

**For #1 – 3, draw a conclusion. What type of reasoning is used?**

- 1) At Fumio's school if you are late five times, then you will receive a detention. Fumio has been late to school five times.
- 2) If Natalie saves \$2000, then she will go on vacation. If she goes on vacation, then Natalie will take time off of work.
- 3) Every Wednesday Lucy's mom calls. Today is a Wednesday.

**For #4 – 5, determine whether each conclusion is valid by the Law of Detachment, the Law of Syllogism, or if it is invalid. If it is invalid, then explain your reasoning.**

- 4) Given: Right angles are congruent.  $\angle 1$  and  $\angle 2$  are right angles.  
Conclusion:  $\angle 1 \cong \angle 2$
- 5) Given: If Dante obtains a part-time job, then he can afford a car payment. Dante can afford a car payment.  
Conclusion: Dante obtained a part-time job.

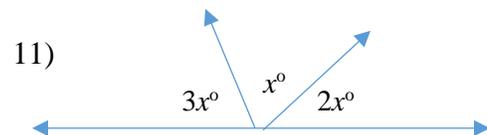
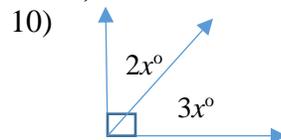
**For #6 – 7: Is the conclusion below valid or invalid? If it is invalid, then provide a counter-example.**

- 6) Given: If a person is a Missouri resident, then he or she does not live by a beach. Michelle does not live by a beach. Conclusion: Michelle is a Missouri resident.
- 7) Given: All vegetarians do not eat meat. Theo is a vegetarian. Conclusion: Theo does not eat meat.

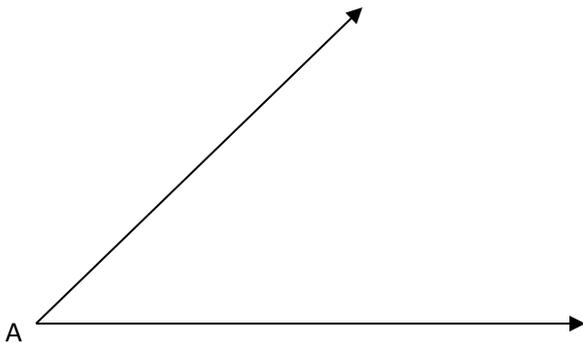
**For #8 – 9: Use the Law of Syllogism or Law of Detachment to draw a valid conclusion from each set of statements, if possible. If no valid conclusion can be drawn, write *no valid conclusion* and explain your reasoning.**

- 8) If two lines are perpendicular, then they intersect to form right angles. Lines  $r$  and  $s$  form right angles.
- 9) If the measure of an angle is between 90 and 180, then it is obtuse. If an angle is obtuse, then it is not acute.

**For #10 – 11, find  $x$ .**

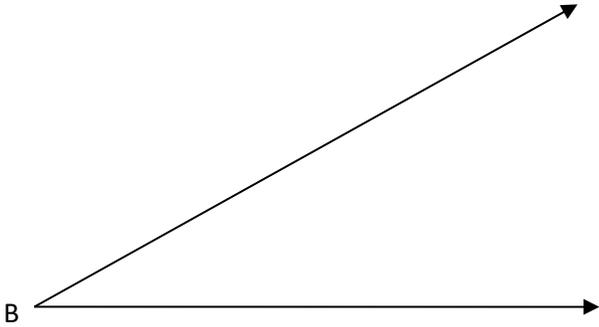


12) Construct the bisector of  $\angle A$ .



13) Construct the  $\perp$  bisector of  $\overline{AB}$ .



14) Copy  $\angle B$ .15) Copy  $\overline{CD}$ .**Selected Answers:**

- 1) Conclusion: Fumio will receive a detention. Law of Detachment
- 2) Conclusion: If Natalie saves \$2000, then she will take time off of work. Law of Syllogism
- 3) Conclusion: Lucy's mom will call today. Inductive reasoning
- 4) Valid; Law of Detachment
- 5) Invalid; Dante could afford the car payment because he was given money as a gift or because he paid off other bills.
- 6) Invalid; Michelle could live in another state that does not have any beaches, such as Kansas.
- 7) Valid
- 8) no valid conclusion; the lines might not intersect at all but could be parallel or on different planes.
- 9) If the measure of an angle is between 90 and 180, then it is not acute.
- 10) 18
- 11) 30