Unit 8 Test Review ANSWERS

1) a) Inferential
b) Descriptive
c) Descriptive
d) Descriptive
e) Inferential
f) Inferential
g) Descriptive
h) Inferential

2) a) Quantitative
b) Qualitative
c) Quantitative
d) Quantitative
e) Qualitative
f) Quantitative
g) Qualitative

3) a) Discrete
b) Continuous
c) Continuous
d) Continuous
e) Discrete
f) Discrete
g) Continuous

4) a) Cluster
b) Systematic
c) Random
d) systematic
e) stratified

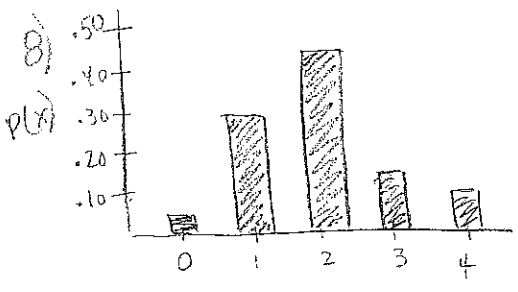
5) a) Experimental
b) Observational
c) Observational
d) Experimental

6) 02 26 07 24 27 28 17 21 10 05

Jack, Bret, Kristin, Clara, Blake, Susan, Sally, Lindy, Weslie, Hannah

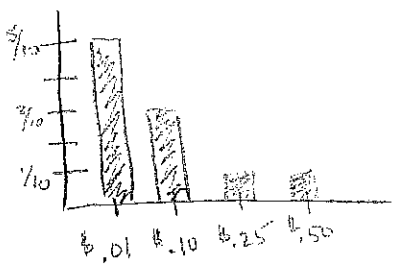
7) a) Yes
b) NO, probabilities do not add to 1
c) No, probabilities add to more than 1

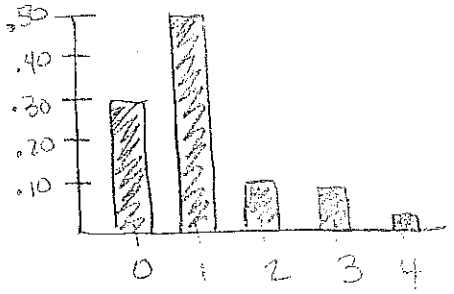
8)



b)

# of coins, x	$.01	$.10	$.25	$.50
P(x)	5/10	3/10	1/10	1/10



c) 

d) $M = 0(.12) + 1(.20) + 2(.31) + 3(.25) + 4(.12) =$
$= 2.05 \sim 2.1$

Variance
$\sigma^2 = 0^2(.12) + 1^2(.20) + 2^2(.31) + 3^2(.25) + 4^2(.12) - (2.05)^2$
$= 1.4075 \sim 1.4$

Standard deviation $= \sqrt{1.4075} = 1.1863 \sim 1.2$

e) $\text{Mean} = 13(.12) + 14(.15) + 15(.29) + 16(.25) + 17(.19)$
$= 15.24 \sim 15.2$

Variance
$\sigma^2 = 13^2(.12) + 14^2(.15) + 15^2(.29) + 16^2(.25) + 17^2(.19) - (15.24)^2$
$= 1.5824 \sim 1.6$

Standard Deviation: $\sqrt{1.5824} = 1.2579 \sim 1.3$

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9) a) $M = np = 200(.04) = 8$
$\sigma^2 = npq = 200(.04)(.96) = 7.68 \sim 7.7$
$\sigma = \sqrt{7.68} = 2.7713 \sim 2.8$

b) $M = np = 180(.75) = 135$
$\sigma^2 = npq = 180(.75)(.25) = 33.75 \sim 33.8$
$\sigma = \sqrt{33.75} = 5.8095 \sim 5.8$

c) $P(X) = {}_nC_x\, p^x q^{n-x}$
$P(5) = {}_{10}C_5 (.30)^5 (.70)^5 = .1029$

d) $P(0) = {}_{10}C_0 (.25)^0 (.75)^{10} = .0563$
$P(1) = {}_{10}C_1 (.25)^1 (.75)^9 = .1877$
$P(2) = {}_{10}C_2 (.25)^2 (.75)^8 = .2816$
$+ \; P(3) = {}_{10}C_3 (.25)^3 (.75)^7 = .2503$
$.7759$

e) $P(16) = {}_{20}C_{16} (.75)^{16} (.25)^4 = .1897$

f) $P(20) = .1216$

b) $P(15) = .0319$
$P(16) = .0898$
$P(17) = .1901$
$P(18) = .2852$
$P(19) = .2700$
$+ \; P(20) = .1216$
$.9888$

c) $P(0)$
$P(1)$
$P(2)$
$\vdots$
$+ \; P(15)$
$.0433$

9) a) P(2)
P(3)
P(4)
P(5)
⋮
+ P(15)
.4509

b) P(3) = .1285

c) P(0) = .2059
P(1) = .3432
P(2) = .7669
P(3) = .1285
P(4) = .0428
.9873

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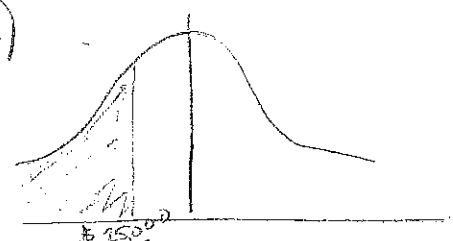
10) A) a) .4744
b) .1443
c) .05910
d) .8329
e) .2139
f) .8284
g) .0233
h) .9131
i) .0183
j) .9535

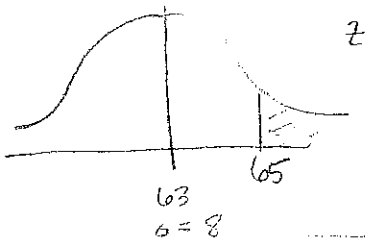
B) a) .4808
b) .4664
c) .9219
d) .0617
e) .6391
f) .0485
g) .0212
h) .8830
i) .9732
j) .9616

C)



a) .5000
b) $z = \frac{25,000 - 27,635}{2550} = -1.03$
$z < -1.03$ $.5 - .3485 = .1515$
or 15.15%

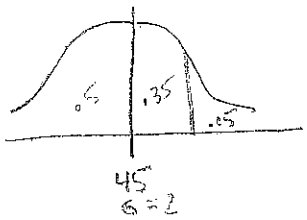
D)



$z = \frac{65-63}{8} = .25$
$z > .25$
$.5 - .0987 = .4013$
40.13% are speeding

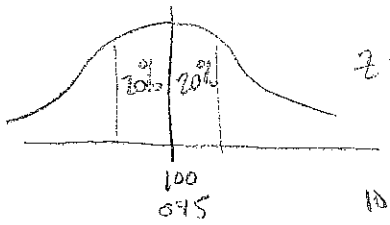
72 mph $z = \frac{72-63}{8} = 1.13$
$z > 1.13$ $.5 - .3708 = .1292$
12.92% will get a ticket

E)



$z = 1.04$
Weight = 2(1.04) + 45
47.08 lbs.

F)



$z = .52$
$100 + .52(15) = 107.8$
$100 - .52(15) = 92.2$

highest score 107.8
lowest score 92.2