Name_____
Date_____

Advanced Algebra
Unit 7: Probability

You should be able to draw the Venn Diagram and list out your probabilities.

1) A class of 28 students were surveyed and asked if they ever had dogs or cats for pets at home.

8 students said they had only ever had a dog.

6 students said they had only ever had a cat.

10 students said they had a dog and a cat.

4 students said they had never had a dog or a cat."

2) A class of 28 students were surveyed and asked if they ever had dogs or cats for pets at home.

18 students said they had a dog.

16 students said they had a cat.

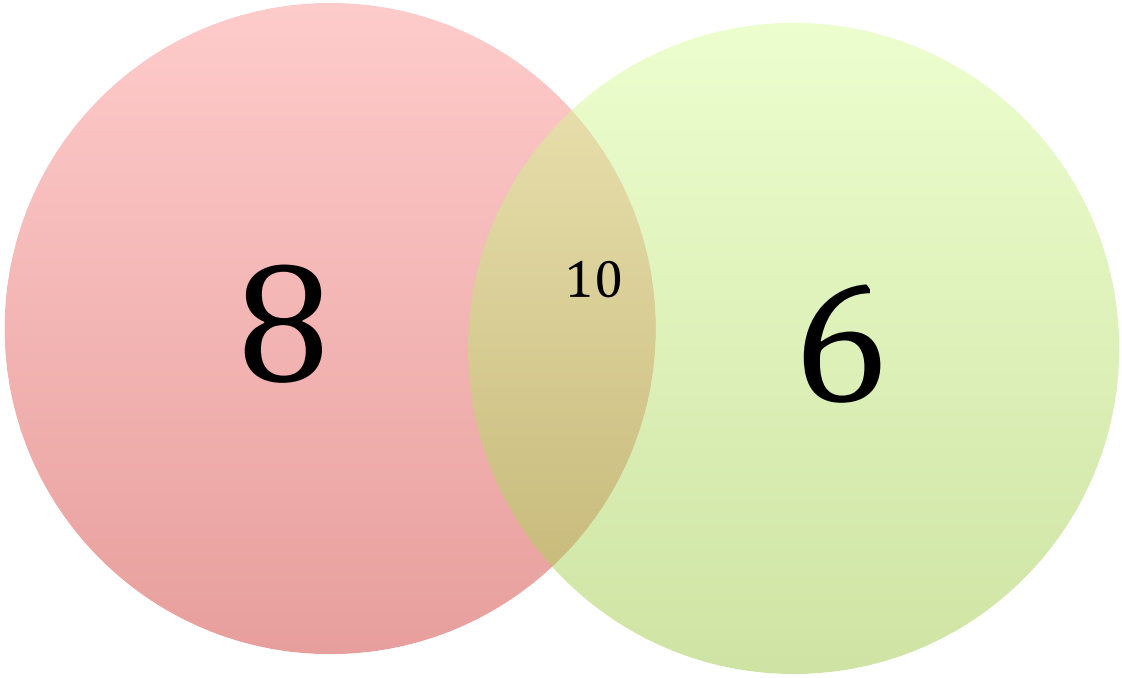
4 students said they had never had a dog or a cat."

3) In a class of 30 students, 19 are studying French, 12 are studying Spanish, and 7 are studying both. How many students are not taking any foreign language.

4) At a Breakfast buffet, 93 people chose coffee for their beverage and 47 chose juice. 25 people chose both coffee and juice. If each person chose at least one of these beverages how many people visited the buffet.

5) A group of 40 people were asked if they preferred basketball or football as their favorite sport . 4 of these people said neither of these sports were their favorite. 20 said that basketball was their favorite while 30 people said that they preferred football.

Solutions for problems 1-5:
1)



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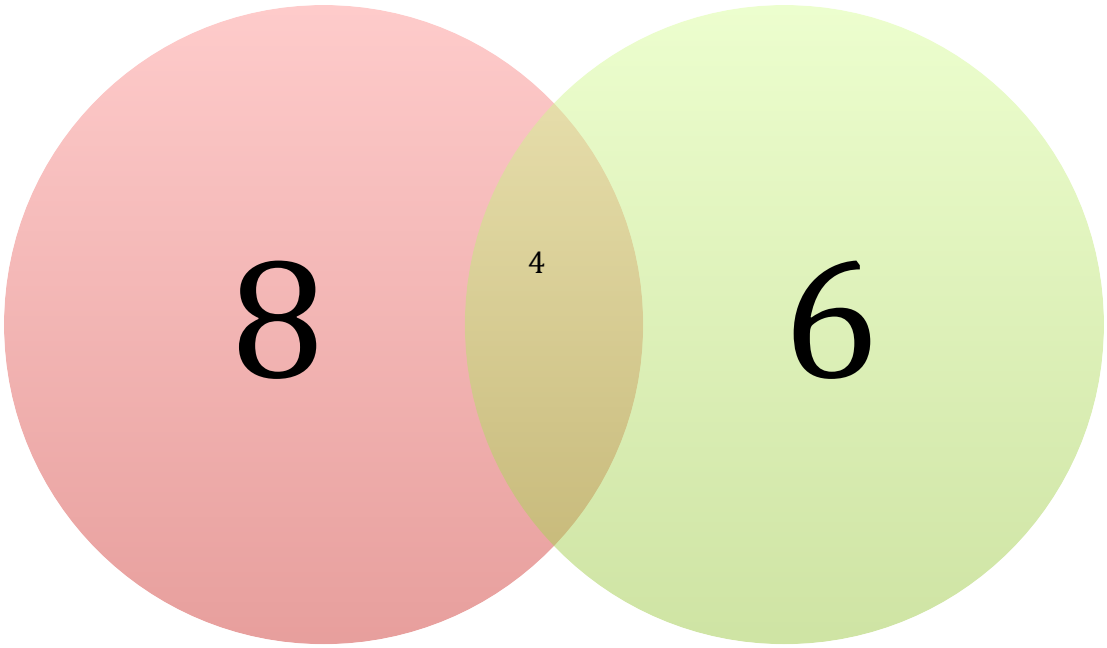

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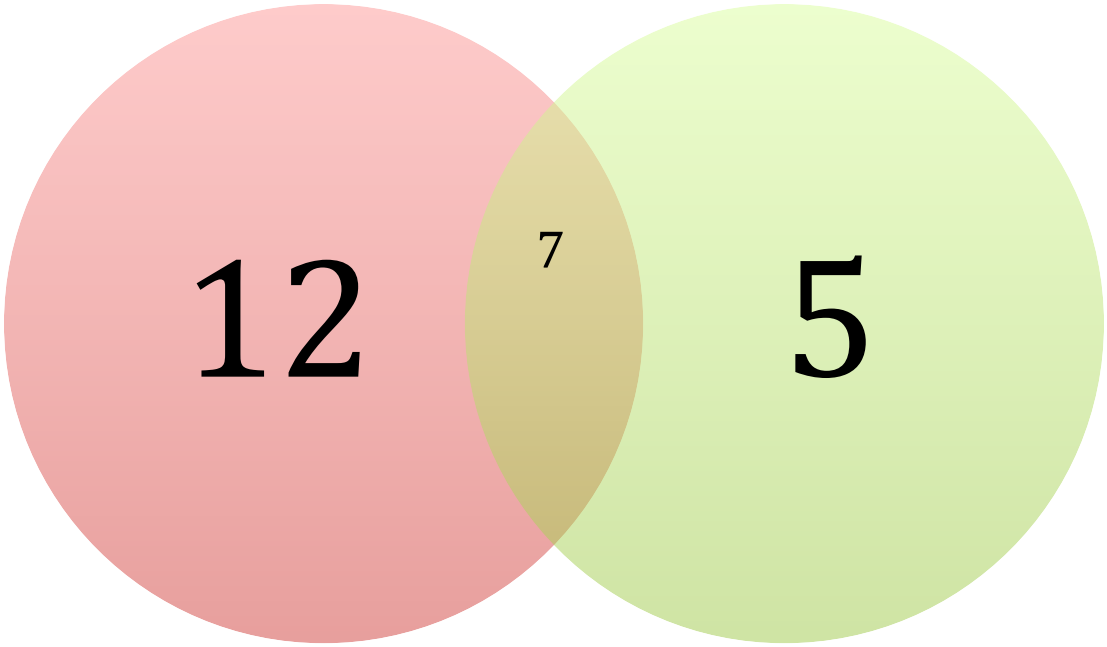

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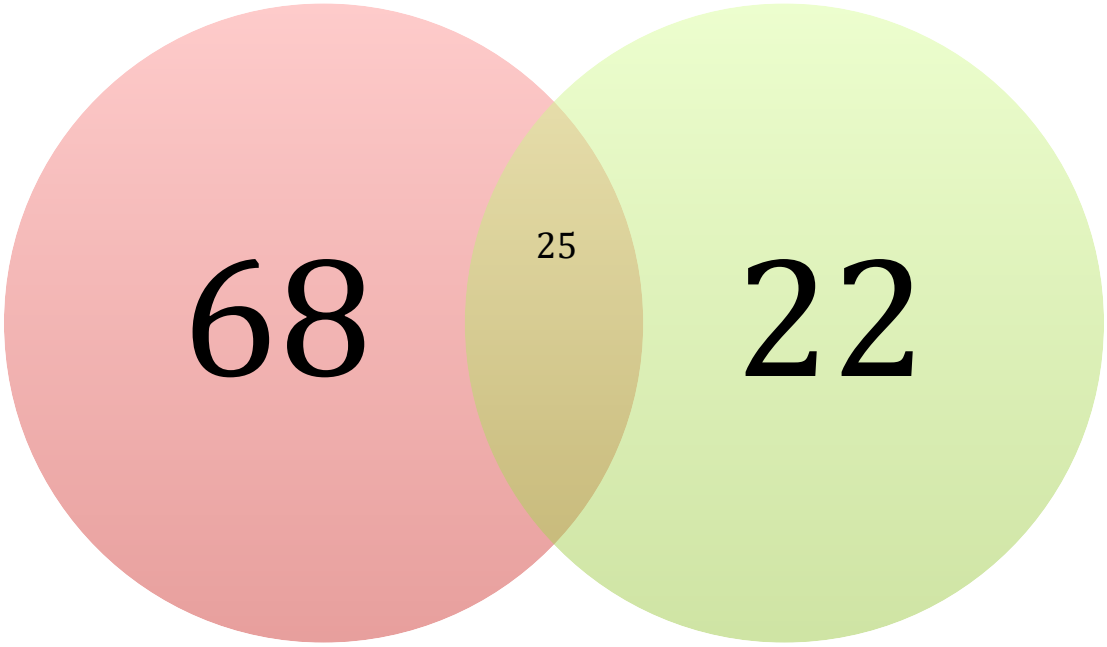

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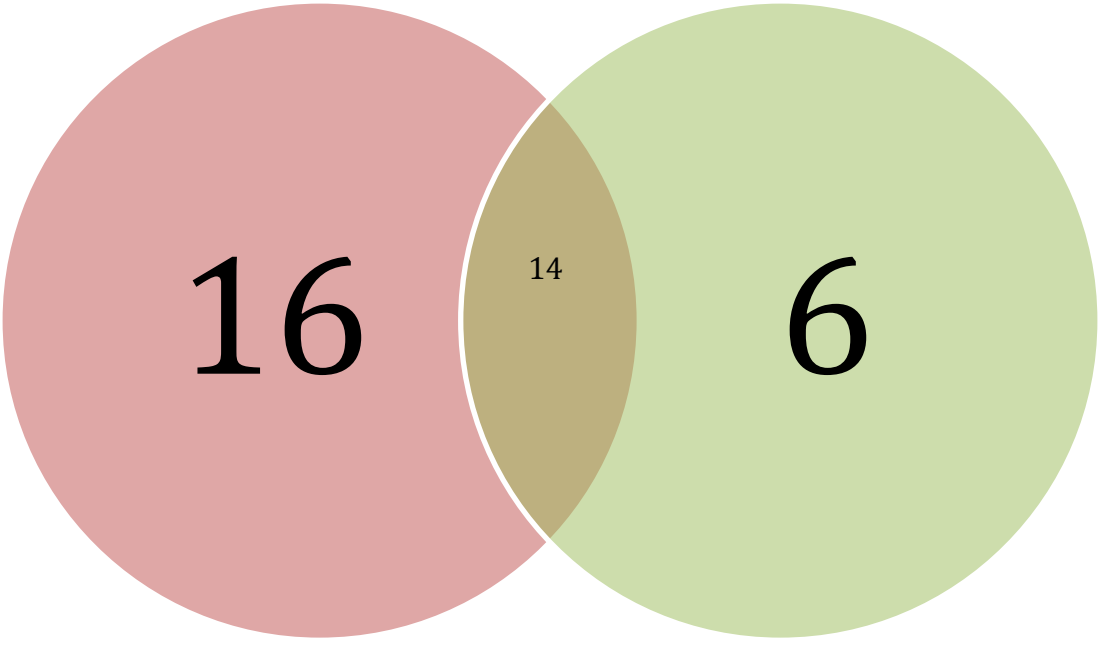

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Extra Practice:

1) Out of forty students, 14 are taking English and 29 are taking Chemistry. Five students are in both classes. Draw the Venn Diagram to represent this scenario.
2) In a class of 50 students, 18 take Chorus, 26 take Band, and 2 take both Chorus and Band. How many students in the class are not enrolled in either Chorus or Band?
3) In a school of 320 students, 85 students are in the band, 200 students are on sports teams, and 60 students participate in both activities. How many students are involved in either band or sports?

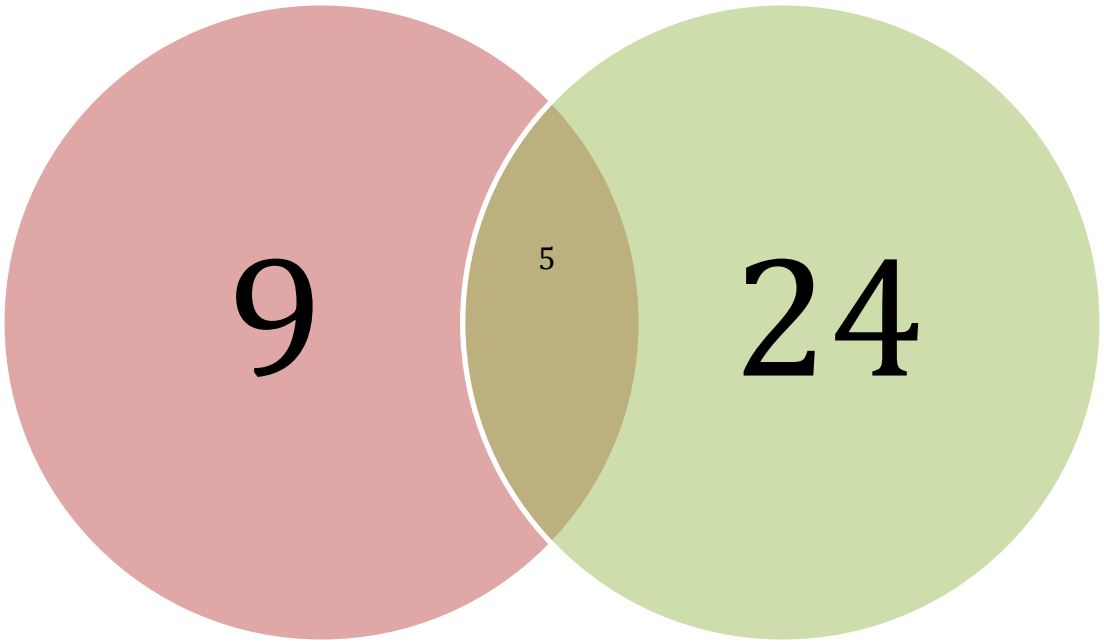
4) Suppose I discovered that my cat had a taste for the adorable little geckoes that live in the bushes and vines in my yard, back when I lived in Arizona. In one month, suppose he deposited the following on my carpet: six gray geckoes, twelve geckoes that had dropped their tails in an effort to escape capture, and fifteen geckoes that he'd chewed on a little. Only one of the geckoes was gray, chewed on, and tailless; two were gray and tailless but not chewed on; two were gray and chewed on but not tailless. If there were a total of 24 geckoes left on my carpet that month, and all of the geckoes were at least one of "gray", "tailless", and "chewed on", how many were tailless and chewed on but not gray?
5) A veterinarian surveys 26 of his patrons. He discovers that 14 have dogs, 10 have cats, and 5 have fish. Four have dogs and cats, 3 have dogs and fish, and one has a cat and fish. If no one has all three kinds of pets, how many patrons have none of these pets?
6) A guidance counselor is planning schedules for 30 students. Sixteen students say they want to take French, 16 want to take Spanish, and 11 want to take Latin. Five say they want to take both French and Latin, and of these, 3 wanted to take Spanish as well. Five want only Latin, and 8 want only Spanish. How many students want French only?
7) 100 people seated at different tables in a Restaurant were asked if their party had ordered any of the following items: Pepsi, chili, or quesadillas
    - 23 people had ordered none of these
    - 11 people had ordered all three of these items
    - 29 people had ordered Chili or quesadillas but did not order Pepsi
    - 41 people had ordered quesadillas
    - 46 people had ordered at least two of these items
    - 13 people had ordered Pepsi and quesadillas but had not ordered Chili
    - 26 people had ordered Pepsi and Chili
8) 150 people at concert were asked if they knew how to play piano, drums, or guitar
    - 18 people could play none of these instruments
    - 10 people could play all three of these instruments
    - 77 people could play drums or guitar but could not play piano
    - 73 people could play guitar

- 49 people could play at least two of these instruments
- 13 people could play piano and guitar but could not play drums
- 21 people could play piano and drums

9) 200 tennis players were asked which of these strokes they considered their weakest stroke, the serve, the backhand, the forehand.
   - 20 players said none of these were their weakest stroke
   - 30 players said all three of these were their weakest stroke
   - 40 players said their serve and forehand were their weakest strokes
   - 40 players said that only their serve and backhand were their weakest strokes
   - 15 players said that their forehand but not their backhand was their weakest stroke
   - 52 players said that only their backhand was their weakest stroke
   - 115 players said their serve was their weakest stroke.

Solutions:

1)



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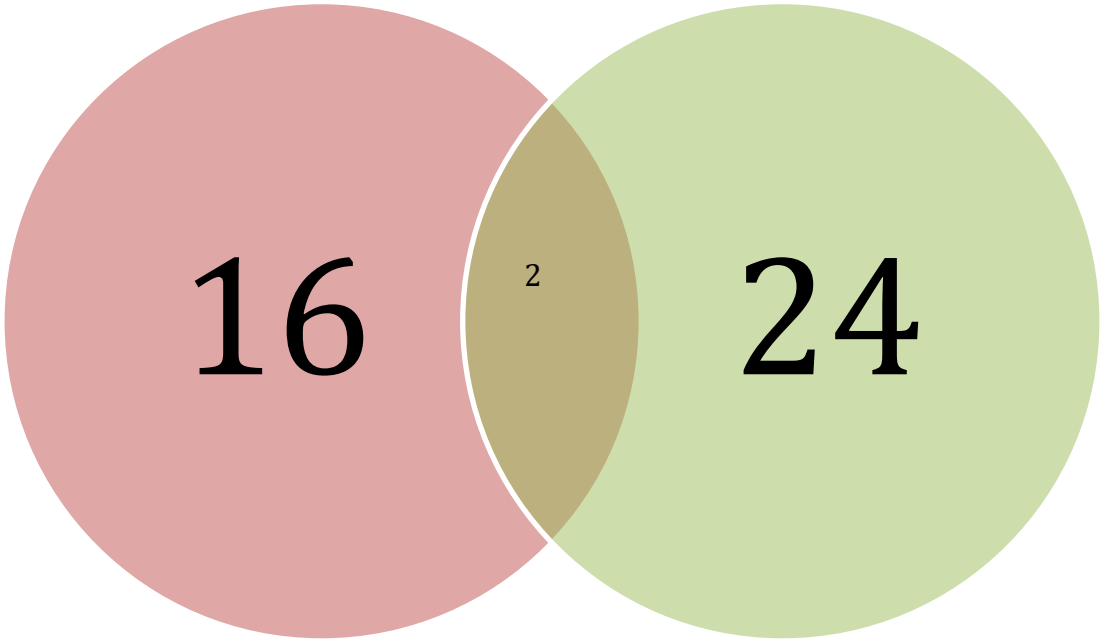
$P(E)=\frac{14}{40}$

$P(C) = \frac{29}{40}$ $P(E \cap C) = \frac{5}{40}$ $P(E \cup C) = \frac{38}{40}$

$P(E|C) = \frac{5}{29}$ $P(C|E) = \frac{5}{14}$

2)



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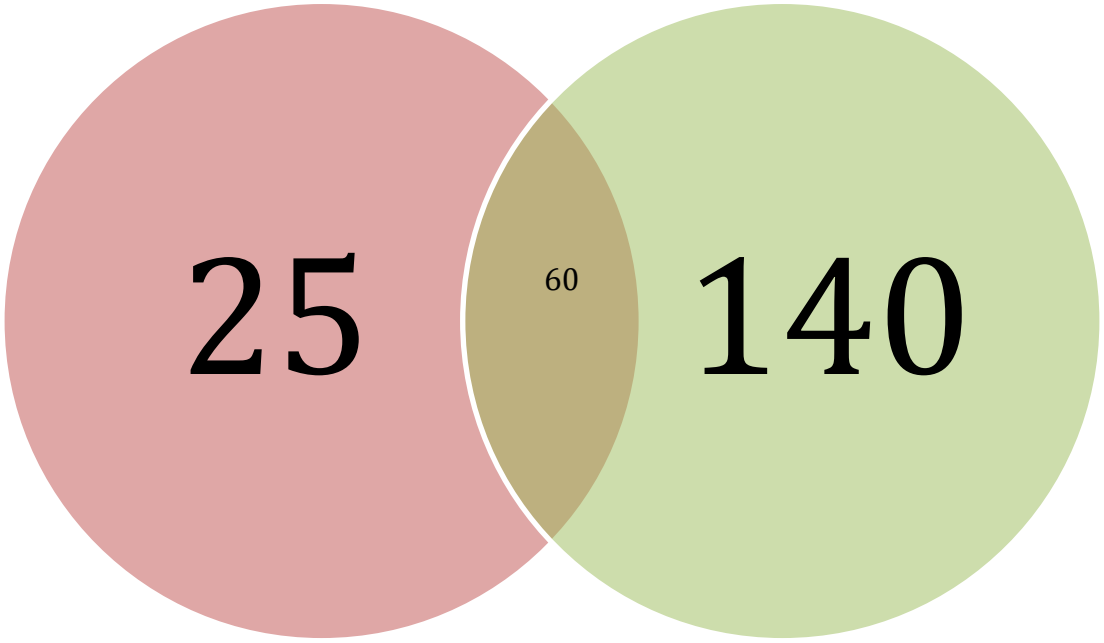
3)



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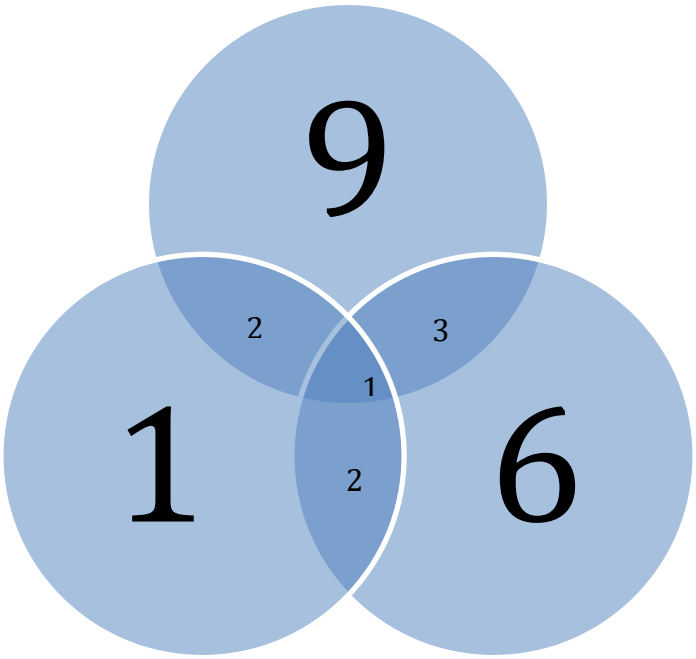
4)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2
3
1
1
2
6