

In the early 1950s, there was an outbreak of a serious disease called malaria amongst the Dayak people in

Borneo. The World Health Organization tried to solve the problem. They sprayed large amounts of a chemical called DDT to kill the mosquitoes that carried the malaria. The mosquitoes died and there was less malaria. That was good. However, there were side effects. One of the first effects was that the roofs of people's houses began to fall down on their heads. It turned out that the DDT was also killing a parasitic wasp that ate thatch-eating caterpillars. Without the wasps to eat them, there were more and more thatch-eating caterpillars. Worse than that, the insects that died from being poisoned by DDT were eaten by gecko lizards, which were then eaten by cats. The cats started to die, the rats flourished, and the people were threatened by outbreaks of two new serious diseases carried by the rats, Sylvatic plague and Typhus. To cope with these problems, which it had itself created, the World Health Organization had to parachute live cats into Borneo to eat the rats.

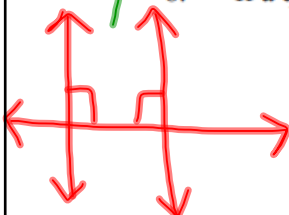
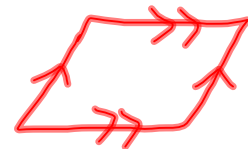
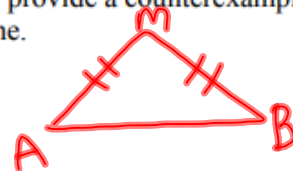
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Logical Reasoning ("if-then" Statements)

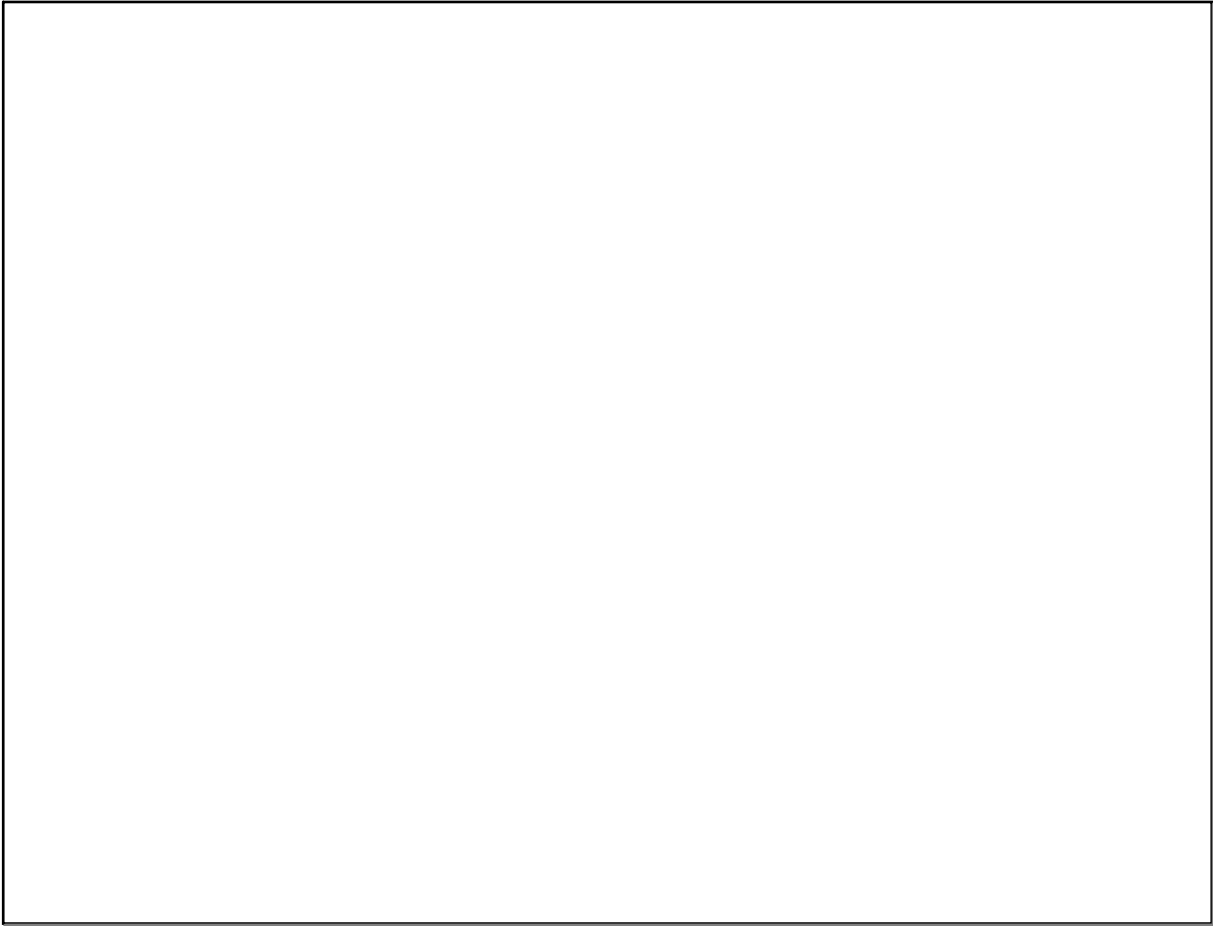
- I. Determine if the following conditional is true or false, provide a counterexample if the statement is false. All points are in the Euclidean Plane.

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1. If $AM = MB$, then M is the midpoint of \overline{AB} .
2. If $AB = 2PB$, then P is the midpoint of \overline{AB} .
3. If two angles are supplementary then they are equal.
4. If a figure is a square, then it is a quadrilateral.
5. If a quadrilateral has four right angles then it is a square.
6. If a quadrilateral is a parallelogram then it is a rectangle.
7. In a plane, if two lines are perpendicular to the same line, then they are parallel.
8. If a quadrilateral is a square, then it is a rectangle.



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