

STATISTICS

MEAN = AVERAGE

MEDIAN = MIDDLE

MODE = MOST COMMON

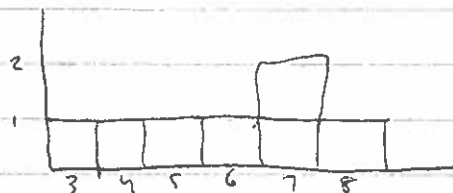
3, 4, 5, 6, 7, 7, 8

MEAN = $\frac{40}{7} = 5.71$

MEDIAN = 6

MODE = 7

HISTOGRAM :



EX 1 (272-274)

FRONTS	TREES	F x T	CUM FREQ	MEAN = $\frac{245}{50} = 4.9$
1	2	2	2	
2	3	6	5	MEDIAN = AVE of 25, 26
3	6	18	11	= 5
4	11	44	22	MODE = 6
5	8	40	30	
6	12	72	42	
7	5	35	47	HISTOGRAM
8	0	0	47	
9	2	18	49	
10	1	10	50	
	<u>50</u>	<u>245</u>		

USE
HANDOUT

Example 2

The following are 20 random numbers from 0.3 through 0.7 generated by a computer program:

0.6	0.3	0.4	0.7	0.7
0.6	0.4	0.5	0.5	0.3
0.3	0.3	0.5	0.6	0.6
0.5	0.3	0.4	0.3	0.4

- Plot a histogram of the data.
- Find the mean.
- Find the median.
- Find the mode.

Example 3

The following are grades of 60 students who took a precalculus test:

86	85	72	70	80
82	87	65	77	83
81	82	73	80	60
79	82	88	73	79
72	73	73	80	66
82	90	75	87	75
81	73	65	76	82
84	99	80	76	84
91	77	67	76	78
83	97	70	49	75
63	78	81	88	78
74	77	73	73	79

- Group the data into classes of 10 from 40 to 49, 50 to 59, and so on, and plot a histogram of the classes.
- Which class is the mode?
- In which class does the median grade occur?
- The mean can be estimated quickly by assuming that each grade in a class is the average of the possible grades in that class. For example, the class 70–79 has an average of 74.5. Estimate the mean using the classes.
- Find the actual mean of the grades and compare it to the estimate in part (d).

NAME _____

TRIG
9.2 / 9.3
NOTES

fronds	trees					
1	2					
2	3					
3	6					
4	11					
5	8					
6	12					
7	5					
8	0					
9	2					
10	1					
mean				variance		
median				standard dev.		
mode						
number	frequency					
0.3						
0.4						
0.5						
0.6						
0.7						
mean						
median						
mode						
class	frequency	representative				
40s		number				
50s						
60s						
70s						
80s						
90s						
mean						
median						
mode						
actual mean						

fronds	trees	F x T	CUM FREQ	DEV	DEV ²	TREES x DEV ²
1	2	2	2	-3.9	15.21	30.42
2	3	6	5	-2.9	8.41	25.23
3	6	18	11	-1.9	3.61	21.66
4	11	44	22	-.9	.81	8.91
5	8	40	30	.9	.81	8.91
6	12	72	42	1.1	1.21	14.52
7	5	35	47	2.1	4.41	22.05
8	0	0	47	3.1	9.61	0
9	2	18	49	4.1	16.81	33.62
10	1	10	50	5.1	26.01	26.01
TOT	50	245				182.50
mean	245 ÷ 50	4.9		VARIANCE	182.50 ÷ 50	3.65
median	25/26	5		STANDARD DEV	√3.65	1.91
mode		6				
number	frequency	# x FREQ	CUM FREQ			
0.3	6	1.8	6			
0.4	4	1.6	10			
0.5	4	2.0	14			
0.6	4	2.4	18			
0.7	2	1.4	20			
TOT	20	9.2				
mean	9.2 ÷ 20	.46				
median	10/11	.45				
mode		.3				
class	frequency	representative number	FREQ x REP	CUM FREQ		
40s	1	44.5	44.5	1		
50s	0	54.5	0	1		
60s	6	64.5	387	7		
70s	27	74.5	2011.5	34		
80s	22	84.5	1859.0	56		
90s	4	94.5	378.0	60		
TOT			4680			
mean	4680 ÷ 60	78				
median	30/31	70.5				
mode	70s	70.5				

ACTUAL AVG = 77.73

↓
1 2 3 4

40

↓
49

276:1-8

DEVIATION = DIFFERENCE FROM MEAN

VARIANCE = AVG OF SQUARES OF DEVIATIONS

STANDARD DEVIATION = $\sigma = \sqrt{\text{VARIANCE}}$

#	DEVIATION	DEVIATION ²
EX1) 78	4.6	21.16
83	.4	.16
96	13.4	179.56
75	7.6	57.76
81	1.6	2.56
		<u>261.20</u>

413

MEAN = $413/5 = 82.6$

VARIANCE = $261.20/5 = 52.24$

$\sigma = 7.228$

USE HANDOUT

Exam #	Times	FXT	DEV	DEV ²	Times x DEV ²
EX2) 1	2	2	3.9	15.21	30.42
2	3	6	2.9	8.41	25.23
3	6	18	1.9	3.61	21.66
4	11	44	.9	.81	8.91
5	8	40	.9	.81	.81
6	12	72	1.1	1.21	14.52
7	5	35	2.1	4.41	22.05
8	0	0	3.1	9.61	0
9	2	18	4.1	16.81	33.62
10	1	10	5.1	26.01	26.01
	<u>50</u>	<u>275</u>			<u>182.50</u>

MEAN = $275/50 = 4.9$

VARIANCE = $182.50/50 = 3.65$

$\sigma = 1.910$

280:1-8

TRIG

9.4

280:1-8

THE NORMAL DISTRIBUTION
(BELL CURVE)

P 283

TABUS ON 284-285 TALKS WHAT % OF THE GRAPH IS
TO THE LEFT OF THE # (DETERMINED BY # OF σ AWAY
FROM MEAN TO ME)

P 285: EX

h) SHOW ME "LEGS" (IN SOME BOOKS BUT OTHERS ARE OK)

285:7-12

285:7-14

PQ

Q

<i>z</i>	<i>u</i>	1	2	3	4	5	6	7	8	9
.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5733
.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817

Mosteller, Rourke & Thomas, Probability with Statistical Applications, © 1970, Addison-Wesley, Reading, MA. Reprinted with permission.

z*-Scores for Large Values of *z

<i>z</i>	<i>P(z)</i>	<i>z</i>	<i>P(z)</i>
2.1	.98214	2.8	.99744
2.2	.98610	2.9	.99813
2.3	.98928	3.0	.99865
2.366	.99000	3.090	.99900
2.4	.99810	3.5	.999767
2.5	.99379	4.0	.9999683
2.576	.99500	4.5	.99999660
2.6	.99534	5.0	.999999713
2.7	.99653		

Name _____

Trig Practice Test, Chapter 9

1. (7 points) Find the mean, median, mode, variance, and standard deviation of

3 4 4 5 5 5 6 6 7 7 8 9

2. (7 points) The table below represents the number rolled on a die in 50 trials. Find the mean, median, mode, variance, and standard deviation

roll	frequency
1	7
2	8
3	9
4	9
5	10
6	7

3. (5 points) Find the mean, variance, and standard deviation of 56, 59, 62, 68, and 74

4. (5 points) Take these exam scores, group them into classes. Find the mean, median, and mode.

74	45	55	68	59
98	98	87	89	98
84	45	56	66	75
55	53	83	59	59
64	86	85	86	98
87	78	75	68	59

5. (11 points) A set of 300 values is normally distributed with a mean of 70 and a standard deviation of 8.

If a value is picked at random, what is the probability that it is less than ~~80~~¹⁰²?

more than 90?

less than 50?

more than 55?

between 50 and ~~100~~¹⁰²?

How many of the values are expected to be at or below 80?

above 85?

at or below 60?

between 60 and 80?

What percent of the values are expected to be within 2 standard deviations of the mean?

Within what interval about 70 should 99% of the values lie?