**nrich**
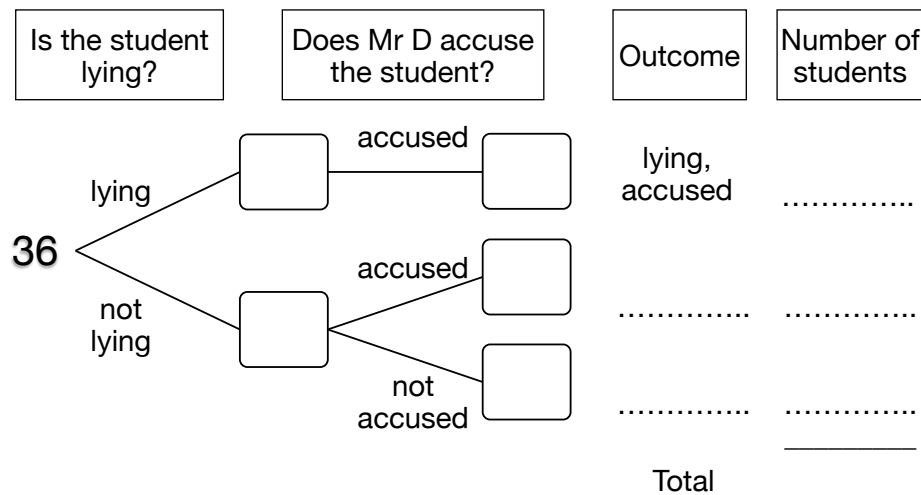
A certain teacher, Mr L I Detector, claims he can tell when students are lying about their homework. This is true. Unfortunately, he also accuses some students who are telling the truth.

So what are the chances that someone will be wrongly accused?

Complete the tree diagram and 2-way table below for **your results for 36 students**.
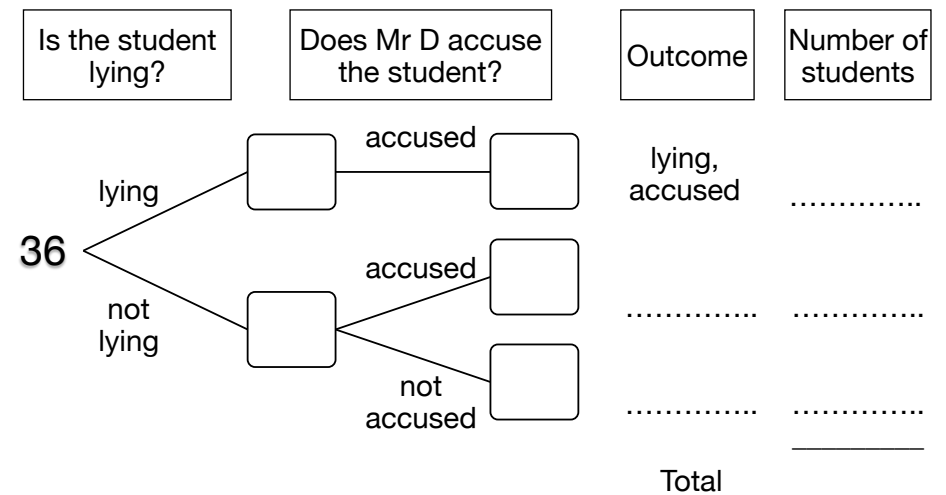
**Tree Diagram**



| Is the student lying? | Does Mr D accuse the student? | Outcome | Number of students |
|---|---|---|---|
| lying | accused | lying, accused | …………... |
| 36 | | | |
| not lying | accused | …………... | …………... |
| | not accused | …………... | …………... |
| | | Total | |

**How do the observed results compare with what we might expect?**

Complete the tree diagram and table below to show what we would **predict for 36 students**.

How do your predicted results compare with your experimental data?



| Is the student lying? | Does Mr D accuse the student? | Outcome | Number of students |
|---|---|---|---|
| lying | accused | lying, accused | …………... |
| 36 | | | |
| not lying | accused | …………... | …………... |
| | not accused | …………... | …………... |
| | | Total | |

**2-way table**

| 2-way table | | Does Mr D accuse the student? | | Total |
|---|---|---|---|---|
| | | Accused | Not accused | |
| Is the student lying? | Lying | | | |
| | Telling the truth | | | |
| | Total | | | |

| | | Does Mr D accuse the student? | | Total |
|---|---|---|---|---|
| | | Accused | Not accused | |
| Is the student lying? | Lying | | | |
| | Telling the truth | | | |
| | Total | | | |