

## Valid or Invalid

NAME \_\_\_\_\_

*For each of the following examples, decide if the argument is valid or invalid, and draw a Venn diagram that justifies your response. If the argument is valid, give the type of reasoning used.*

1. If someone buys a new Lamborghini, she or he will pay over \$200,000.  
Marie does not buy a new Lamborghini.  
Therefore, Marie does not pay over \$200,000 for her new car.
2. If people listen to Rush Limbaugh, they will hear a lot of gossip about Washington.  
Mr. Jones hears gossip about Washington all the time.  
Mr. Jones must listen to Rush Limbaugh.
3. In Algeria, if the terrorists believe that someone is promoting Western culture, he or she is in danger of being assassinated.  
The terrorists believe that all barbers are promoting Western culture.  
In Algeria, all barbers are in danger of being assassinated.
4. In China, job applicants do not ask how much they will be paid when they are hired.  
When Jin Tai was hired, he asked his employer how much he would be paid.  
Jin Tai must have been hired outside of China.
5. If Alec washes the school's windows, he will be paid \$5.00 an hour.  
Alec washes the school's windows for four hours, so he gets paid \$20.00.
6. If Maria leaves work at five o'clock, she will run into rush-hour traffic.  
If Maria runs into rush-hour traffic, she will arrive home in a bad mood.  
Therefore, if Maria leaves work at five o'clock, she will arrive home in a bad mood.
7. Some solutions to the equations are integers.  
Some integers are less than zero.  
We can conclude that some solutions to the equation are less than zero.
8. If a politician decides to run for president, then he or she will make many visits to New Hampshire.  
Senator Dole has decided to run for president.  
Senator Dole will make many visits to New Hampshire.
9. Five identical sweatshirts are placed in a bag. A letter is stitched to the back of each shirt; two of the letters are L's and three are W's. Chris, Hugo, and Mary each pull out a shirt without looking at it and put it on. Chris can see Mary's and Hugo's shirts and correctly deduces, "I cannot tell which letter I have on." Mary sees only Hugo's shirt and draws the same valid conclusion. Hugo sees no one's shirt but uses his logic and is able to tell which letter is on his back. How does Hugo do it? First write a valid argument that involves Chris's deduction. Then using that conclusion, write a second argument to justify Hugo's claim. Diagram your arguments.