a place of mind

FACULTY OF EDUCATION

Department of
Curriculum and Pedagogy

Mathematics

Probability: Monty Hall

Science and Mathematics
Education Research Group

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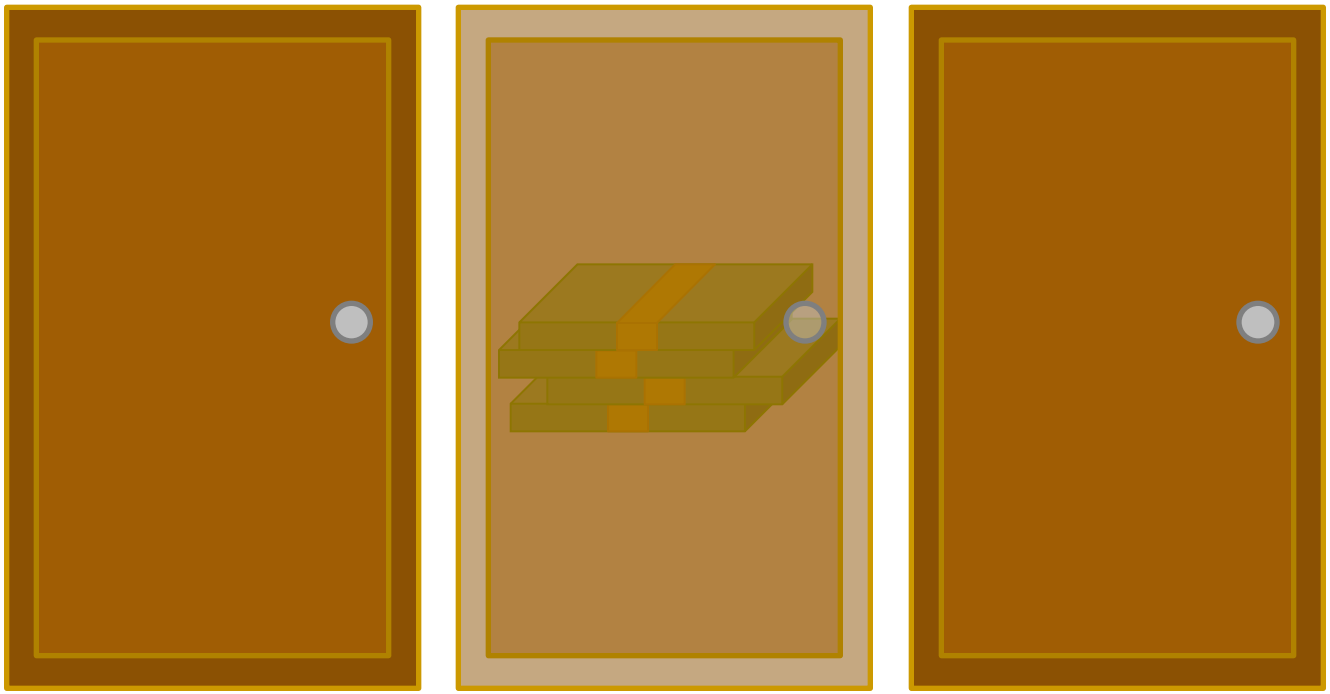
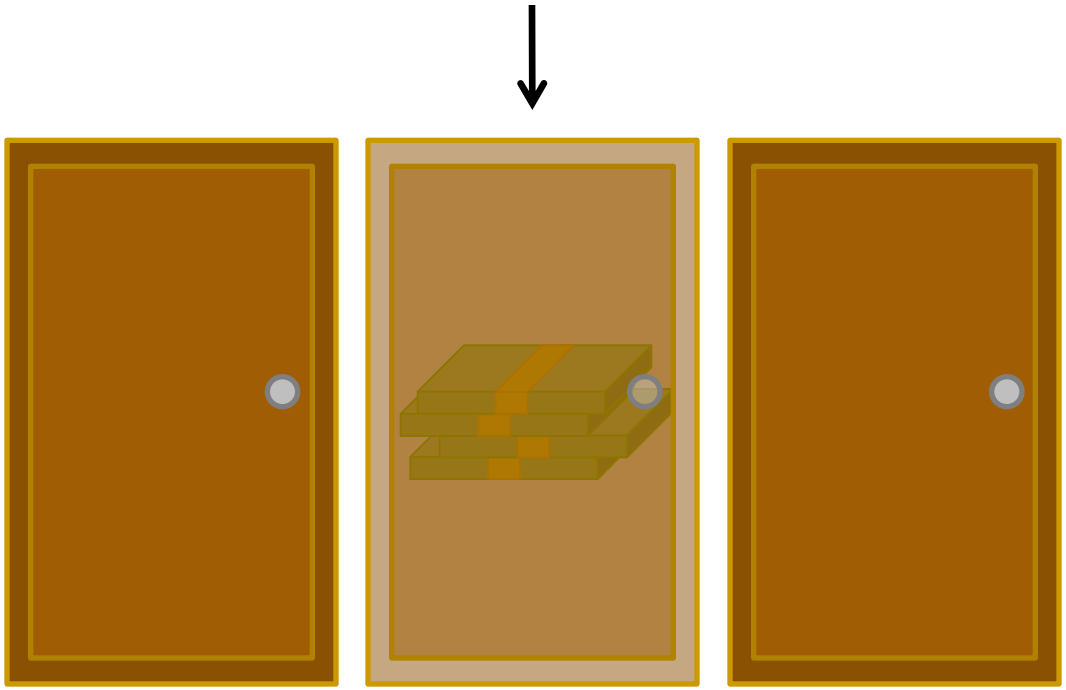
Monty Hall Problem



Monty Hall Problem I

There are three doors in front of you. Behind one door there is a prize. Behind the two other doors, there is nothing. What are the chances that you will pick the door with the prize?

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. None of the above



Solution

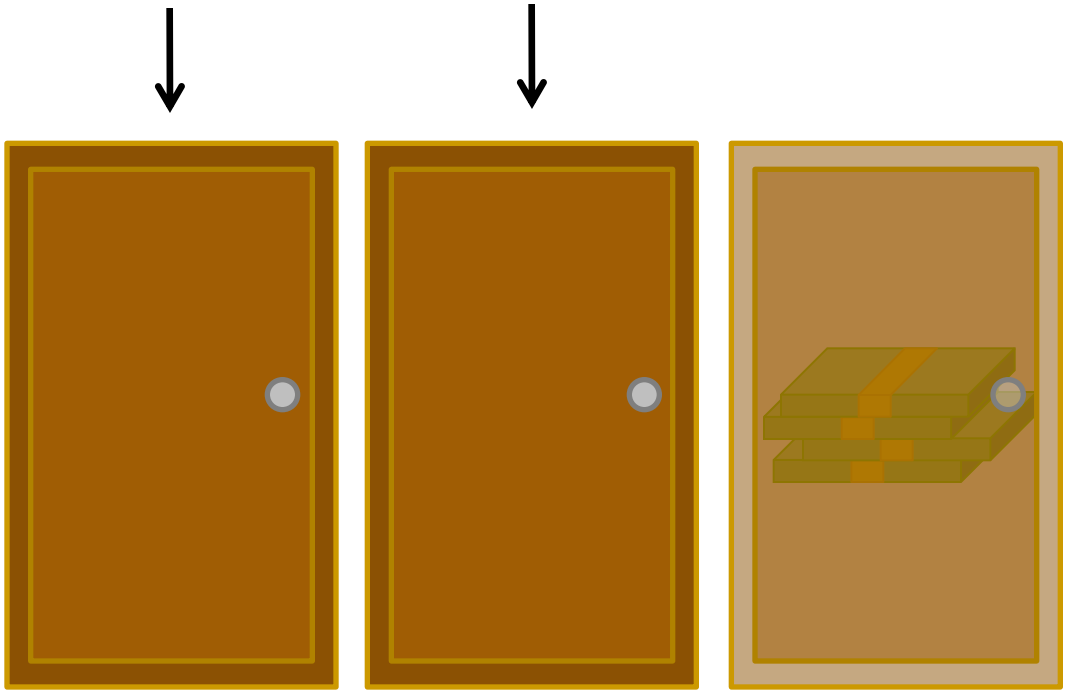
Answer: B

Justification: There are three doors and one prize, so the chance of picking the prize is one in three.

Monty Hall Problem II

There are three doors in front of you. Behind one door there is a prize. Behind the two other doors, there is nothing. What are the chances that you will pick a door with nothing?

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. None of the above



Solution

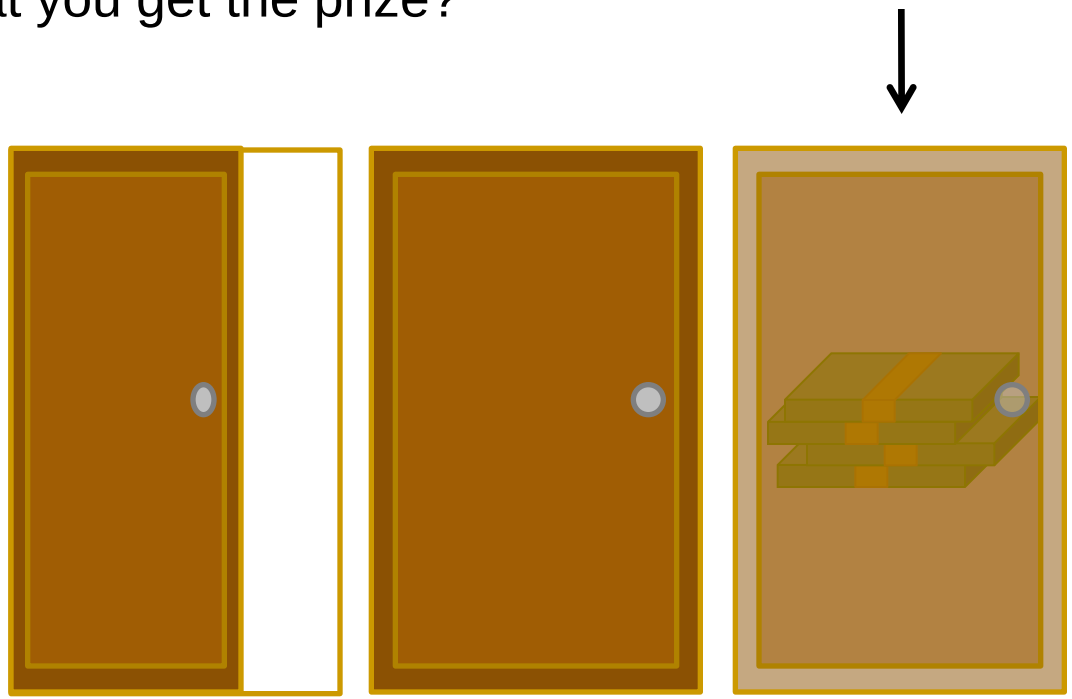
Answer: D

Justification: There are three doors and two doors with nothing. Therefore there is a 2/3 chance of getting nothing. Alternatively, there is a 1/3 chance of getting the prize, so there is 1-1/3=2/3 chance of getting nothing.

Monty Hall Problem III

There are three doors in front of you. Behind one door there is a prize. Behind the two other doors, there is nothing. You select a door. A door with nothing behind it is opened. What are the chances that you get the prize?

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. None of the above



Solution

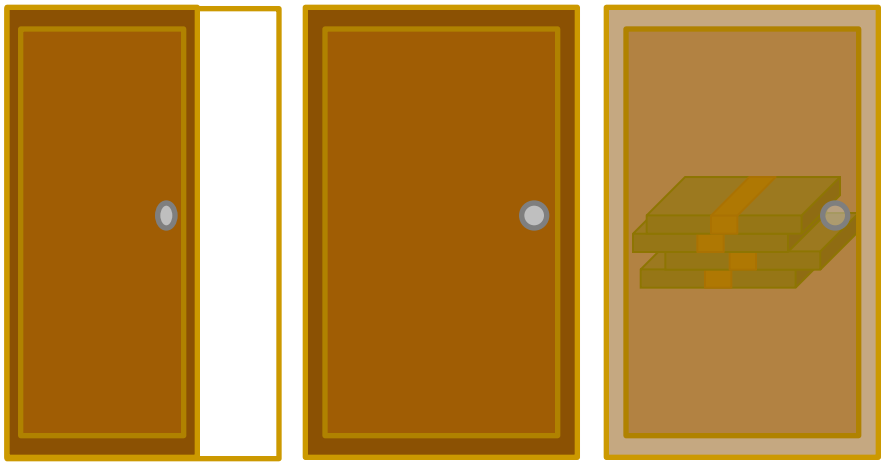
Answer: B

Justification: This is the same as question 1 except a door is opened. Opening the door does not affect the probability that was determined in the past.

Monty Hall Problem IV

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. None of the above

There are three doors in front of you. Behind one door there is a prize. Behind the two other doors, there is nothing. You select a door. A door with nothing behind it is opened. What are the chances that you get nothing? Note that the door opened is completely arbitrary, and this image only serves one possibility.



Solution

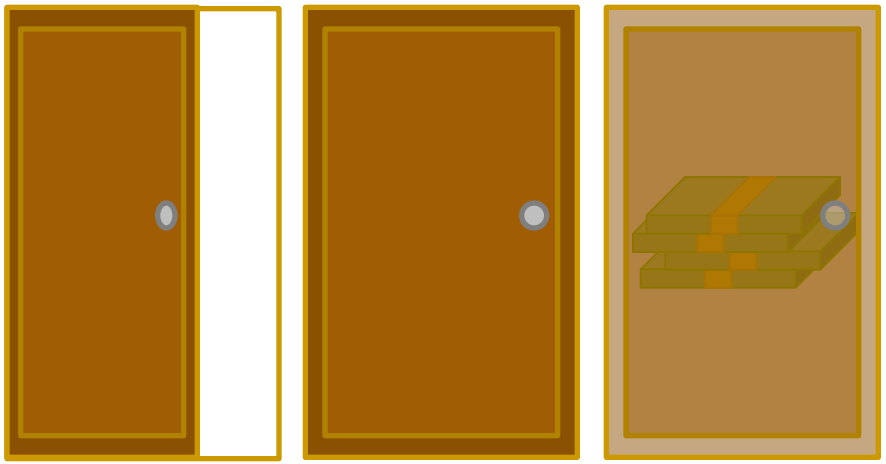
Answer: D

Justification: Again, another empty door opening does not effect the probability determined in the past, so this question is fundamentally the same as question 2.

Monty Hall Problem V

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. None of the above

There are three doors in front of you. Behind one door there is a prize. Behind the two other doors, there is nothing. You select a door. A door with nothing behind it is opened. If you switch to the other remaining door, what are the chances that you get the prize? Note that the door opened is completely arbitrary, and this image only serves one possibility.



Solution

Answer: D

Justification: This is a direct result of question 4. Knowing that if you chose nothing, the remaining door must be the prize since the other door with nothing was opened, and knowing that the chances of picking nothing at first is 2/3, the chances of the remaining door having the prize is also 2/3.