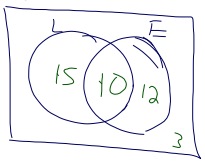
G) In a group of 40 students, 22 study Economics, 25 study Law, and 3 study neither of these subjects. Determine the probability that a randomly chosen student studies:

a both Economics and Law $\frac{10}{40}$ **b** at least one of these subjects $\frac{37}{40}$

c Economics given that he or she studies Law. $\frac{10}{25}$

40



$40 - 3 = 37$ $22 + 25 = 47$

$47 - 37 = 10$

A group of businesses were asked whether they had increased or decreased their number of employees in the last year.

a Find the probability that a business with 10-19 employees grew in the previous year.

b Find the probability that a business that increased in size had 10-99 employees.

c Find the probability that a randomly selected business decreased in size over the previous year.

Number of employees	Decreased	Stayed the same	Increased
1-4	26	168	25
5-9	19	41	3
10-19	23	9	7
20-99	20	2	14
100-499	6	0	6
500+	14	0	19
Total	108	220	74

a) $\frac{7}{39}$ b) $\frac{21}{74}$ c) $\frac{108}{108+220+74}$ $\frac{108}{402}$

H) Use the following letters to fill in Venn Diagram: N, R, Z, Q

N = Naturals

R = Reals

Z = Integers

Q = Rationals

I) For the data set given, find using technology:

a the minimum value 6 **b** the maximum value 28

c the median 15 **d** the lower quartile (Q_1) = 12

e the upper quartile (Q_3) = 21 **f** the range $Max - Min = 22$

g the interquartile range. $Q_3 - Q_1 = 9$

15	22	19	8	14	11
12	25	20	10	9	16
24	21	15	12	28	13
26	19	11	14	6	18
22	14	13	20	25	10

1) STAT → EDIT (entered data)

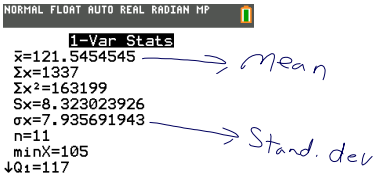
2) STAT → CALC → 1VAR STAT

```
NORMAL FLOAT AUTO REAL RADIAN MP
        1-Var Stats
x̄=16.4
Σx=492
Σx²=9084
Sx=5.916662619
σx=5.817215829
n=30
minX=6
↓Q1=12
```

```
NORMAL FLOAT AUTO REAL RADIAN MP
        1-Var Stats
↑Sx=5.916662619
 σx=5.817215829
 n=30
 minX=6
 Q1=12
 Med=15
 Q3=21
 maxX=28
```

Find, using your calculator, the mean and standard deviation of these sets of data:

a 117, 129, 105, 124, 123, 128, 131, 124, 123, 125, 108



mean

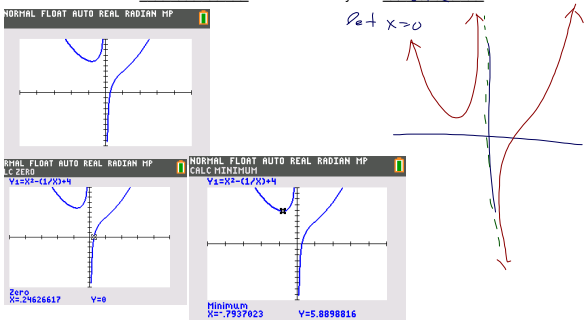
Stand. dev

J) Given graph of $y = x^2 - 1/x + 4$

Find Turning point: (-.794, 5.89) Asymptotes: $X=0$

Zero's: .246 y -int: none

Ret $x>0$



K) Use line M as the given equation $9x - 3y = 6$ and the point P as coordinates (2, 4)

$9(2)-3(4)=6$

$18-12=6$

Is P on M? Yes Find the gradient of M: 3 (solve for y)

$-3y = -9x + 6$

$y = 3x - 2$

What is the gradient of a line that is, parallel to M 3, perpendicular to M, $-\frac{1}{3}$.

slope

Find equation of line that is ~~parallel~~ to M and passes through point P. _____

parallel line

$y = 3x - 4$

1 line

$y = -\frac{1}{3}x + b$

$4 = -\frac{1}{3}(2) + b$

$4 = -\frac{2}{3} + b$

$\frac{14}{3} = b$

$y = -\frac{1}{3}x + \frac{14}{3}$

L) Identify the following from the given parabola $y = -2x^2 - 4x + 3$

Direction of opening: Down Axis of Symmetry: $X = -1$ Vertex: $(-1, 5)$

$x = \frac{-b}{2a}$

$x = \frac{4}{2(-2)}$

$= \frac{4}{-4}$

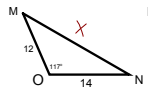
$x = -1$

$y = -2(-1)^2 - 4(-1) + 3$

$y = -2 + 4 + 3$

$y = 5$

M) Given triangle MNO



Find MN: 22.2

SAS

L.O.C.

$x^2 = 12^2 + 14^2 - 2(12)(14)\cos 117$

$x = \sqrt{492.54\ldots}$

$x = 22.19$

Find Area of triangle MNO: 74.8

$\text{Area} = \frac{1}{2}ab\sin C$

$\text{Area} = \frac{1}{2}(12)(14)\sin 117$

N) Solve for x $20(5)^x = 100$

$5^x = 5$

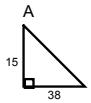
$\ln 5^x = \ln 5$

$x\ln 5 = \ln 5$

$\frac{x\ln 5}{\ln 5} = \frac{\ln 5}{\ln 5}$

$x = 1$

O) Find the measure of <A



$\tan A = \frac{38}{15}$

$A = \tan^{-1}\left(\frac{38}{15}\right)$

$A = 68.46$