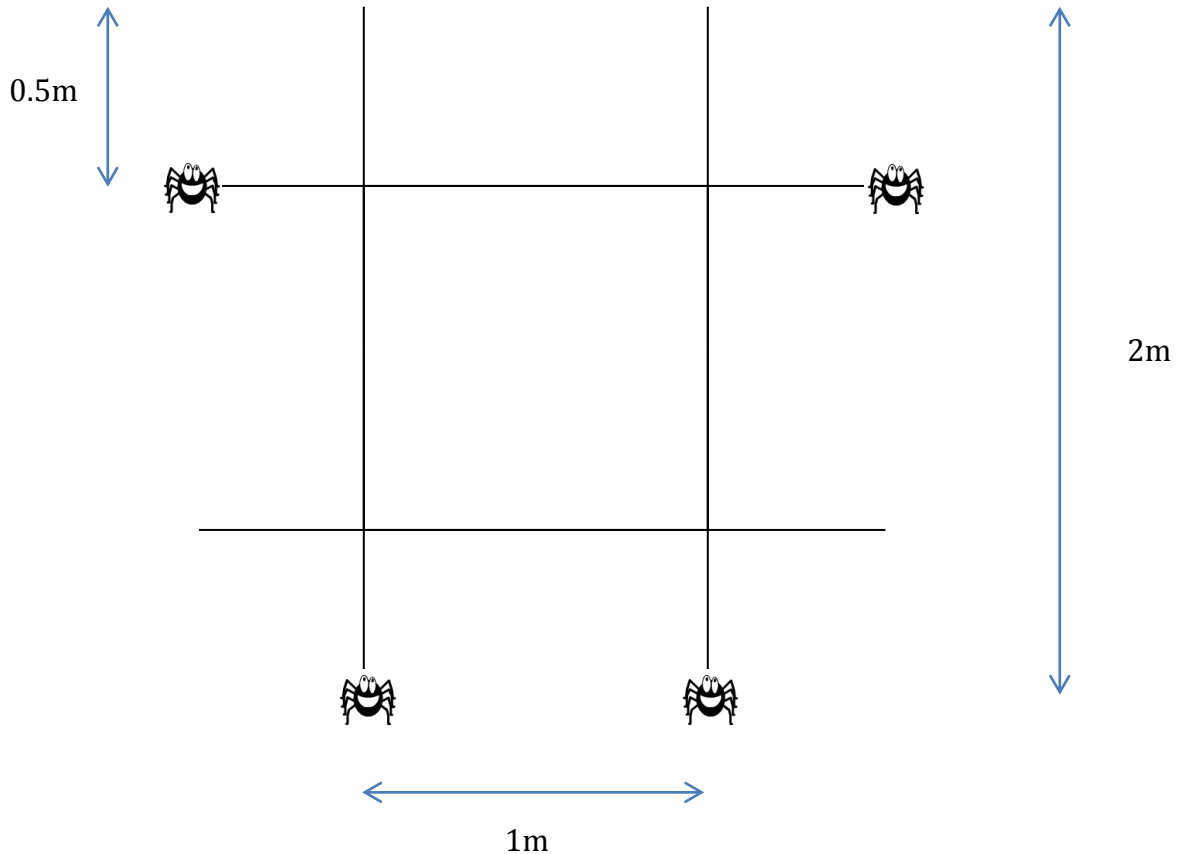


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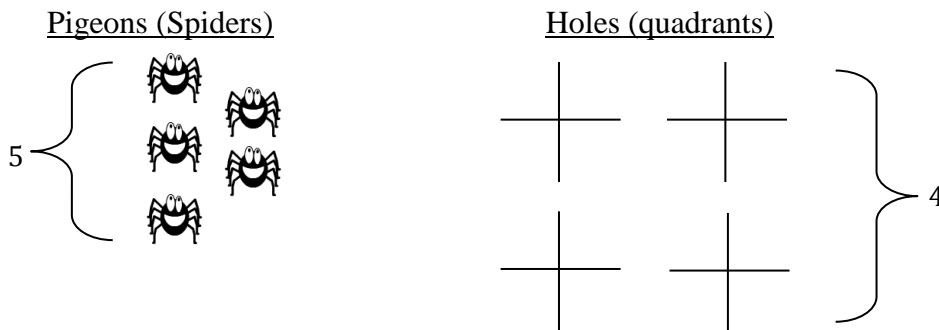
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Feedback #4 Pigeonhole Principle

What is the largest number of spiders which can amicably share the spider web pictured below? A spider will tolerate a neighbor only at a distance of 1.1m or more traveling **along the web**. This means the spiders do not worry about the actual distance between them only the distance traveling on the web itself is of concern.



Solution: As shown above 4 spiders can amicably share the spider web. We now show that 5 spiders cannot amicably share the spider web. Divide the web into 4 equal quadrants and use the pigeonhole principle:



In this case at least one quadrant will have two unhappy spiders.