

# Critical Thinking and Problem Solving

## Combination Problems Mathematical, Probability and Decision Trees



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## Exercise

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There are two ways I go to work, both involve a two part journey.

- I can cycle to the bus stop; it usually takes 5 minutes, or 15 minutes if the railroad crossing is closed on the road, which happens on 10% of occasions.
- A bus takes an average of 5 minutes to arrive. I took the first bus, which may have been a slow bus that took 30 minutes or a fast bus that took 15 minutes. Chances of I get a slow bus is 20%
- Or, I could drive to the Park and Ride parking lot
- Driving normally takes 15 minutes, but about half the time there is a traffic jam and it takes 20 minutes.
- When I get to the Park and Ride, sometimes I get the bus right away, but there's a 60% chance I'll have to wait 10 minutes for the next bus.
- The bus took 10 minutes to take me to work.

### Questions

1. What is my shortest time to start to work?
2. On average, what is my best option for going to work and how much time do I need?
3. What is the probability that the first trip option takes 40 minutes or more?

### Answer

First up, let's try to simplify the statements by grouping them together.