Python Lab 8 Solutions

Question 1.

    (a) Number of unique items

```
print(fruit.item.nunique())
```

       Output:
       27

    (b) Common items between countries.

```
spain = set(fruit.query("country=='Spain'").item)
uk = set(fruit.query("country=='UK'").item)
print(spain.intersection(uk))
```

       Output:
       {'Pears', 'Currants', 'Gooseberries', 'Apples', 'Plums and sloes',
       'Strawberries', 'Grapes', 'Cherries', 'Raspberries'}

    (c) Area by country and area by item

```
AAA = fruit.query("year==2019")
# Total area by country
BBB = AAA.groupby('country')
area_by_country = BBB['area'].sum()
# Total area by item
CCC = AAA.groupby('item')
DDD = CCC['area'].sum()
area_by_item = DDD.sort_values(ascending=False)
```

Output:
```
Spain      1497270.0
UK           27924.0

Grapes                                           937108.0
Oranges                                          140310.0
Tangerines, mandarins, clementines, satsumas     105580.0
Peaches and nectarines                            77700.0
Lemons and limes                                  46840.0
Apples                                            45580.0
Cherries                                          28236.0
Pears                                             22135.0
Watermelons                                       21460.0
Apricots                                          20240.0
Plums and sloes                                   15435.0
Figs                                              14600.0
Avocados                                          14100.0
Strawberries                                      12034.0
Bananas                                            9060.0
Blueberries                                        4030.0
Raspberries                                        3914.0
Currants                                           2536.0
Grapefruit                                         2430.0
Kiwi fruit                                         1550.0
Gooseberries                                        186.0
Cherries, sour                                      130.0
```

(d) Strawberries

```
AAA = fruit.query( "item=='Strawberries'" )

BBB = AAA.pivot(index= 'year' , columns= 'country' ,values= 'yield' )

CCC = BBB.reset_index()

plt.figure()

CCC.plot.line(x='Year',y= ['Spain','UK'] )

plt.show()
```

(e) Yield in UK

```
FFF = fruit.query("country=='UK'")
plt.figure()
FFF.boxplot(column='yield',by='item')
plt.title('Yearly fruit yield (kg/hectare) in the UK (1961-2019)')
plt.suptitle('')   # not necessary
plt.xticks(rotation=60)
plt.show()
```

Yearly fruit yield (kg/hectare) in the UK (1961-2019)