



College Mathematics

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Strategies and theories



Theories:

Gardener

Strategies:

**Problem
-based
Co-operative
-based**

Classroom:

**Laissez
-faire**



Main:Strategies

Why **problem-based** and **co-operative-based** strategies entail?

Answer: they can make student study initiatives but not passively. This is very useful not only for the course of College Mathematics but also for their future



Famous proverb:

Give a man a fish and he will eat for a day, Teach a man to fish and he will eat for the rest of his life.





What we need to take care?

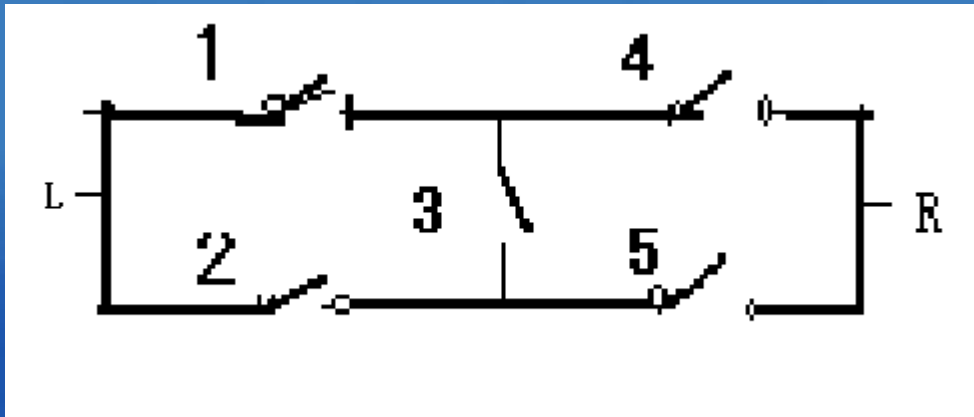
- ◆ Take too much time
- ◆ May get out of control
- ◆ Make them have enthusiasm

At the same time, we must not only solve questions and explain problems, but also let them **master method** to solve similar questions.



To show this more clearly - example

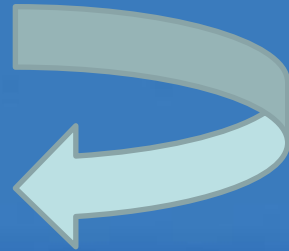
Example 1:



From L to R, there are five switches, the probability for each switch closed is p , and they are independent with each other. The probability from L to R is through?



How to solve to problem?



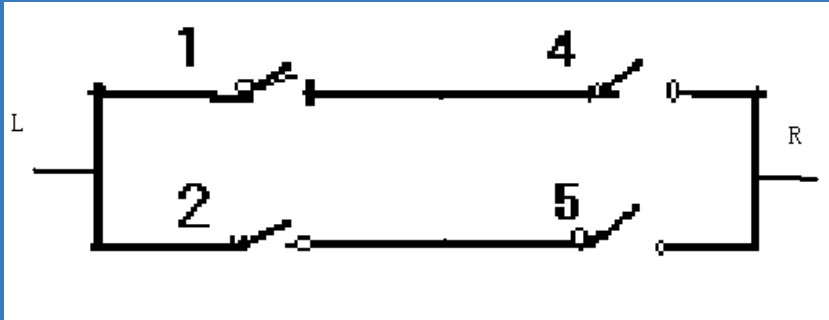
We need do.....

- (1) Ask students to discuss with each other
- (2) This problem belong to what kind of probability
- (3) What formula will be used
- (4) Ask some students to the blackboard



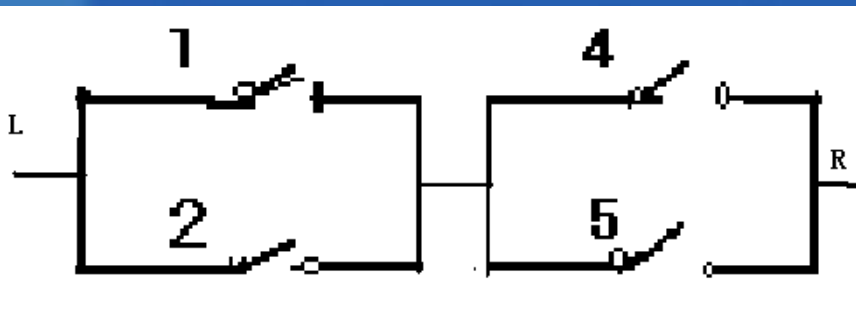
Formula: $P(AB)=P(A)P(B)$,

$$P\{A_1 \cup A_2 \cup \dots \cup A_n\} = 1 - P(\bar{A}_1) \dots P(\bar{A}_n)$$



Two situations: 3 is open or not:

$$\begin{aligned} P(A | \bar{A}_3) &= P(A_1 A_4 \cup A_2 A_5) \\ &= 2p^2 - p^4 \end{aligned}$$



$$\begin{aligned} P(A | A_3) &= P\{(A_1 \cup A_2)(A_4 \cup A_5)\} \\ P(A | A_3) &= P(A_1 \cup A_2)P(A_4 \cup A_5) \\ &= (2p - p^2)^2 \end{aligned}$$

Result:

$$P(A) = P(A | \bar{A}_3)P(\bar{A}_3) + P(A | A_3)P(A_3) = 2p^2 + 2p^3 - 5p^4 + 2p^5$$

Why would this strategy work?



- ❑ Encourage inquiry and learning through the search for information
- ❑ Encourage independent learning
- ❑ Practice their thinking skills when they try them best to find answers
- ❑ Gain confidence from discuss with their classmates
- ❑ Improve relationship with their peers



Conclusion

Use problem-based and co-operative based strategies

Those days: few students can try their best to study and do their work. So a Ta even the lecture should make his students feel the pleasure of study. Especially like college Mathematics, almost all university students must learn something related to this.

Otherwise, They will not pay their attention to your lecture or even not do homework.

At the same time, a teacher should be like a gardener, he or she should teach something not only related to courses but also related to life. A teacher should be friend with his students, too.

