Assignment 1

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Question 1:

a) Symmetric

b) 15 percent

c) smallest: -50%

   largest: 60%.

d) 37.5%.

Question 2:

a)
without splitting stems:

```
4 | 9
5 | 3 6 6 6 8 8 8 9
6 | 1 1 1 2 3 5 5 6 7 7 7 8 8 9
7 | 0 0
```

with splitting stems:

```
4 | 9
5 | 3
5 | 6 6 6 8 8 8 9
6 | 1 1 2 3
6 | 5 6 7 7 7 8 8 9
7 | 0 0
```

I prefer the one with splitting stems. Because there're too many data on one single stem.

b) shape: right-skewed.
   There's no outlier.

c) mean $= (65+61+67+59+58+62+56+67+61+67+63+53+68+49$
$+66+58+69+70+65+56+68+56+58+70)/24$
$= 59.375.$

  median $= (62+63)/2 = 62.5.$

d) $Q_1 = (58+58)/2 = 58$
   $Q_3 = (67+67)/2 = 67.$

e) Yes. Because medium is larger than mean.

Question 3:

mean $= (29+35+33+29+29+34+29+30+29+28)/10$
$\text{s} \quad\quad = 30.5.$

standard deviation $= [(29-30.5)^2+(35-30.5)^2+(33-30.5)^2+(29-30.5)^2+$
$(29-30.5)^2+(34-30.5)^2+(29-30.5)^2+(30-30.5)^2+$
$(29-30.5)^2+(28-30.5)^2]/10$
$= (2.25+20.25+6.25+0.25+2.25+2.25+12.25+2.25+$
$0.25+2.25+6.25)/10$
$= 5.625.$

Question 4:

Percent of colors
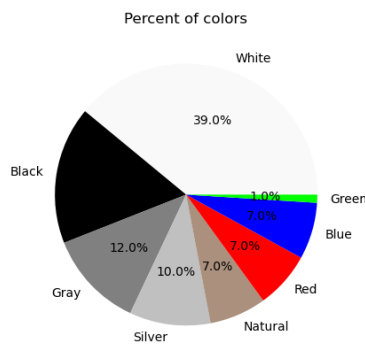
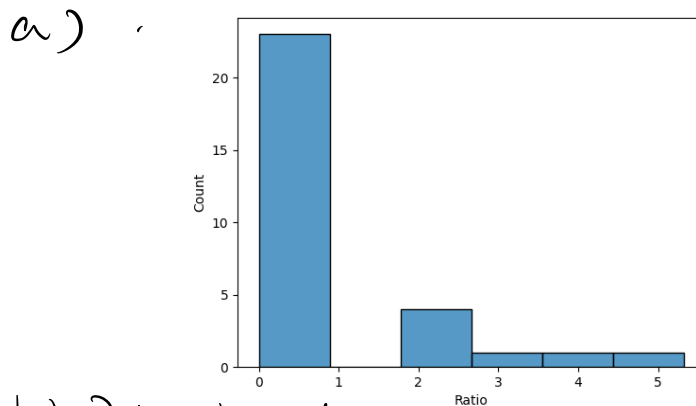## Question 5:

a) The usage keeps stable from 2011 to 2015, then falls in 2016 and 2017, grows in 2018

b)
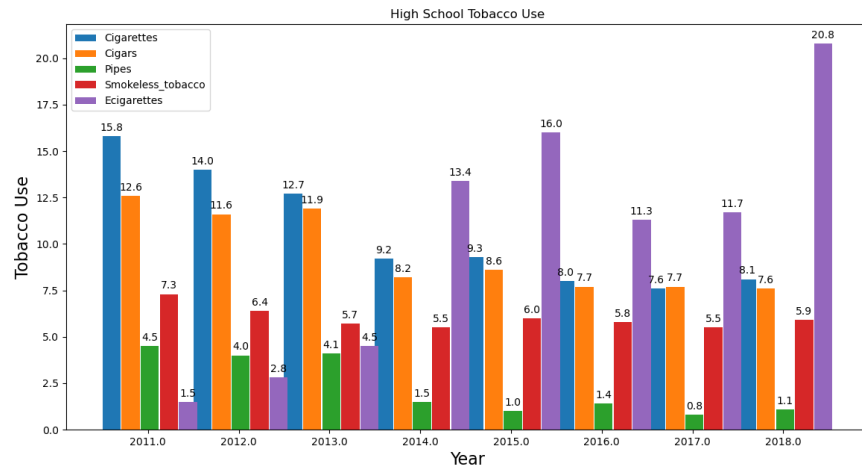
c) Tobacco, Cigars and pipes steady decrease, while smokeless tobacco keeps stable and Ecigarettes use steady increase.
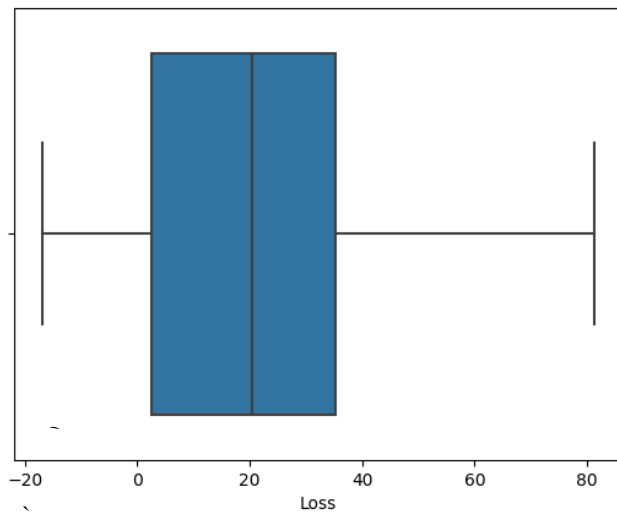
Question 6:

a)

b) Right-skewed.

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Most modern food oils are not healthy.

Question 7.

a) The weight of the subject grows after this study

b) · Gastric banding is more effective than lifestyle intervention.

c) No. The benefit one would have from losing weight depends on his/her initial weight. The advantage of BMI is that it takes into account of one's initial weight.