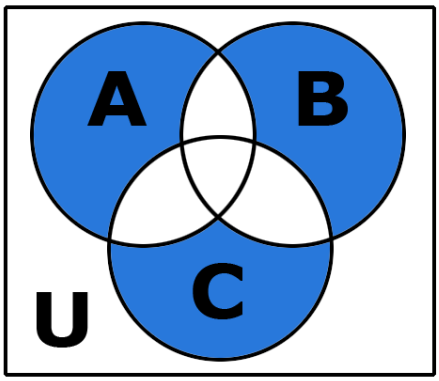
- B.



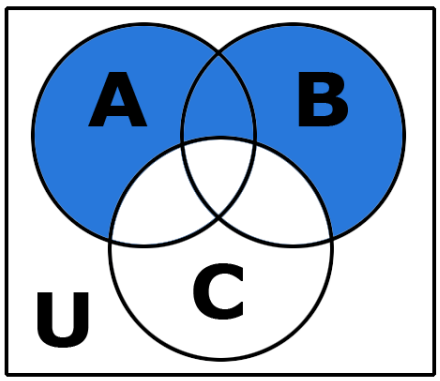
- D.



- C.



- D.



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18. **(2 points)** `Library/SDSU/Discrete/Sets/VennB10/VennB10.pg`
Which of the following Venn diagrams corresponds to $A \cup B \cup C^c$?

19. **(10 points)** local/Library/NAU/setFoundations/MAT320_0302.pg

Enter T or F depending on whether the statement is true or false. (You must enter T or F – True and False will not work.)

___1. $A \cap B = A \implies A \subseteq B$
___2. $B \subseteq C \implies A \cup B \subseteq A \cup C$
___3. $A \cup B \subseteq A \cup C \implies B \subseteq C$
___4. $\tilde{A} \subseteq B \implies A \subseteq \tilde{B}$
___5. $B \setminus A = \emptyset \implies A \subseteq B$