15. a) This is an observational study.
    b) The study is retrospective. Results were obtained from pre-existing medical records.
    c) The subjects in this study were 981 women who lived near the site of dioxin release.
    d) The parameter of interest is the incidence of breast cancer.
    e) As there is no random assignment, there is no way to know that the dioxin levels caused the increase in breast cancer. There may have been lurking variables that were not identified.

16. a) This is an observational study.
    b) The study is retrospective. Results were obtained from pre-existing church records.
    c) The subjects of the study are women in Finland. The data were collected from church records dating 1640 to 1870, but the selection process is unknown.
    d) The parameter of interest is difference in average lifespan between mothers of sons and daughters.
    e) For this group, having sons was associated with a decrease in lifespan of an average of 34 weeks per son, while having daughters was associated with an unspecified increase in lifespan. As there is no random assignment, there is no way to know that having sons caused a decrease in lifespan.

21.
a) This is an experiment. Hopefully, dogs are randomly assigned to different treatment groups.
b) The subjects are inactive dogs.
c) There is 1 factor (type of dog food), at 2 levels (low-calorie and standard). One possible difficulty with this experiment is that some owners might feed their dogs more food than others. We will assume that the dog food company has given the owners specific instructions about the quantity of food required, based on the size of each dog.
d) 1 factor, at 2 levels, results in 2 treatments.
e) The response variable is the weight of the dogs.
f) The experiment uses blocking by size of breed. Blocking by size reduces variation in weight that may be due to overall size of the dog.
g) Assuming that the dog owners do not know which type of dog food their dog is receiving, the experiment is blinded.
h) Assuming the dog owners followed the prescribed feeding levels, there could be a conclusion as to whether or not the dog food helped the dogs maintain a healthy weight.

22.
a) This is an experiment. Athletes were randomly assigned to one of two exercise programs.
b) The subjects are athletes suffering hamstring injuries.
c) There is one factor (type of exercise), at 2 levels (static stretching, and agility and trunk stabilization).
d) 1 factor, at 2 levels, results in 2 treatments.
e) The response variable is the time before the athletes were able to return to sports.
f) The experiment is completely randomized.
g) The experiment employs no blinding. The subjects know what kind of exercise they do.

Sweet 16 Low Down *Pg. 15*

Three quarters of the teams are out! Take a look at the lucky 25% that get to keep competing:

1. Find each "Sweet 16" team's win-loss record before the tournament started.
2. Calculate the offensive averages for each team in the first 2 rounds using the statistics provided. (Offensive average would the average amount of points scored against the other two teams)
3. Calculate the defensive averages for each team in the first 2 rounds using the statistics provided. (Defensive average would be the average amount of points allowed to each of the other two teams)
4. Calculate the differences between the offensive and defensive averages for each team.

FILL IN THE TABLE BELOW WITH YOUR ANSWERS TO 1 - 4:

	TEAM	Wins-Losses	Offensive Average	Defensive Average	Difference
East **Region 1**	Duke	29-5 85.3%	85, 77 81	62, 76 69	12
	Va Tech	24-8 90.6%	66, 67 66.5	52, 58 55	11.5
	LSU	26-6 81.2%	79, 69 74	74, 67 70.5	3.5
	MI State	28-6 82.9%	76, 70 73	65, 50 57.5	15.5
Region 2					
Region 3					
Region 4					

5. Rank the teams from best to worst in each of these four categories.

RANK	WINS-LOSSES	OFFENSIVE AVERAGE	DEFENSIVE AVERAGE	DIFFERENCE
	H → L	H → L	Lowest → H	H → L
1	Houston			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

6. Explain the significance of the "Difference" between offensive and defensive averages column. How does this quantity help you to compare teams?

_____
_____
_____
_____
_____
_____

7. Could you devise a method for seeding the top 16 teams based on the above statistics? How would the seeding look (aka how would you rank the teams)? Who would play one another and why would you choose those games to be played? Cite the stats that would matter most to your new seeding system. Write a concise paragraph addressing these issues.

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