Name: __KEY__   Date: _____   Period: _____
Probability: Everyday Decisions Based on Probability
II.B. Student Activity Sheet 8: Choosing Classes

Four teachers offer Zane's favorite computer class at different times during the day. The school counselor asks Zane if he prefers a morning or afternoon class. Below is a list of teachers and the periods they teach this class. The morning classes are 1st, 2nd, and 3rd periods, and the afternoon classes are 4th, 5th, and 6th periods.

- Mr. Nelson—2nd, 4th, 5th, 6th
- Ms. Trevino—1st, 2nd, 3rd, 4th, 5th
- Mr. Garza—1st, 3rd, 4th, 6th
- Ms. Jones—1st, 2nd, 3rd, 6th

1. Before answering the counselor's question, Zane wants to list all the possibilities so he can make a choice that gives him the highest probability of getting a teacher he prefers. Create a table and a tree diagram that illustrate the possibilities. *see attached.*

2. Before deciding on a morning or afternoon class, Zane remembers he wants to take his math class during 3rd period. What is the probability that he will be assigned the computer class during this time?

$P(\text{computer class } 3^{rd}) = 3/17 = 17.6\%$

3 out of the 17 classes are offered 3rd period.

3. Zane prefers to be in the class of Ms. Trevino or Mr. Nelson. Should he pick the morning or the afternoon? Explain your reasoning.

Morning $P(\text{Trevino or Nelson}) = \frac{3}{17} + \frac{1}{17} = \frac{4}{17} = 23.5\%$ vs. (29.4%)

Afternoon $P(\text{Trevino or Nelson}) = \frac{2}{17} + \frac{3}{17} = \frac{5}{17}$ ← He should pick the afternoon.

4. After checking the schedule, the counselor told Zane that Mr. Garza's classes are filled. How does this information affect the probability of Zane getting any afternoon class? If Zane asks for an afternoon class, how does this affect his probability of getting Mr. Nelson or Ms. Trevino?

Since Mr. Garza's classes are no longer an option, $P(\text{afternoon computer class}) = \frac{8-2}{17-4} = \frac{6}{13} = 46.2\%$ The prob. of getting Nelson or Trevino is now higher since there are now fewer afternoon classes.
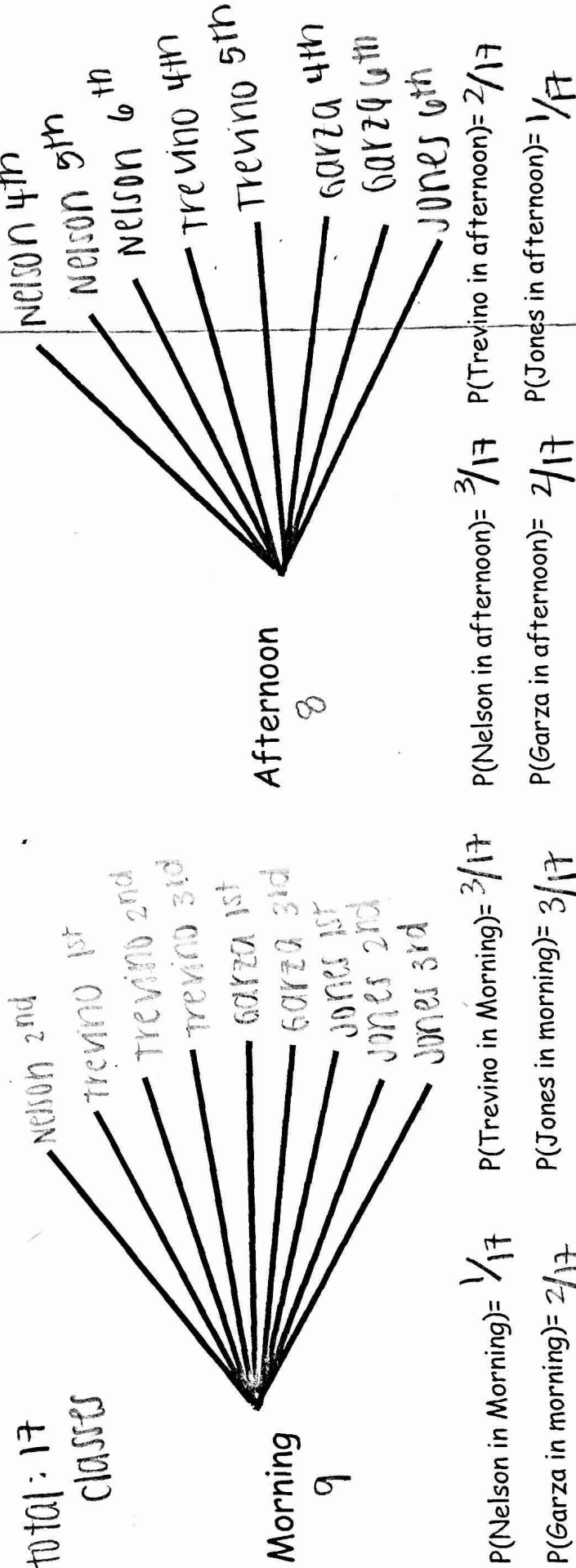
5. Because this is a required class for all students and Mr. Garza's classes are filled, the school adds another teacher, Ms. Lopez. She will teach 1st and 6th periods. Does this fact affect the probability of getting Mr. Nelson in the morning? Yes. see diagram on back.

P(Nelson or Trevino in afternoon)
$= \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

KEY

	1st period	2nd period	3rd period	Lunch	4th period	5th period	6th period
Mr. Nelson		X			X	X	X
Ms. Trevino	X	X	X		X	X	
Mr. Garza	X		X		X		X
Ms. Jones	X	X	X				X

total: 17 classes

Morning
9

- Nelson 2nd
- Trevino 1st
- Trevino 2nd
- Trevino 3rd
- Garza 1st
- Garza 3rd
- Jones 1st
- Jones 2nd
- Jones 3rd

Afternoon
8

- Nelson 4th
- Nelson 5th
- Nelson 6th
- Trevino 4th
- Trevino 5th
- Garza 4th
- Garza 6th
- Jones 6th

P(Nelson in Morning) = 1/17   P(Trevino in Morning) = 3/17   P(Nelson in afternoon) = 3/17   P(Trevino in afternoon) = 2/17

P(Garza in morning) = 2/17   P(Jones in morning) = 3/17   P(Garza in afternoon) = 2/17   P(Jones in afternoon) = 1/17

(5)

Morning
8
- Nelson
- Trevino
- Trevino
- Trevino
- Jones
- Jones
- Jones
- Lopez

Afternoon
7
- Nelson
- Nelson
- Nelson
- Trevino
- Trevino
- Jones
- Lopez
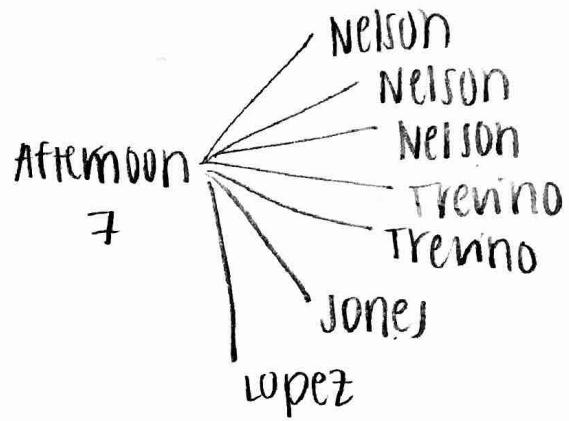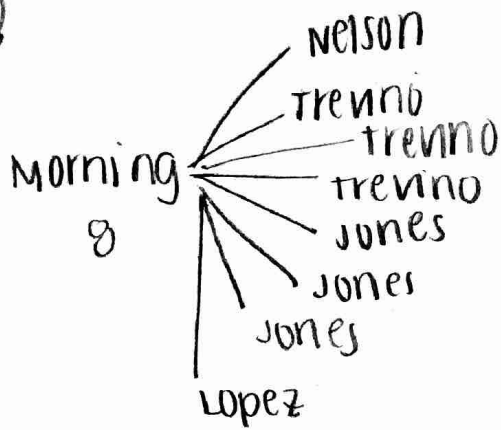
P(Nelson given morning) = $\frac{1}{8}$ = 12.5%
(if He asks for a morning class)

P(Nelson in the am) = $\frac{1}{15}$ = 6.7%