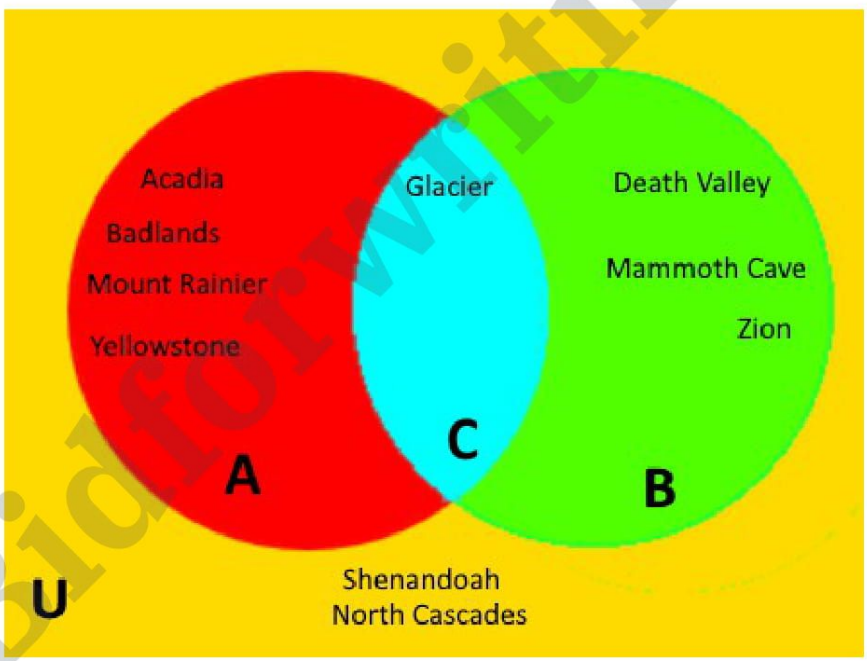
Mathematics Assignment

1. $\{January, June, July\}$;
2. *To be equal, each element should be the same, despite the order*. As we can see, none of the elements is equal, so these sets are not equal.

   To be equivalent, sets have to have an equal number of elements. In set A, the number of elements is 3, and in set B, the number of elements – 3. **So these sets are equivalent, but not equal.**
3. If the set contains 9 elements, the number of subsets will be 2^9
4. The service provides us with 6 features. According to (3), a number of subsets will be 2^6.
5. 

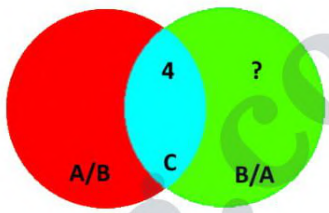
   $C = A \cap B$

6. In the instructions, we see only two groups of students: who visited student council and who visited intramurals. So let's divide them into two sets: A- visited student council and B – visited intramurals.

   Let's check, what's given in instructions and what should we find:

Red- A, Green – B and C – intersection.

Given:
$A \cup B = 46$
$A / B = 30$
$A \cap B = 4$
$B / A = ?$



Let's represent the information, like a math equation.

$A + B + C = 46;$

$A - C = 30;$

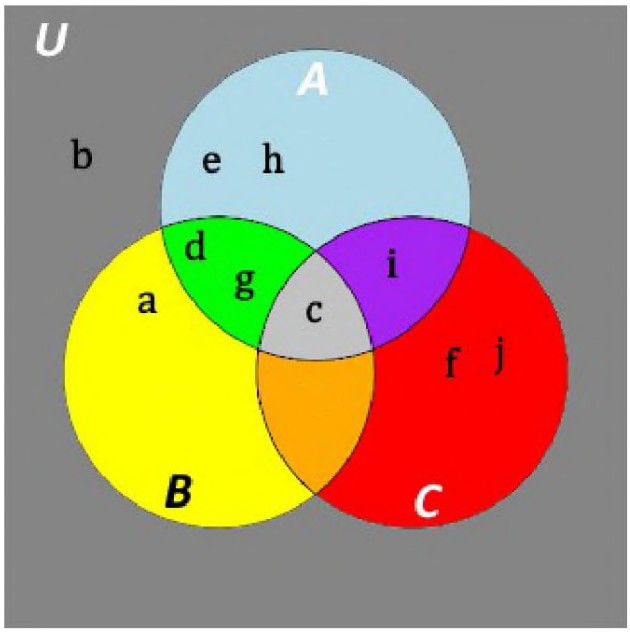
$C = 4;$

As we can see, we can solve the problem by solving a simple equation. Let's do it:

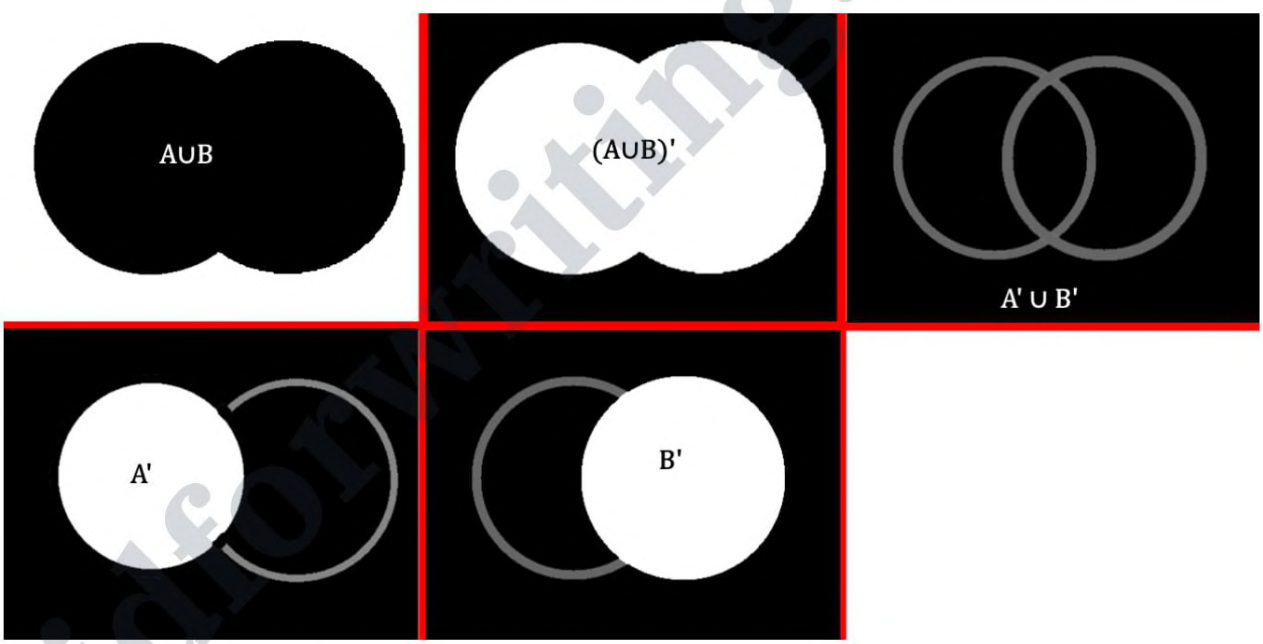
$A = 30 + C = 34;$

$B = 46 - A - C = 46 - 34 - 4 = 8$

So the answer is – eight students.

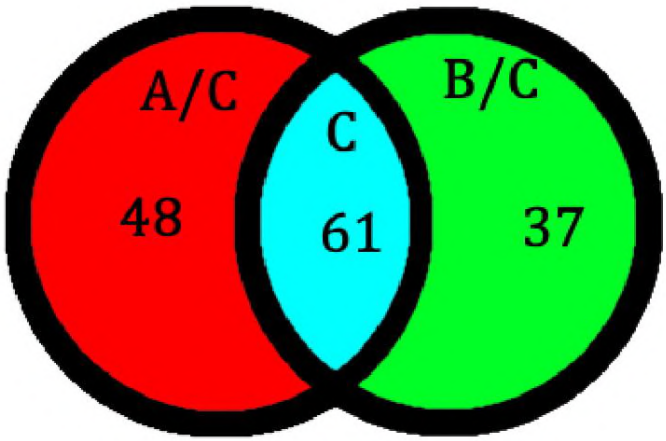
7. 

8.



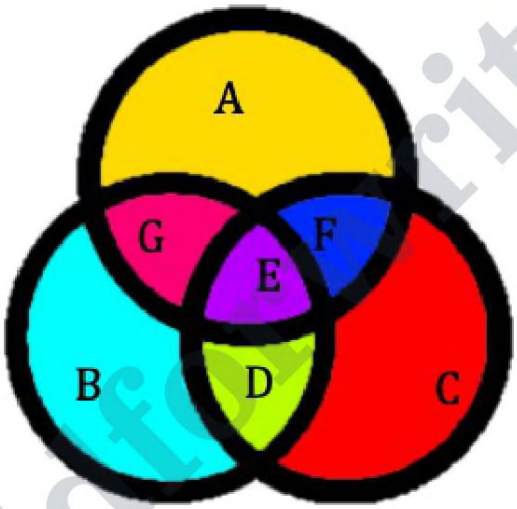
Explanation: Black areas are what is True and white (and grey) –false. Union of A' and B' is everything. Because A' covers everything, but A (same for B').

As you may see from diagrams, 2nd and 3rd in a first row are not equal, **so the statement is not equal.**



9.

A – pumpkins, B – pies. **As shown in the diagram, the result is 37.**



10.

Here we need to be careful with instructions.

A (whole circuit) – mysteries

B (whole circuit) – sci-fi

C (whole circuit) – romance

Let's do it as was shown in (6):

Given:

$$A+G+E+F=44$$
$$B+D+E+G=33$$
$$C+D+E+F=29$$
$$G+E=13$$
$$D+E=5$$
$$E+F=11$$
$$E=2$$

$$A+B+D+E+F+G=?$$

As we can see, we almost have an answer:

$$A+(B+D+E+G)+F=A+33+F=?$$

F can be calculated from the 6th equation. $F=11-E=11-2=9$

So now, we need to find A. Let's use the first equation:

$$A+G+E+F=44$$

$$A+(G+E)+F=A+13+9=44$$

$$A=44-13-9=22$$

Now, let's put everything together:

$$A+(B+D+E+G)+F=22+33+9=64$$

So the answer is – sixty-four customers.