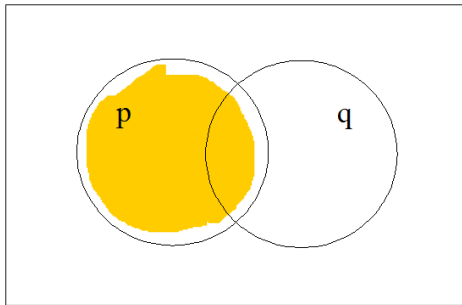


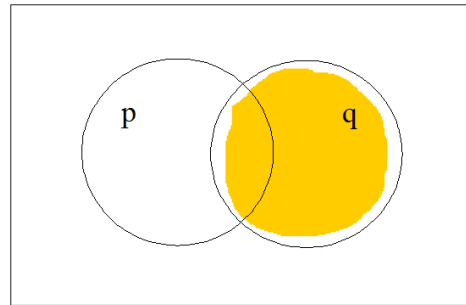
Math 155 – Venn Diagrams Worksheet

Venn Diagrams with Two Propositions

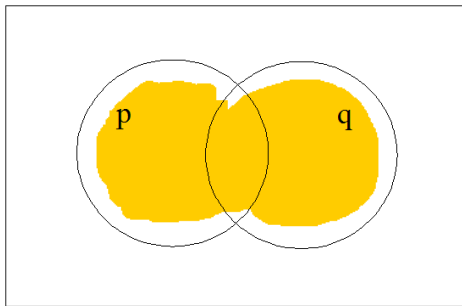
Shade in the following diagrams according to the proposition labeled below them:



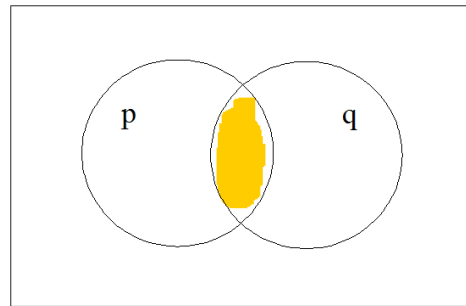
p



q

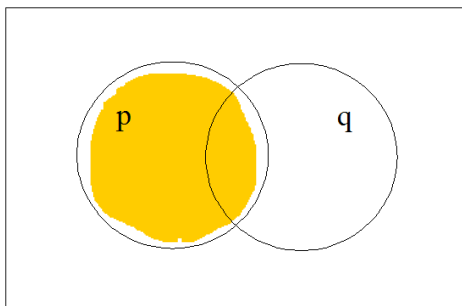


$p \vee q$

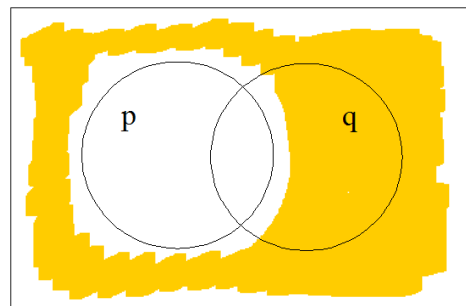


$p \wedge q$

Negation of Venn Diagrams

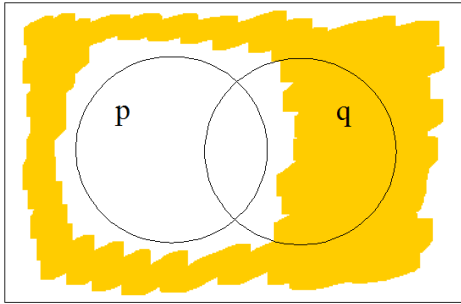
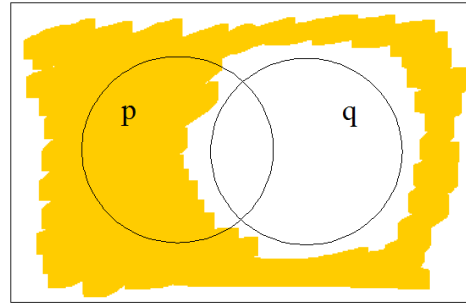
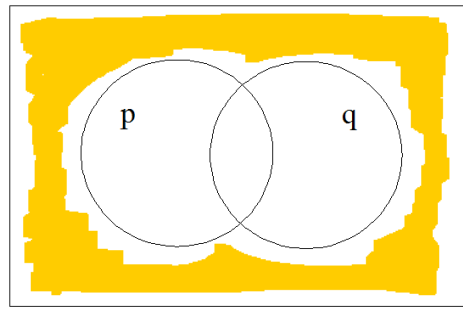


p

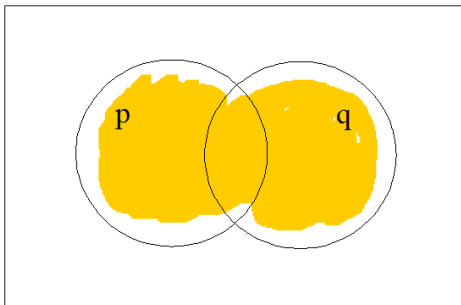
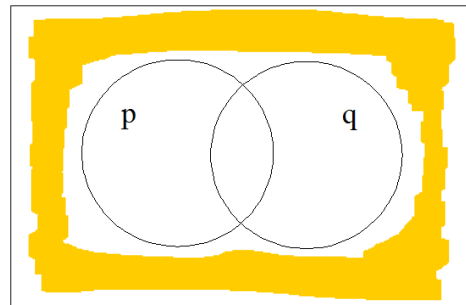


\bar{p}

Let's do a more complicated one by steps: $\bar{p} \wedge \bar{q}$


 \bar{q}

 \bar{p}

 $\overline{p \vee q}$

Another example: $\overline{p \vee q}$


 $p \vee q$

 $\overline{p \vee q}$

What do you notice about the results of the last two exercises?

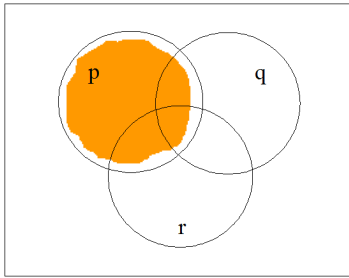
diagrams are the same, so

$\bar{p} \wedge \bar{q}$ is logically equivalent to $\overline{p \vee q}$

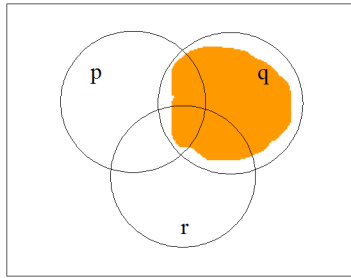
De Morgan's Law

Venn Diagrams with Three Propositions

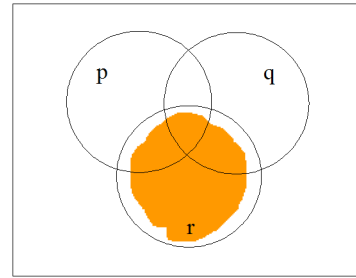
Shade in the following diagrams according to the propositions labeled below them:



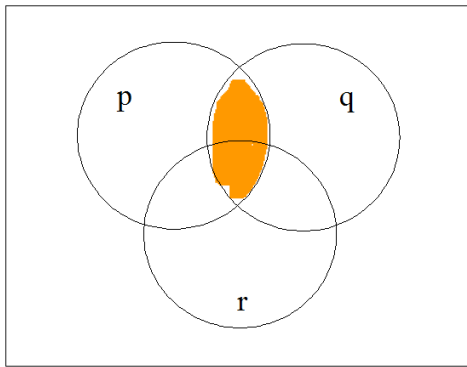
p



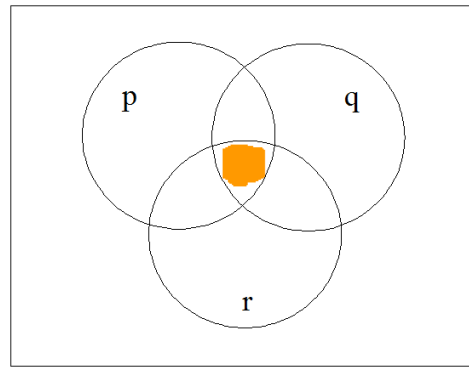
q



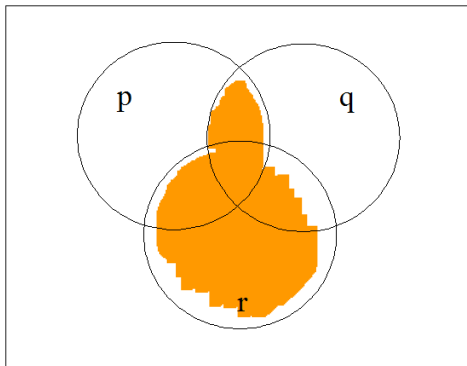
r



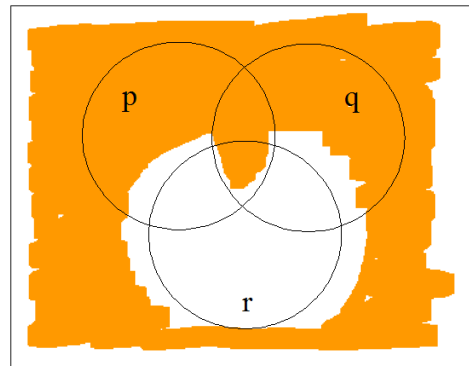
$p \wedge q$



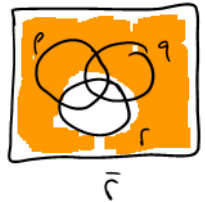
$p \wedge q \wedge r$



$(p \wedge q) \vee r$



$(p \wedge q) \vee \bar{r}$



\bar{r}