1. Use your knowledge to write several probability statements about this test (based on the numbers provided). 

\[ P(TB) = \frac{38}{1000} = 38\% \]

\[ P(\text{Tested positive | not TB}) = \frac{62}{620} = 10\% \]  

2. Look over the statements you wrote. Put an asterisk (*) next to those that are conditional probability statements (statements based on margin “row” or “column” percentages). If there are not any, add some now.

3. Part of understanding the world around us is being able to take information, make sense of it, and then explain it to others. Based on your statements above, what would you say to a friend regarding the validity of their results if they are testing for TB and only get a skin test? Be sure to use data to best inform your friend. 

\[ \frac{361 + 558}{1000} \text{ or } 91.9\% \text{ valid} \]

4. In this situation, explain the consequences of errors (having a test with incorrect results).

someone given treatment that doesn't need it, someone doesn't get treated that needs it, etc

5. If a health test is not 100% certain, why might it be beneficial to have the results lean more toward a false positive? 

better to be safe

6. Is a sample space of 200 enough to indicate whether or not this is true for an entire population?

The larger the sample space, the more accurate the results.

7. How would you answer the young adult who tested positive and asks, “Do I really have TB?”

Probably….let’s test again.
1. How many students were surveyed?
\[350 + 50 + 225 + 375 = 1000\]

2. What were the students asked?
Are you in choir or band?

3. How many students are in both choir and band?
\[50\]

4. How many students are not in either choir or band?
\[375\]

5. What is the probability that a randomly selected student would be in band?
\[\frac{275}{1000} = 27.5\%\]
6. What does the 95 in the center tell you?
Students who are enrolled in all 3 elective courses.

7. What does the 145 tell you?
Students who are enrolled in music and art.

8. How many total students are represented in the diagram?  1325

9. Which elective class has the least number of students enrolled?  art
Given the tree diagram below answer the questions and determine the probabilities. The diagram represents the number of plate appearances during the first month of a minor league baseball season.

10. How many times did a batter come to the plate during this time period? 1610

11. Based on this data, if you are a left-handed batter what is the probability that you will face a right-handed pitcher? 255/417 or 61.1%

12. Based on this data, if you are a right-handed batter what is the probability that you will face a left-handed pitcher? 693/1193 or 58%

13. What is the probability that a left-handed pitcher will be throwing for any given plate appearance? (162 + 693)/1610 or 53%

14. What is the probability that a left-handed batter would be at the plate for any given plate appearance? 417/1610 or 26%

15. What observations do you make about the data? Is there any amount that seems to be overly abundant? What might account for this?

Why are there more "mismatched" pairs than pairs of the same-handedness. There is an overabundance of right handed batters. This is probably representative of the general population.
Find the probability of achieving success with each of the events below.

16. Rolling an even number on standard six-sided die. \[ \frac{1}{2} \]

17. Drawing a black card from a standard deck of cards. \[ \frac{1}{2} \]

18. Flipping a coin and getting Heads three times in a row. \[ \frac{1}{8} \]

19. Rolling a die and getting a four. \[ \frac{1}{6} \]

20. Drawing an ace from a deck of cards. \[ \frac{1}{13} \]

21. Rolling a die twice in a row and getting two threes. \[ \frac{1}{36} \]

22. From a bag containing 3 blue, 2 red, and 5 white marbles. Pulling out a red marble. \[ \frac{2}{10} = \frac{1}{5} \]