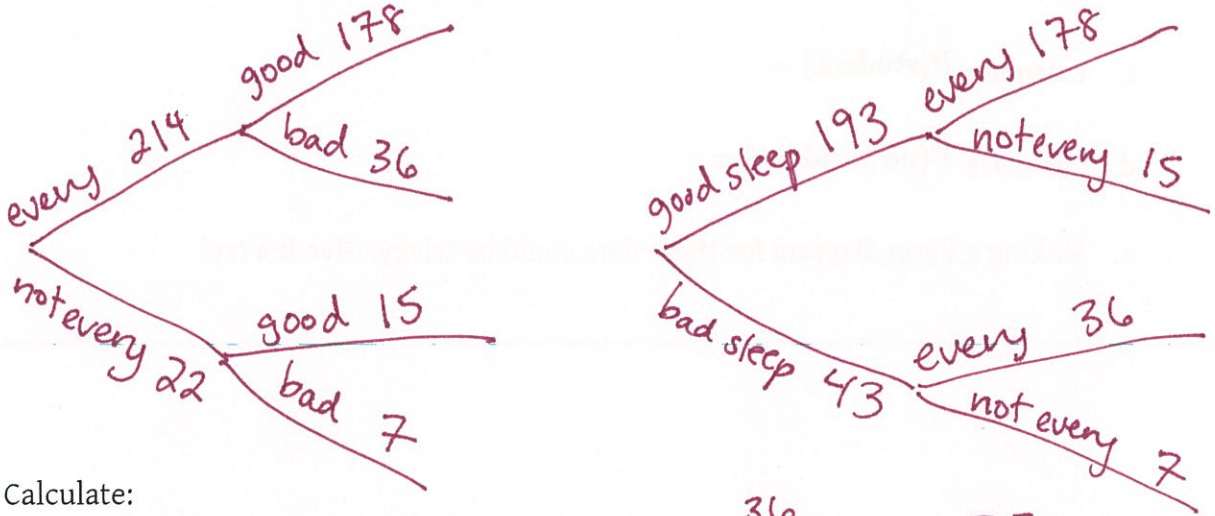
5. In a survey distributed on a gaming platform, 214 ninth graders played video games every day of the week and 22 ninth graders did not play video games every day of the week. Of those that played every day of the week, 36 had trouble sleeping at night. Of those that did not play every day of the week, 7 had trouble sleeping at night.

   a. Create a 2-way frequency table using these data.

| | good sleep | bad sleep | Total |
|---|---|---|---|
| vg every day | 178 | 36 | 214 |
| vg not every day | 15 | 7 | 22 |
| Total | 193 | 43 | 236 |

   b. Create a Venn diagram using these data. (Honors: create 2 Venn diagrams with these data that are as different from each other as possible.)


   c. Create a tree diagram using these data. (Honors: create 2 tree diagrams with these data that are as different from each other as possible.)




   d. Calculate:

      i. $P(\text{sleep trouble} \mid \text{video games every day}) = \frac{36}{214}$ or 17%

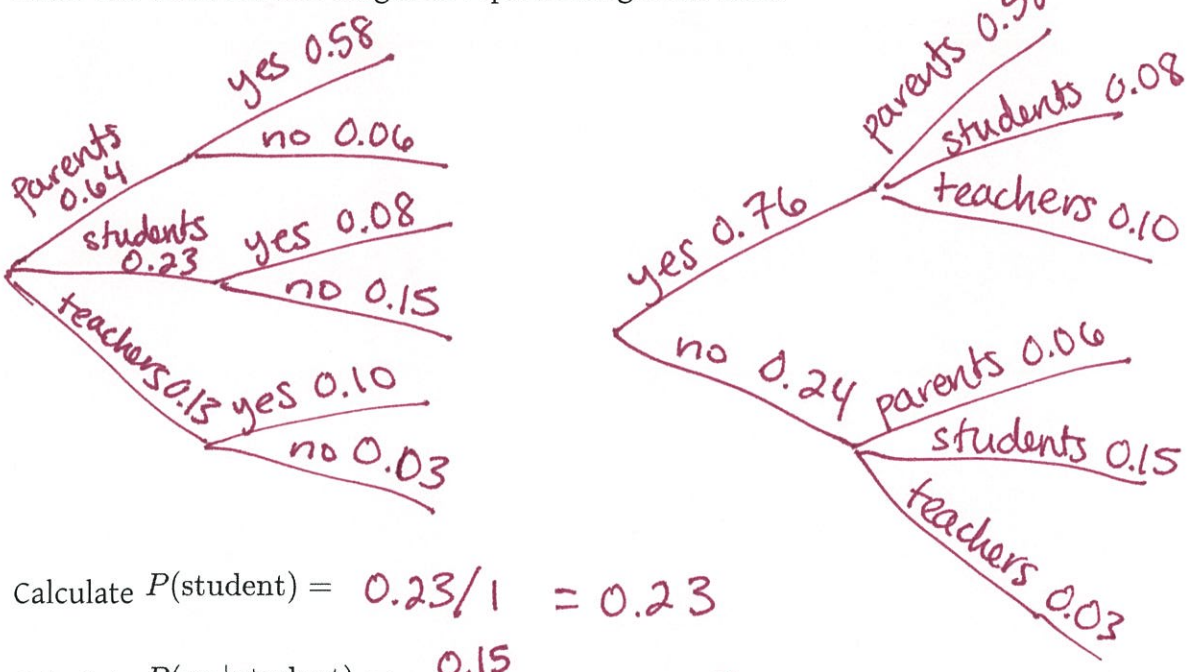
      ii. $P(\text{sleep trouble} \mid \text{video games not every day}) = \frac{7}{22}$ or 32%

6. Challenge: For financial reasons, a school district is debating eliminating a computer programming class in the high school. The district surveyed parents, students, and teachers. The results are given in the 2-way relative frequency table below. (Note that the numbers given are the proportion of the full group surveyed.)

| | Parents | Students | Teachers | Total |
|---|---|---|---|---|
| Yes | 0.58 | 0.08 | 0.10 | 0.76 |
| No | 0.06 | 0.15 | 0.03 | 0.24 |
| Total | 0.64 | 0.23 | 0.13 | 1 |

a. Fill in the rest of the table.

b. Make two different tree diagrams representing these data.




c. Calculate $P(\text{student}) =$ $0.23/1 = 0.23$

d. Calculate $P(\text{no} \mid \text{student}) =$ $\dfrac{0.15}{0.23} = 0.65$

e. Making a Venn diagram for these data could be tricky. Give it a try!