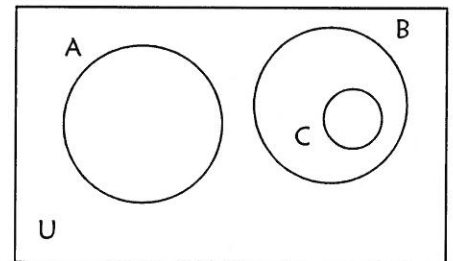
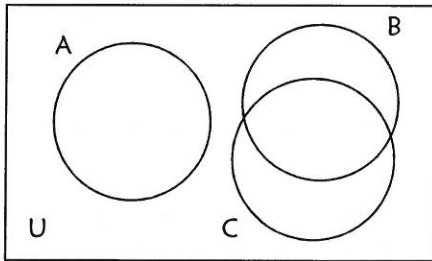
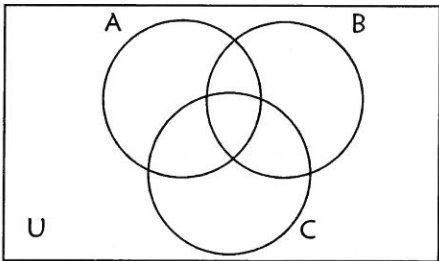
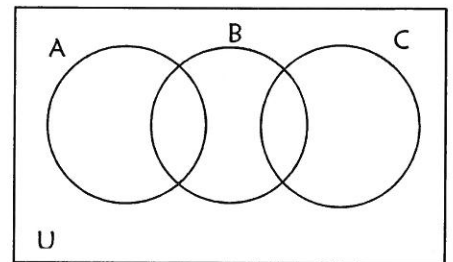
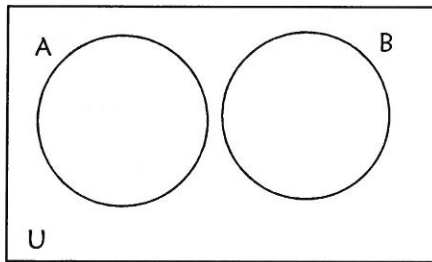
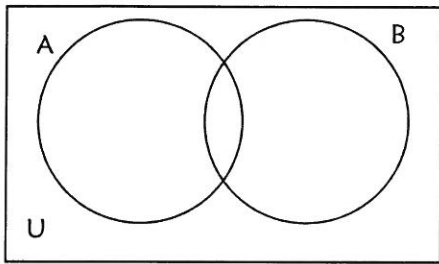


8A Venn Diagrams

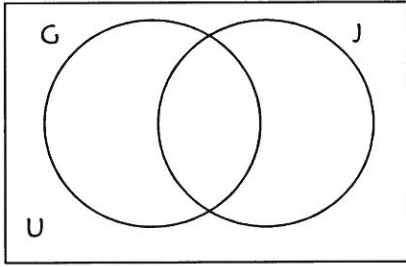
Venn Diagrams are a way organize various properties of members of a group.



Some symbols we will use and explore.

Symbol	Name	Meaning	Example
U	universal set	The set of all possible members being surveyed for properties	$U = \{\text{all the people in room 4 during our Precalculus class}\}$
A, B, C	Sets	A group in U that has a particular property	$M = \{\text{all males}\}$ $S = \{\text{seniors}\}$ $T = \{\text{teachers}\}$
$A \cap B$	intersection	belong to sets A <u>AND</u> B	$M \cap S = \{\text{anyone who is a male AND a senior}\}$
$A \cup B$	union	belong to sets A <u>OR</u> B	$M \cup S = \{\text{anyone who is a male OR a senior}\}$
$A \subseteq B$	subset	A is a subset of B; A is a more specific group of B, but they could be equal.	If $B = \{\text{males who are teen boys}\}$, then $B \subseteq M$ <i>Out of all the males in the room, a smaller or equal portion are also teenagers</i>
$A \subset B$	proper subset	A is a proper subset of B; A is a more specific group of B and has fewer members.	If $G = \{\text{females who are teen girls}\}$ then $G \subset F$ <i>Out of all the females in the room, a smaller portion are teenagers; the teacher is an adult</i>
$A \not\subset B$	not a subset	left set not a subset of right set	$G \not\subset M$
\bar{A} A' A^c	Not A; A's complement	everything that is NOT in set A	If $A = \{\text{all students who have a 90% or higher}\}$ Then $\bar{A} = \{\text{all students with an 89% or lower}\}$
\emptyset	empty set	No members of this set	If $J = \{\text{people in the room who are from Jupiter}\}$ $T = \emptyset$

$A \cap B$ – the Intersection



Shade: Overlapping Region

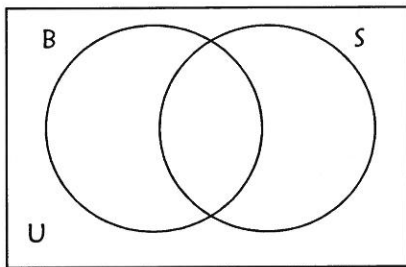
If you see $A \cap B$, then whatever you are shading HAS to be contained inside some portion of A or B

Example: There are 25 people in a class.
10 are girls, 7 people wearing jeans, and 3 girls are wearing jeans.

Name the set and how many are in it:

- Girls who are wearing jeans:
- Boys:
- Boys who are wearing jeans

$A \cup B$ – the Union



Shade: Every set in the union

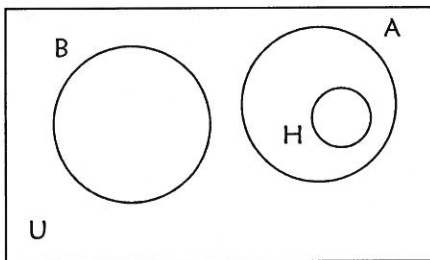
If you see $A \cup B$, then you will be shading more than one set

Example: There are 25 people in a class.
16 have brothers, 19 have sisters, and 8 have both

Name the set and how many are in it:

- Students who have a brother or a sister
- Students who have both
- Students who have a sister, but not a brother

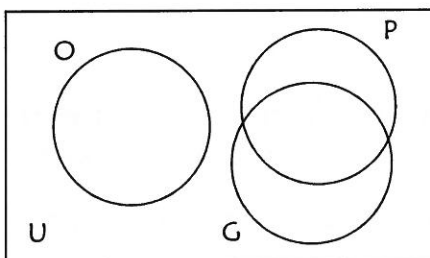
Example: Grades in a class: 120 students taking a class, 114 are passing. 38 have a 90% or above, 4 have a 100%.



Name the set and how many are in it:

- Students who have an A, but not a 100%
- Students who are passing
- Students who are passing, but not with an A
- Students who are failing

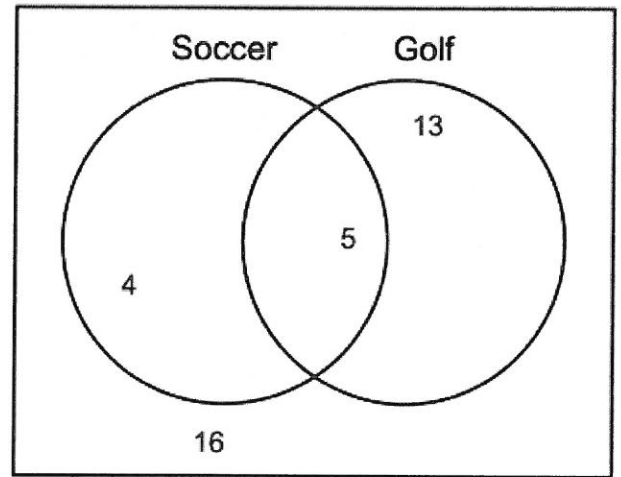
Example: Musicality: In a class of 30, 20 students play an instrument, 11 play piano, 9 play guitar, 4 play both.



- Students who only play guitar:
- Students who play piano or something else.
- Students who do not play an instrument
- Students who play guitar only or nothing.

For each of the following, use the Venn Diagram to:

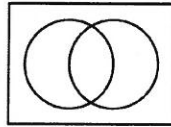
- State how many elements are in the stated set or subset
- Name the set using Set Symbols
- Shade the Venn diagram.



1. Students who were given the survey

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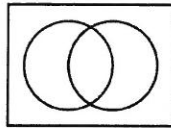
c.



2. Students who like Golf

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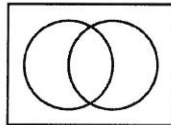
c.



3. Students who do not like Golf

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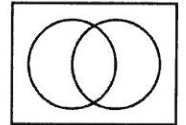
c.



7. Students who only like one of the two sports

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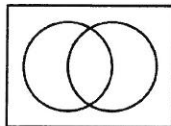
c.



4. Students who like Soccer, but not Golf

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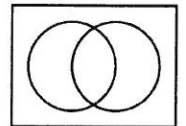
c.



8. Students who do not like both sports

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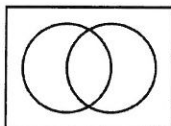
c.



5. Students who like Soccer and Golf

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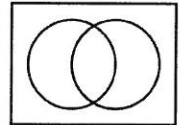
c.



9. Students who like Soccer or don't like Golf

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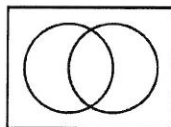
c.



6. Students who like Soccer or Golf

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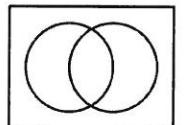
c.



10. Students who do not like Soccer or Golf

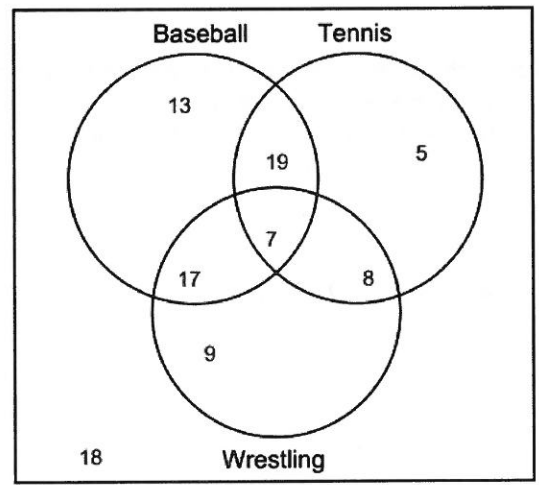
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c.



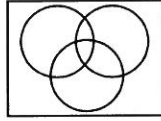
For each of the following, use the Venn Diagram to:

- State how many elements are in the stated set or subset
- Name the set using Set Symbols
- Shade the Venn diagram.



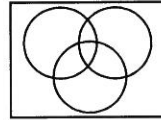
1. Students who were given the survey

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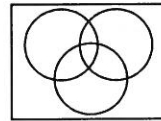
2. Students who like Tennis

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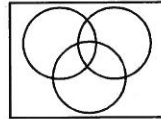
3. Students who like Tennis, but not Baseball

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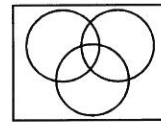
4. Students who ONLY like Baseball

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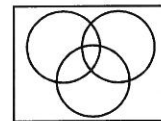
5. Students who like Tennis or Wrestling.

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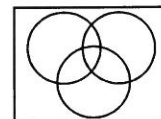
6. Students who like Baseball and Wrestling.

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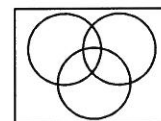
7. Students who like Baseball and Wrestling, but not Tennis

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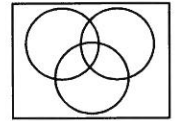
8. Students who do not like Tennis or Wrestling

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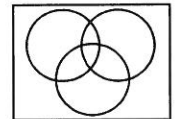
9. Students who like Tennis or Wrestling, not both

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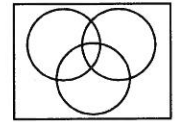
10. Students who do not like Wrestling

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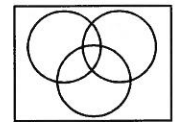
11. Students who like two sports

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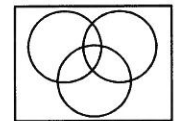
12. Students who like two sports, but not Tennis.

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13. Students who like all three sports

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14. Students who don't like any of these sports.

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