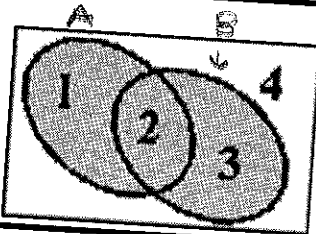
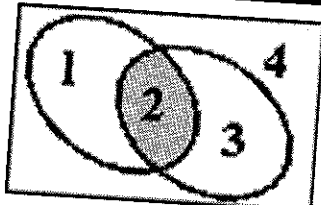
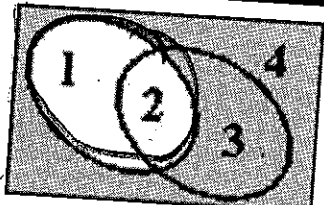
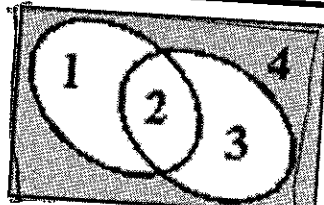
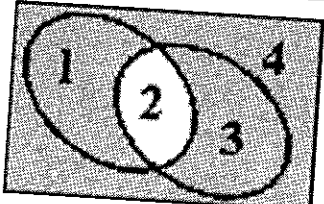


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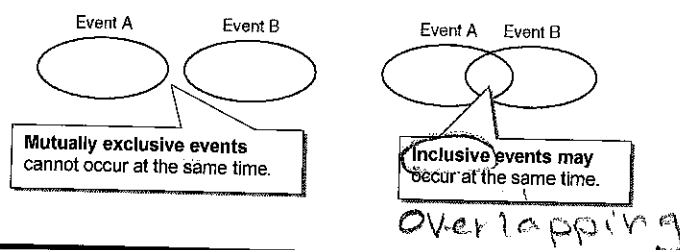
Set Notation

Set Notation	Pronunciation	Meaning	Venn Diagram	Answer
$A \cup B$	"A union B"	Everything in both sets		$\{1, 2, 3\}$
$A \cap B$	"A intersect B"	Only what is in common with both sets		$\{2\}$
\bar{A} or A'	"A complement"	Everything NOT in set A		$\{3, 4\}$
$(A \cup B)'$	"not A union B"	Everything NOT in set A and set B		$\{4\}$
$(A \cap B)'$	"not A intersect B"	Everything NOT in common between set A and set B		$\{1, 3, 4\}$

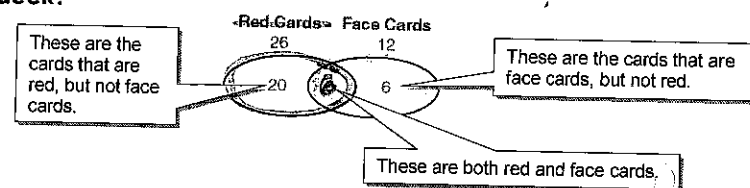
Name: _____ Date: _____

Reading Strategies**Use a Venn Diagram**

A **Venn diagram** can be used to organize what you know about mutually exclusive and inclusive events. The diagram on the left shows **mutually exclusive** events. There is **no overlap** so they can never occur at the same time. In the diagram on the right, the shaded overlapping region represents where both events A and B occur.



What is the probability of drawing a red card or a face card from a full deck?



These are **inclusive events** because a card can be both red and a face card. Half of a deck of cards is red, so there are 26 red cards.

There are 12 face cards in a deck. But some of the cards are both red and face cards. Of the 12 face cards, 6 of them are red.

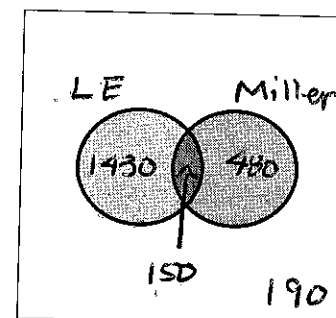
So, the **overlapping** region has a value of 6, since there are 6 cards that are favorable outcomes for both events A and B.

Draw and label a Venn diagram for each situation. Then, answer the following questions. Write your answer as a reduced fraction.

Of the 2250 voters surveyed, 1580 voted in the last election and 630 are planning to vote for Miller for mayor. Only 150 of those who voted in the last election are planning to vote for Miller.

1. Draw and label a Venn diagram for this example.

- $\frac{630}{2250}$ 2. Probability of Voting for Miller $P(M)$
 $\frac{2060}{2250}$ 3. $P(\text{Voted Last Election} \cup \text{Voting for Miller})$
 $\frac{150}{2250}$ 4. $P(\text{Voted Last Election} \cap \text{Voting for Miller})$
 $P(LE \cap M)$



A restaurant served 253 customers last night. The staff reported that 189 of the customers had made a reservation and that 163 customers used credit cards. Only 47 of those who used credit cards did not have a reservation.

5. Draw and label a Venn diagram for this example.

- $\frac{189}{253}$ 6. Probability of Making a Reservation $P(R)$
 $\frac{64}{253}$ 7. Probability of Not Making a Reservation $P(R^c)$
 $\frac{236}{253}$ 8. $P(\text{Reservation} \cup \text{Using a Credit Card})$
 $\frac{114}{253}$ 9. $P(\text{Reservation} \cap \text{Using a Credit Card})$
 $P(R \cap C)$

