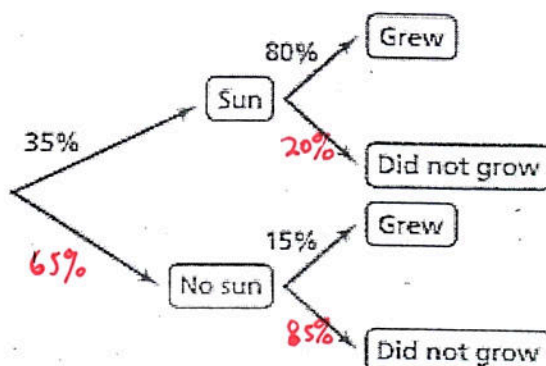Integrated 2   Name   *Solutions*

Tree Diagrams   Date_____Period_____

You can use a tree diagram to organize information.

- 35% of a group of plants prefer the sun.

- 80% of the plants that received sun, grew.

- 15% of the other plants grew.

Find the following probabilities.

1. P (Sun and Grew)

   $= (0.35)(0.80) =$ **0.28**

   > To determine the probability, multiply the probabilities along each branch.

2. P(No Sun and Grew)

   $= (0.65)(0.15) =$ **0.0975**

3. P (Grew) = P (Sun and Grew) + P (No Sun and Grew)

   $= 0.28 + 0.0975$

   $=$ **0.3775**

   > To combine probabilities of an outcome, add all the favorable outcomes.

The following represents the percent of boys and girls in the 10th grade at a school, and whether they joined the student government club.

```
                                    15%    Joined government club    (0.45)(0.15)=0.0675
                              Boys
                 45%               85%     Did not join government club
                                    20%    Joined government club    (0.55)(0.20)=0.11
                 55%         Girls
                                    80%     Did not join government club
```
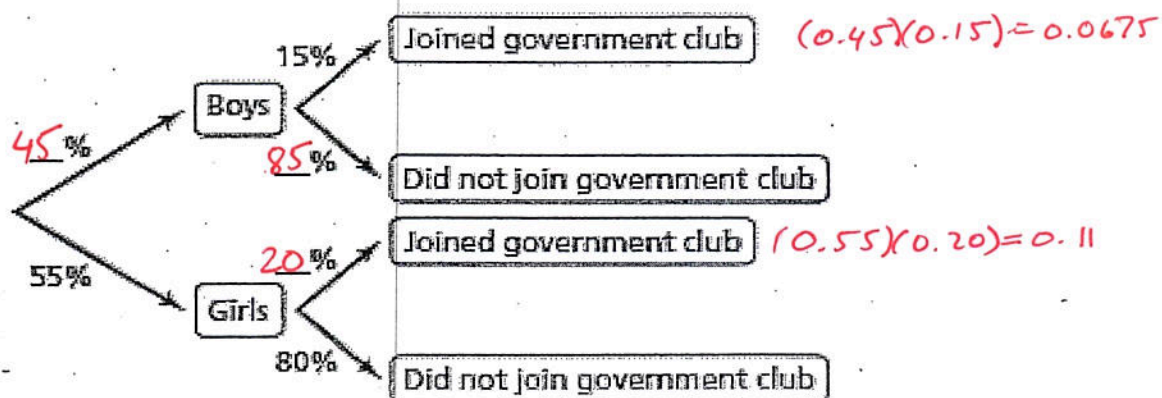
4. Complete the tree diagram by filling in the blanks.

5. Find P(Girls AND Did not join government club)

    $= (0.55)(0.80) = \boxed{0.44}$
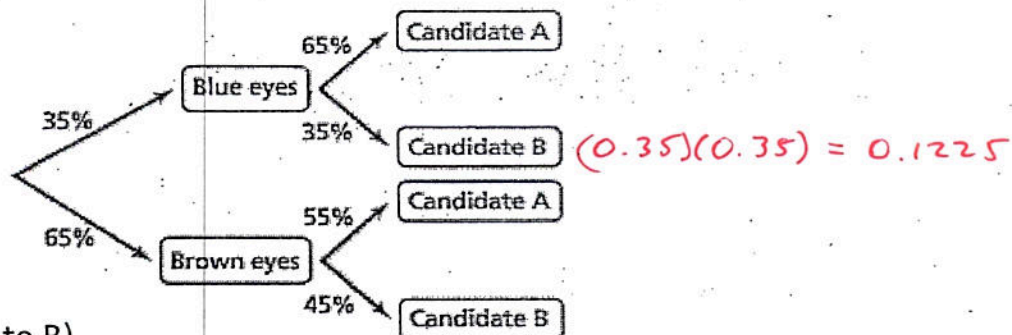
6. What is the overall percentage of students who joined the government club?

    P(joined gov club)

    $= P(\text{Boys AND joined gov club}) + P(\text{Girls AND joined gov club})$
    $= (0.45)(0.15) + (0.55)(0.20) = 0.0675 + 0.11 = \boxed{0.1775} \text{ or } \boxed{17.75\%}$

The tree diagram shows the percent of blue-eyed voters and brown-eyed voters that voted for 2 candidates.

```
                                    65%    Candidate A
                         Blue eyes
              35%                   35%     Candidate B    (0.35)(0.35) = 0.1225
                                    55%     Candidate A
              65%        Brown eyes
                                    45%     Candidate B
```

7. P (Blue Eyes AND Candidate B)

    $= (0.35)(0.35) = (0.35)^2 = \boxed{0.1225}$

8. What is the overall percentage of voters who voted for candidate A?
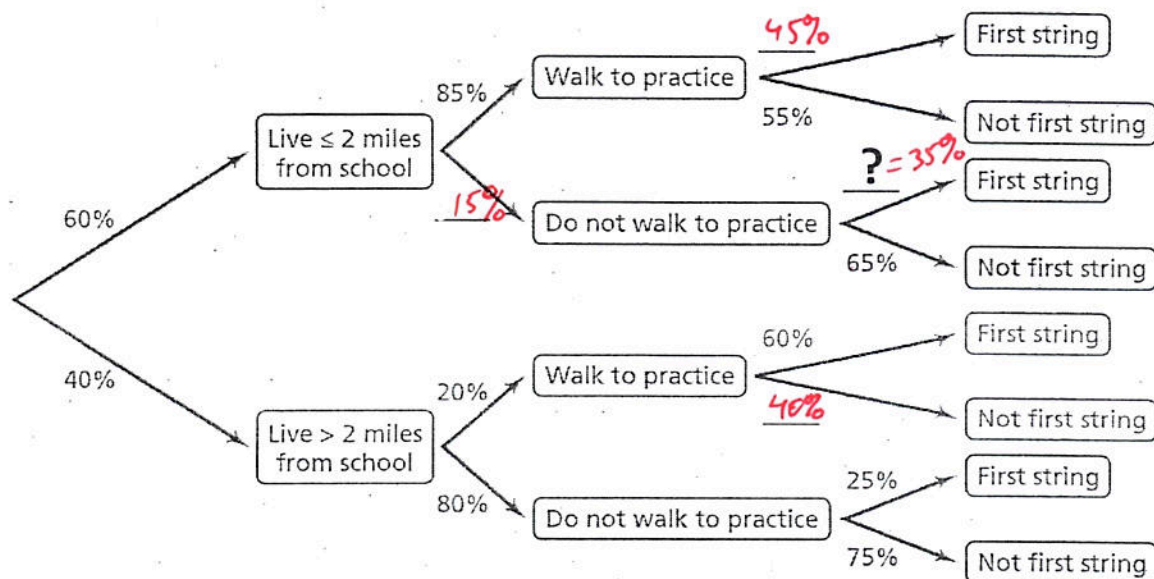
    P(voted for cand A)

    $= P(\text{Blue eyes AND cand A}) + P(\text{Brown Eyes AND cand A})$
    $= (0.35)(0.65) + (0.65)(0.55)$
    $= 0.2275 + 0.3575$
    $= \boxed{0.585} \text{ or } \boxed{58.5\%}$

The tree diagram below shows the percentage of a school's basketball players who live within 2 miles of school, whether or not they walk to practice, and whether or not they are one of the 5 players in the first string (players who start the game).

9. Explain what the probability of the "?" in the blank on the tree diagram represents.

The ? represents the following:

"The probability a player is First String given he or she lives ≤ 2 miles from school and doesn't walk to practice."

10. Find P(Lives > 2 miles from school AND Walks to practice)

$= (0.40)(0.20) = \boxed{0.08}$

11. What is the overall percentage of basketball players who Live ≤ 2 miles from school who do not walk to practice and are not on the first string?

$= (0.60)(0.15)(0.65) = 0.0585 \text{ or } \boxed{5.85\%}$