**Tutorial 1**

**1)**

Books: https://www.goodreads.com/

Horse racing: https://www.ascot.com/

Stock prices: https://uk.finance.yahoo.com/

Risks of diseases: CDC

College & Universities: Guardian Uni Guide

Crime rates: Police records

**3)**

Credit card billing data - what day to people spend the most money on?

Click data from amazon - what product descriptions are the most attractive to customers?

White Pages tele-directory - what is the average sum of digits of phone numbers?

**4)**

Blindfold all your friends.

Make them drink a glass of water.

Make them drink some coke & diet coke in different order for each.

Separately ask them which they preferred.

Removed blindfolds.

**5)**

Get 300 students using a stratified sample.

Make them sit numeracy and literacy tests to assess their intelligence.

Split into 3 equal groups.

Assign topic all have no knowledge of

Make them study it for a week, one group music with lyrics, one group instrumental, and one group silence.

At the end of the week make the students take a test.

Cross reference scores of tests with intelligence.

**6)**

Natural number: 1

Integer: -2

Rational number: 3.5

Irrational number: sqrt(2)

**7)**

(a) 7 + 10 = 10 + 7 - commutative

(b) 2(3 + 5) = (3 + 5)2 - associative

(c) (x + 2y) + 3z = x + (2y + 3z) - associative

(d) (3 · a) · c = 3 · (a · c) - associative

(e) (x + a)(x + b) = (x + a)x + (x + a)b - distributive

**8)**

3x+3y

8a-8b

28y-14x

3ab+3ac-6ad

**9)**

17/30

9/20

3

1/36

Verified using:

def fractionAdder(n1,d1,n2,d2):

    primeNumbers = [2,3,5,7,9,11,13,17,19,23,29]

    d3=d1\*d2

    n1a=n1\*d2

    n2a=n2\*d1

    n3=n1a+n2a

    for i in range(int(d3\*\*0.25)):

        print(f"{i}: {n3} / {d3}")

        for i in primeNumbers:

            if ((d3/i) == int(d3/i)) and ((n3/i) == int(n3/i)):

                d3 = d3/i

                n3 = n3/i

    return n3, d3

**11)**

100

0.25

-1

12

2

1

**13)**

a. 109.9884

b. 48.36

c. 30.24

d. 42313990.36