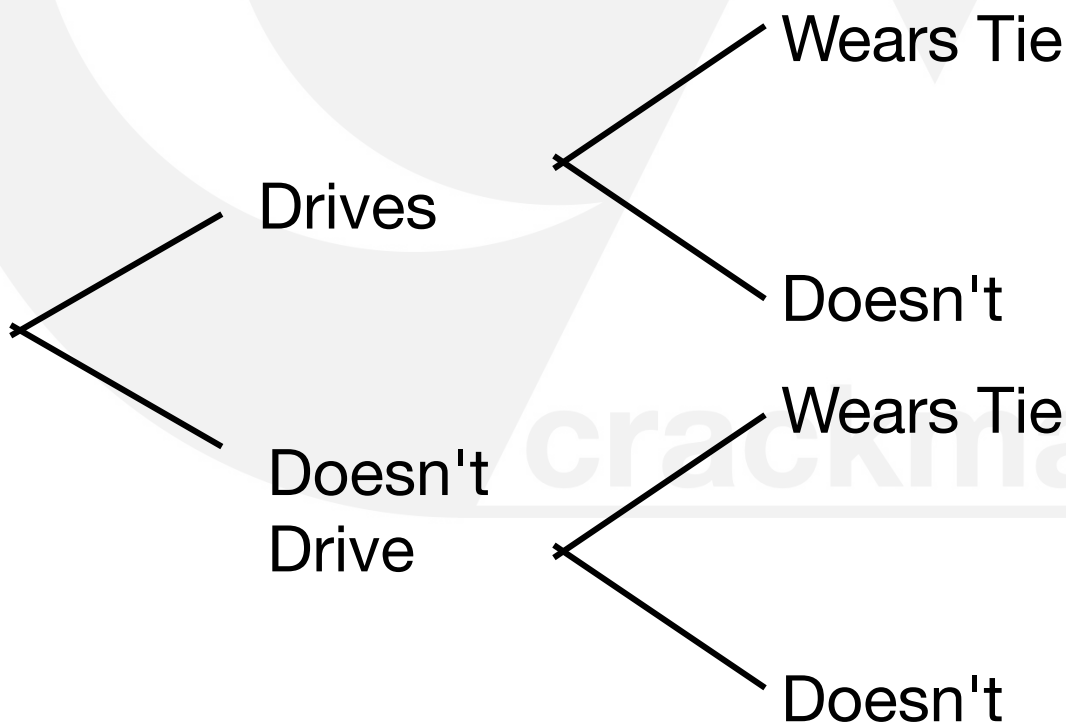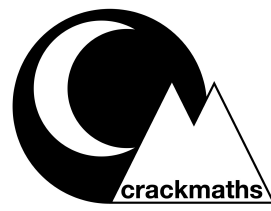# 66. How to calculate probability from a probability tree
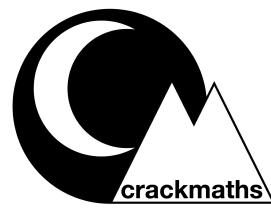
Scenario Questions:

1. Bob has a 0.6 chance of driving to work and a 0.7 chance of wearing a tie. The probability tree shows this information.

a. What is the probability that he both drives and wears a tie
b. What is the probability he doesn't drive and wears a tie

```
                              Wears Tie
                            /
                    Drives
                   /        \
                  /          Doesn't
                 /
                  \          Wears Tie
                   \        /
              Doesn't      
              Drive        \
                            Doesn't
```

Scenario Questions:

2. There's a 40% chance of rain tomorrow, and a 80% chance that Lily remembers to bring her umbrella.

a. What is the probability that it both rains and Lily brings her umbrella?
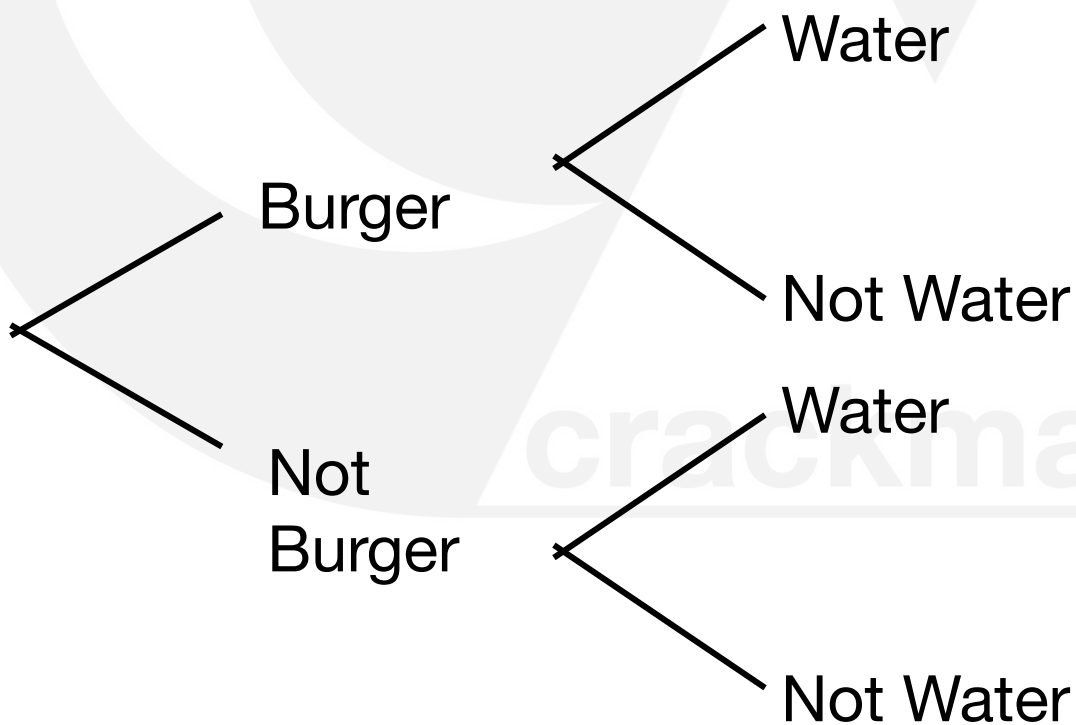b. What is the probability that it rains and Lily forgets her umbrella?

Umbrella

Raining

No Umbrella

Umbrella

Not Raining

No Umbrella
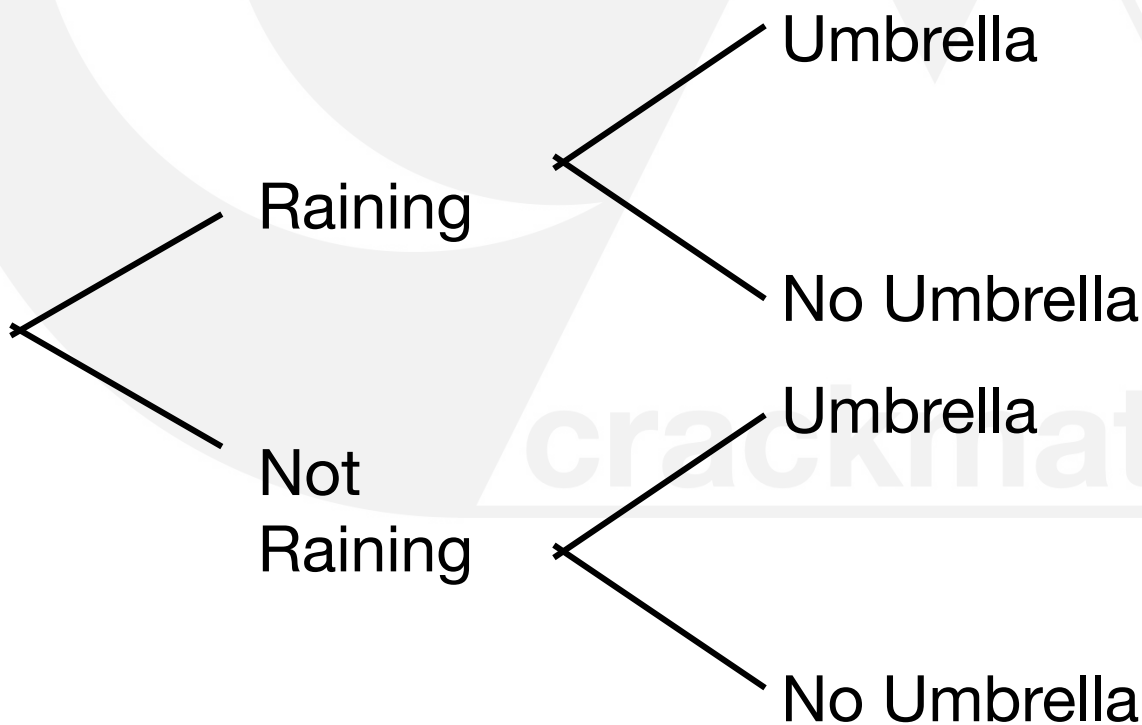
Scenario Questions:

3. Jasmine has a ¾ chance of ordering a burger for lunch, and a ⅗ chance of getting a bottle of water to drink.

a. What is the probability that she orders a burger and gets a bottle of water?
b. What is the probability that she doesn't order a burger and gets water?

Water

Burger

Not Water

Water

Not Burger

Not Water
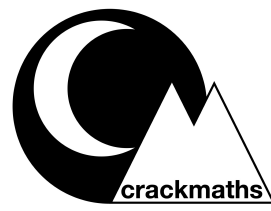
Scenario Questions:

4. Javine has a 3/10 chance of going to the gym, and a 9/10 chance of meeting her friend there.

a. What is the probability that she goes to the gym and meets her friend?
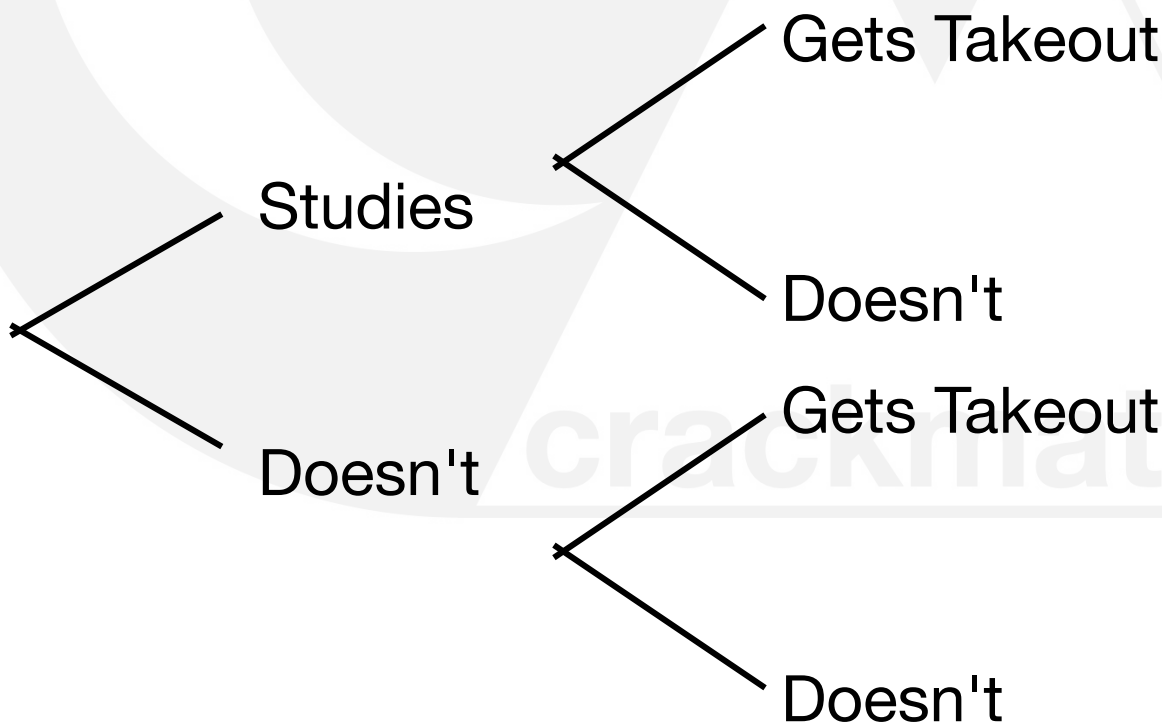b. What is the probability that she goes to the gym and doesn't meet her friend?
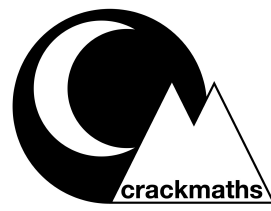
Meets Friend

Gym

Goes Solo

No Gym
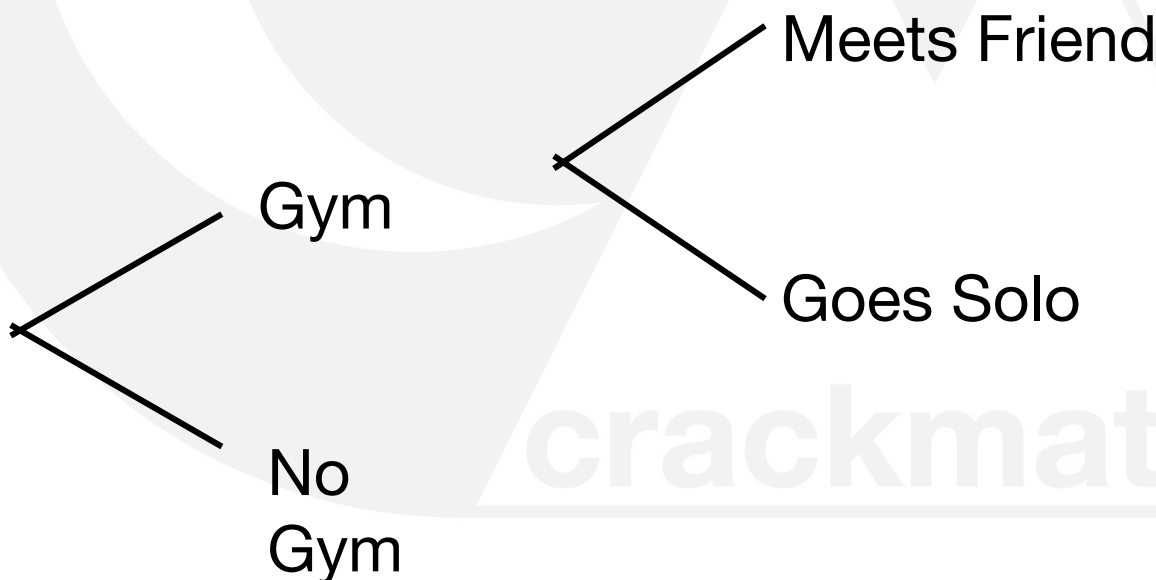
Scenario Questions:

5. Jamie has a 0.85 chance of studying for her maths test, and a 0.5 chance of getting take out for dinner.

a. What is the probability that they both study and gets and eats take out for dinner?
b. What is the probability that they don't study and gets take out for dinner?

Gets Takeout

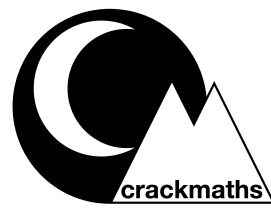Studies

Doesn't

Gets Takeout

Doesn't

Doesn't

Scenario Questions:

6. James has a 0.7 chance of going to the supermarket, and a 0.4 chance of buying bread.

a. What is the probability that he both goes to the supermarket and buys bread?
b. What is the probability that he doesn't go to the supermarket
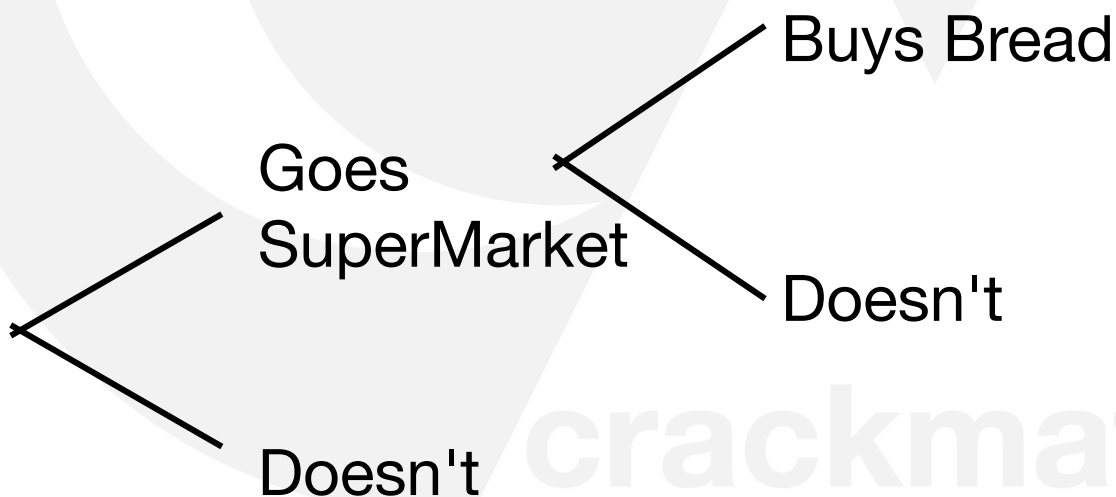
Scenario Questions:

7. Mark has a 50% chance of watching a movie, and a 60% chance of eating popcorn while watching it.

a. What is the probability that he both watches a movie and eats popcorn
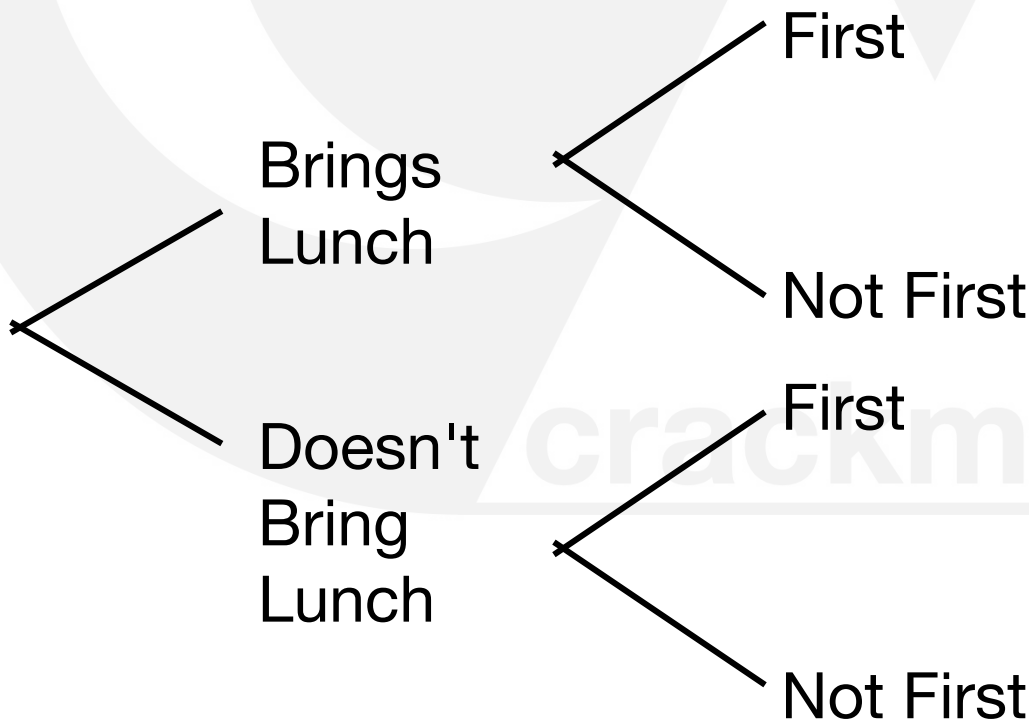b. What is the probability that he both watches a movie and doesn't eat popcorn?

Popcorn

Movie

No Popcorn

No
Movie
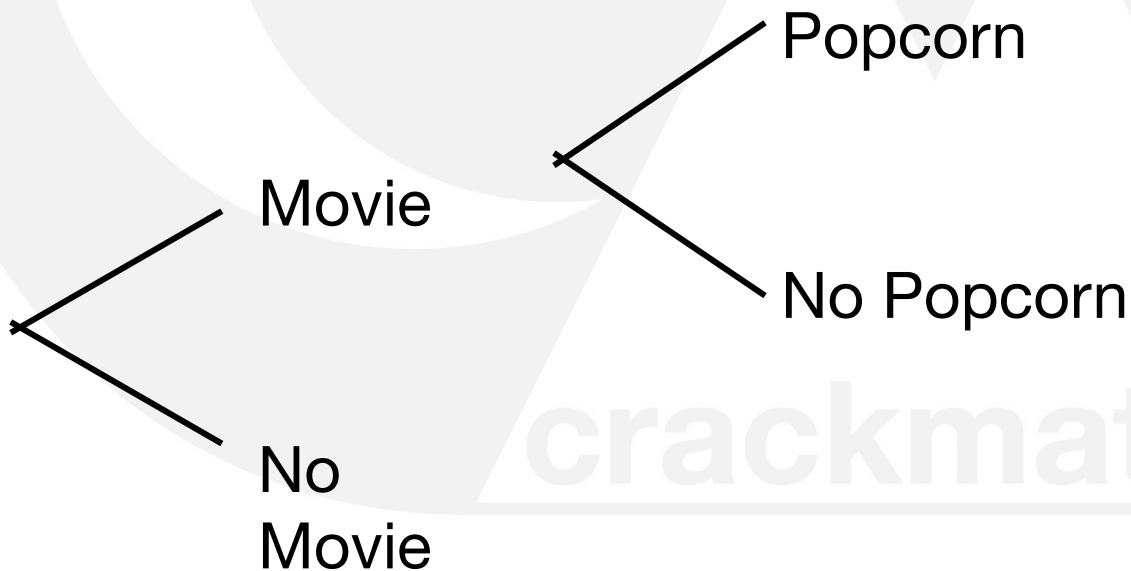
Scenario Questions:

8. Lionel has a 72% chance of bringing his lunch to work, and a 63% chance of being first to the photocopier.

a. What is the probability that he both brings his lunch and gets to the photocopier first?
b. What is the probability that he brings his lunch but misses out on the copier

```
                                    First
                    Brings
                    Lunch
                                    Not First

                                    First
                    Doesn't
                    Bring
                    Lunch
                                    Not First
```

Scenario Questions:

9. Pedro has a 80% chance of exercising in the morning, and a 65% chance of drinking a protein shake afterwards.

a. What is the probability that he both exercises and drinks a protein shake?
b. What is the probability that he doesn't exercise?
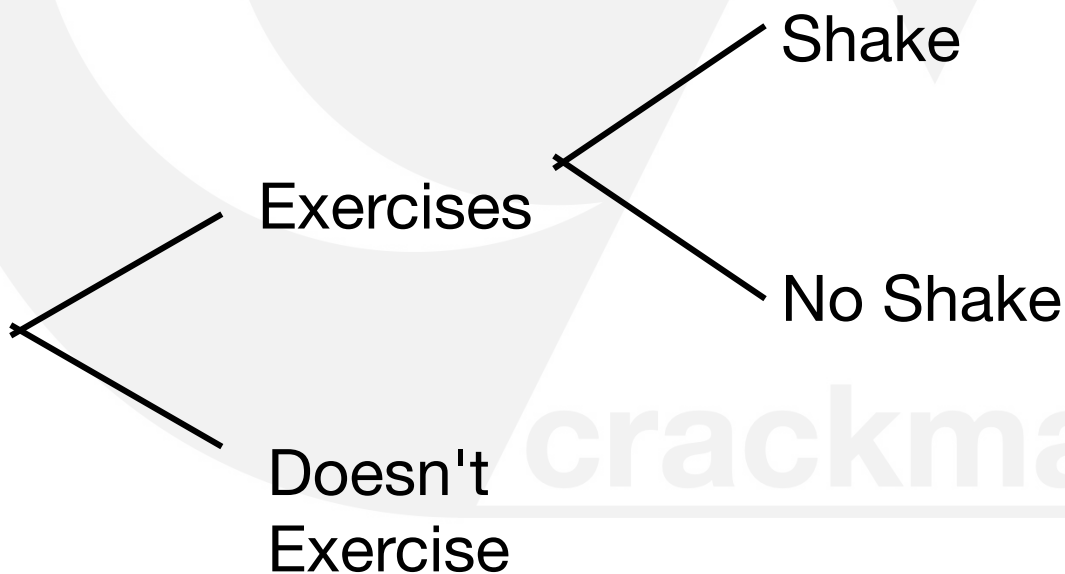
66. How to calculate probability from a probability tree

Scenario Questions: Answers

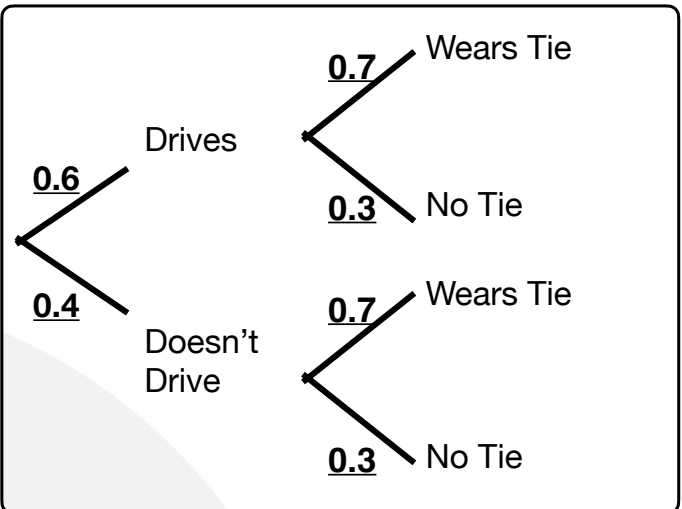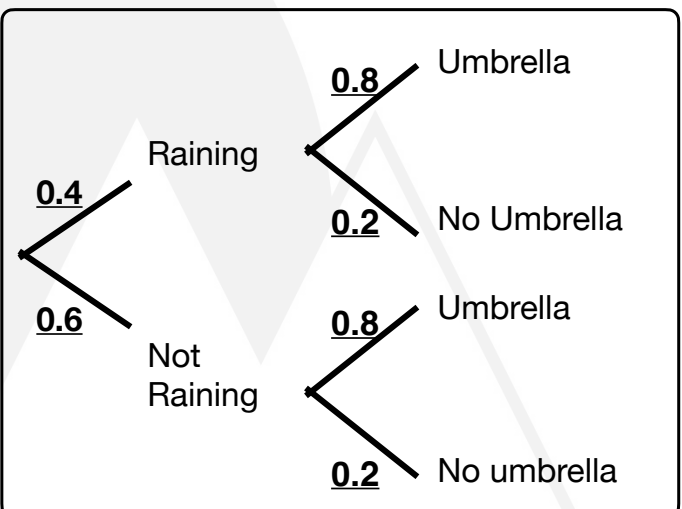1. Bob has a 0.6 chance of driving to work and a 0.7 chance of wearing a tie. The probability tree shows this information.

a. What is the probability that he both drives and wears a tie
b. What is the probability he doesn't drive and wears a tie and doesn't drive

Drives
- 0.6
  - 0.7 Wears Tie
  - 0.3 No Tie
- 0.4 **Doesn't Drive**
 - 0.7 Wears Tie
  - 0.3 No Tie

1. a. 0.42 b. 0.28.

2. There's a 40% chance of rain tomorrow, and a 80% chance that Lily remembers to bring her umbrella.

a. What is the probability that it both rains and Lily brings her umbrella??
b. What is the probability that it rains and Lily forgets her umbrella?

Raining
- 0.4
  - 0.8 Umbrella
  - 0.2 No Umbrella
- 0.6 **Not Raining**
  - 0.8 Umbrella
  - 0.2 No umbrella

2. a. 0.32.   b. 0.08

3. Jasmine has a ¾ chance of ordering a burger for lunch, and a ⅗ chance of getting a bottle of water to drink.
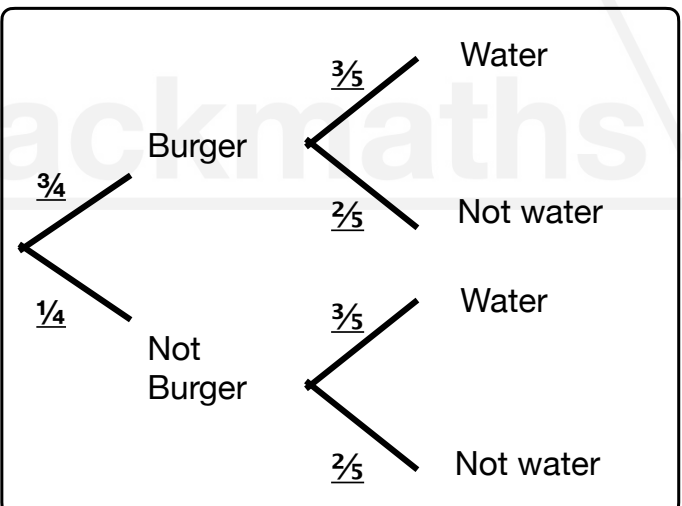
a. What is the probability that she orders a burger and gets a bottle of water?
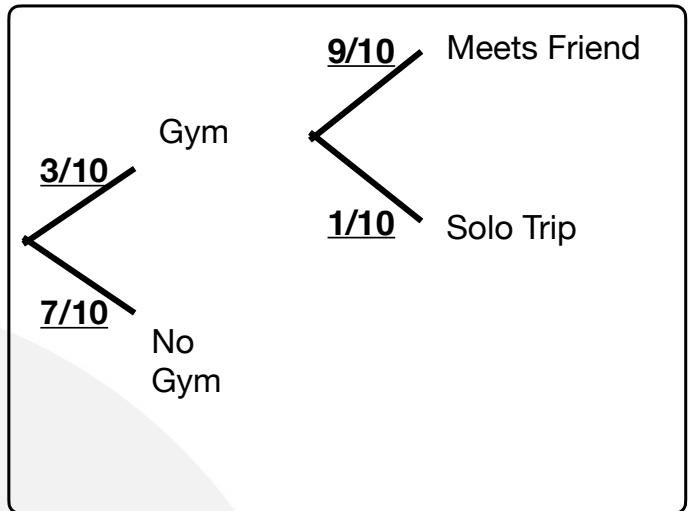b. What is the probability that she doesn't order burger and but gets water?

Burger
- ¾
  - ⅗ Water
  - ⅖ Not water
- ¼ **Not Burger**
  - ⅗ Water
  - ⅖ Not water

3. a. 9/20. b. 3/20

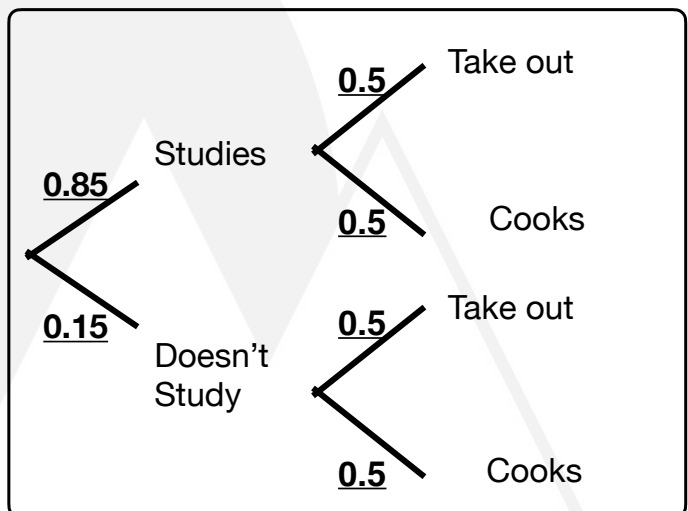# 66. How to calculate probability from a probability tree

Scenario Questions: Answers

4. Javine has a 3/10 chance of going to the gym, and a 9/10 chance of meeting her friend there.

a. What is the probability that she goes to the gym and meets her friend?
b. What is the probability that she goes to the gym and doesn't meet her friend?

3/10 Gym
9/10 Meets Friend
**1/10** Solo Trip
7/10 No Gym

4. a. 27/100 b. 3/100.

5. Jamie has a 0.85 chance of studying for her maths test, and a 0.5 chance of getting take out for dinner.

a. What is the probability that they both study and gets and eats take out for dinner?
b. What is the probability that they don't study and gets take out for dinner?

0.85 Studies
0.5 Take out
0.5 Cooks
0.15 Doesn't Study
0.5 Take out
0.5 Cooks

5. a. 0.425. b. 0.075

6. James has a 0.7 chance of going to the supermarket, and a 0.4 chance of buying bread.
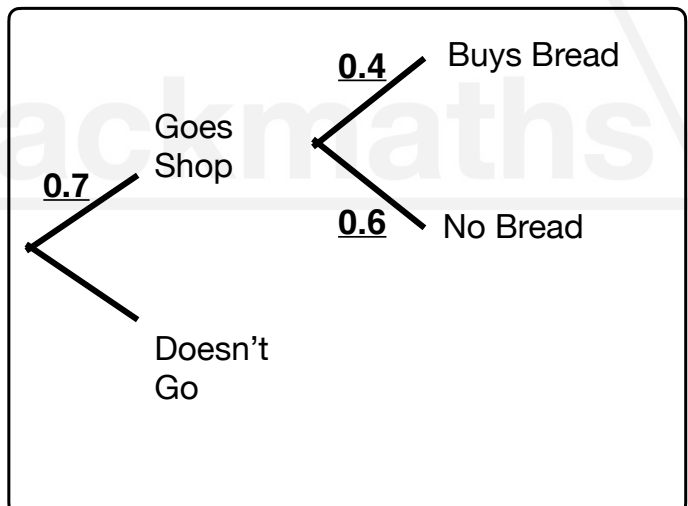
a. What is the probability that he both goes to the supermarket and buys bread?
b. What is the probability that he doesn't go to the supermarket

0.7 Goes Shop
0.4 Buys Bread
**0.6** No Bread
Doesn't Go

6. a. 0.28. b. 0.3

66. How to calculate probability from a probability tree

Scenario Questions: Answers

7. Mark has a 50% chance of watching a movie, and a 60% chance of eating popcorn while watching it.

a. What is the probability that he both watches a movie and eats popcorn
b. What is the probability that he both watches a movie and doesn't eat popcorn?

Goes Movies

Popcorn

No popcorn

Doesn't Go
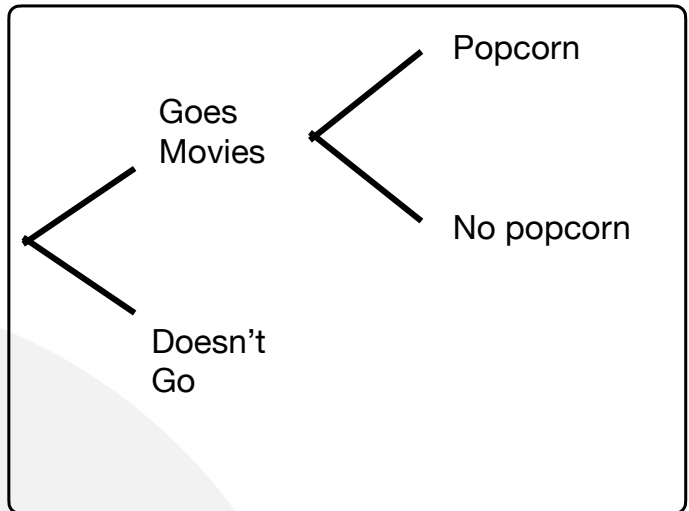
7. a.   30%. b.   20%

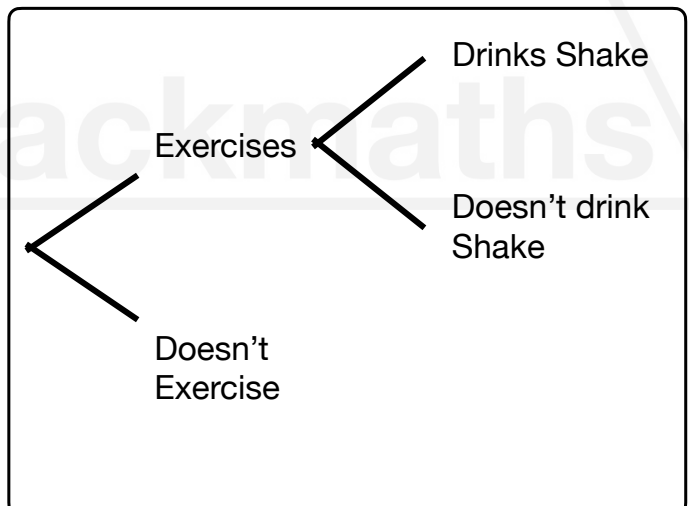8. Lionel has a 72% chance of bringing his lunch to work, and a 63% chance of being first to the photocopier.

a. What is the probability that he both brings his lunch and gets to the photocopier first?
b. What is the probability that he brings his lunch but misses out on the copier

Brings Lunch

First

Not First

Doesn't Bring Lunch

First

Not First
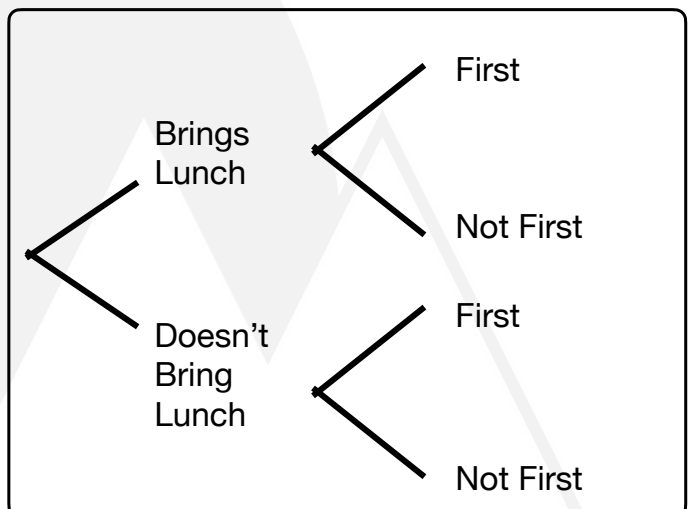
8. a.   45.36%   b.   26.64%

9. Tom has a 80% chance of exercising in the morning, and a 65% chance of drinking a protein shake afterwards.

a. What is the probability that he both exercises and drinks a protein shake?
b. What is the probability that he doesn't exercise?

Exercises

Drinks Shake

Doesn't drink Shake

Doesn't Exercise

9. a.   52%   b.   20%