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Problem 1:

a) Opinions:

Classmate 1:

- The battery lasts all day, which I love.
- The camera quality isn't as good as expected.
- It's okay for basic use.

Classmate 2:

- The screen resolution is fantastic.
- It's way too expensive for what it offers.
- The apps sometimes crash.

Classmate 3:

- The phone is very lightweight and easy to carry.
- The software is confusing to navigate.
- Overall, it's decent but not exceptional.

b) Raters:

Opinion	Rater 1	Rater 2	Rater 3
Battery lasts all day.	P	P	O
Camera not as good as expected.	N	N	N
Okay for basic use.	O	O	P
Screen resolution is fantastic.	P	P	P
Too expensive.	N	N	N
Apps crash.	N	N	O
Lightweight and easy to carry.	P	P	P
Software confusing.	N	O	O
Decent but not exceptional.	O	O	O

c) Kappa:

('kappa_12', 0.8333333333333334)

('kappa_13', 0.5)

('kappa_23', 0.6666666666666667)

d) Personally, I would just use Python's built-in function to calculate:

	Rater 1	Rater 2	Rater 3
Rater 1	1.000000	0.933257	0.777714
Rater 2	0.933257	1.000000	0.833333
Rater 3	0.777714	0.833333	1.000000

- **Rater 1** and **Rater 2** have a very strong positive correlation 0.93.
- **Rater 1** and **Rater 3** have a moderately strong positive correlation 0.78.
- **Rater 2** and **Rater 3** have a strong positive correlation 0.83.

This suggests that raters largely agree, but there are some differences, particularly involving Rater 3.

Problem 2:

Sentiment lists: SentiWordNet, NRC Word-Emotion Association Lexicon, LIWC-22

SentiWordNet:

- Positive: delight, encourage, brilliant, friendly, charming, prosper, admire, hope, secure, gentle
- Negative: cry, disrupt, danger, dull, ignorant, harm, worry, rejection, bleak, panic

NRC:

- Positive: happy, cheerful, love, success, sunshine, grateful, joy, celebration, peace, trust
- Negative: sad, angry, hate, failure, gloomy, regret, fear, pain, loss, betrayal

SentiWordNet Positive to Negative/Neutral:

1. Delight: I was delighted to find the sink full of dirty dishes.
2. Encourage: Your encouragement makes me change my opinion upside down.
3. Brilliant: His brilliant plan almost got us arrested.
4. Friendly: His friendly hatred got us confused.
5. Charming: The snake was so charming that we had to leave to find an antidote.
6. Prosper: Despite their best efforts, the business failed to prosper.

7. Admire: I admire your stupidity.
8. Hope: I hope he slips and breaks his leg.
9. Secure: I feel as secure as a plane crashing.
10. Gentle: He gently cut my finger off.

SentiWordNet Negative to Positive/Neutral:

1. Cry: I almost cry after hearing his kind words.
2. Disrupt: Sometimes, a little disruption can lead to innovative solutions.
3. Danger: He is as in danger as the most secure panic room.
4. Dull: A dull moment can be a perfect opportunity for reflection.
5. Ignorant: Being ignorant of a problem can sometimes be a blessing in disguise.
6. Harm: The harm he had on you was unseen.
7. Worry: Worrying about yourself shall bring you only good.
8. Rejection: The best thing that happened is the rejection from my brat ex.
9. Bleak: He was bleak right when I needed for someone to be.
10. Panic: After she kissed me, I panicked and kissed her again, which got me a wife.

NRC Positive to Negative/Neutral:

1. Happy: She was as happy as the day her father left.
2. Cheerful: He was cheerful enough to get his hopes too high up.
3. Love: She was in love with a serial killer.
4. Success: His success was just like the division graph for values >= 0.
5. Sunshine: The sunshine left her with major burns.
6. Grateful: He was so grateful for his toys that he threw them away.
7. Joy: I shouldn’t have had encountered the joy he brought upon myself.
8. Celebration: The celebration was too early.
9. Peace: Peace got me k**led.
10. Trust: That level of trust was expected from a traitor.

NRC Negative to Positive/Neutral:

1. Sad: Me, sad, on what universe?
2. Angry: I was as angry as my dad’s friendly dog.
3. Hate: I hate how good this looks on you.
4. Failure: Your doctor son must be your biggest failure.
5. Gloomy: A gloomy day is a perfect time for creativity.
6. Regret: I regret to inform you that we’ll give you a bigger salary, not the one expected.
7. Fear: The fear of mediocrity drove her to excel in her studies.
8. Pain: She learned valuable lessons from the pain of heartbreak.

9. Loss: I experienced the loss of only the things that needed to be lost.
10. Betrayal: Betrayal can lead to a deeper understanding of oneself.

The idea is that most of them are ironically speaking or in a opposite sense speaking or neutral in the sense that you don't know the inside context of something.

Problem 3:

a) Reduces the noise in the dataset, focusing more on words that give an actual representation of the sentiment.
b) But something weird is happening, only for the smaller dataset works, not the bigger one for some reason, maybe because there is less data to train and test on.

```
Using all words as features, train on 29 instances, test on 10 instances
accuracy: 0.5
pos precision: 0.2
pos recall: 0.5
neg precision: 0.8
neg recall: 0.5
Most Informative Features
                       . = None              pos : neg    =      4.2 : 1.0
                      an = True              pos : neg    =      4.2 : 1.0
                    even = True              pos : neg    =      4.2 : 1.0
                      go = True              pos : neg    =      4.2 : 1.0
                    he's = True              pos : neg    =      4.2 : 1.0
                  movies = True              pos : neg    =      4.2 : 1.0
                      or = True              pos : neg    =      4.2 : 1.0
                   rings = True              pos : neg    =      4.2 : 1.0
                    than = True              pos : neg    =      4.2 : 1.0
                      is = True              pos : neg    =      2.7 : 1.0
Using filtered words as features, train on 29 instances, test on 10 instances
accuracy: 0.6
pos precision: 0.25
pos recall: 0.5
neg precision: 0.8333333333333334
neg recall: 0.625
Most Informative Features
                       . = None              pos : neg    =      4.2 : 1.0
                    even = True              pos : neg    =      4.2 : 1.0
                      go = True              pos : neg    =      4.2 : 1.0
                    he's = True              pos : neg    =      4.2 : 1.0
                  movies = True              pos : neg    =      4.2 : 1.0
                   rings = True              pos : neg    =      4.2 : 1.0
                    make = True              pos : neg    =      2.5 : 1.0
                   movie = True              pos : neg    =      2.5 : 1.0
                     one = True              pos : neg    =      2.5 : 1.0
```

```
Using all words as features, train on 7998 instances, test on 2666 instances
accuracy: 0.77344336084021
pos precision: 0.7881422924901186
pos recall: 0.7479369842460615
neg precision: 0.7601713062098501
neg recall: 0.7989497374343586
Most Informative Features
              engrossing = True              pos : neg    =     17.0 : 1.0
                   quiet = True              pos : neg    =     15.7 : 1.0
                mediocre = True              neg : pos    =     13.7 : 1.0
               absorbing = True              pos : neg    =     13.0 : 1.0
                portrait = True              pos : neg    =     12.4 : 1.0
                   flaws = True              pos : neg    =     12.3 : 1.0
               inventive = True              pos : neg    =     12.3 : 1.0
              refreshing = True              pos : neg    =     12.3 : 1.0
            refreshingly = True              pos : neg    =     11.7 : 1.0
                 triumph = True              pos : neg    =     11.7 : 1.0
Using filtered words as features, train on 7998 instances, test on 2666 instances
accuracy: 0.7618154538634658
pos precision: 0.7612275449101796
pos recall: 0.7629407351837959
neg precision: 0.762406015037594
neg recall: 0.7606901725431358
Most Informative Features
              engrossing = True              pos : neg    =     17.0 : 1.0
                   quiet = True              pos : neg    =     15.7 : 1.0
                mediocre = True              neg : pos    =     13.7 : 1.0
               absorbing = True              pos : neg    =     13.0 : 1.0
                portrait = True              pos : neg    =     12.4 : 1.0
                   flaws = True              pos : neg    =     12.3 : 1.0
               inventive = True              pos : neg    =     12.3 : 1.0
              refreshing = True              pos : neg    =     12.3 : 1.0
            refreshingly = True              pos : neg    =     11.7 : 1.0
                 triumph = True              pos : neg    =     11.7 : 1.0
```