HA1

Stats Quiz

1. Box and Whisker
   a. 5 number summary
   b. Calculator Stats → Edit, Stats → Calc → one-var-stats
   c. Percentiles
2. Basic Probabilities
   a. Independent vs Independent Events
      i. A dice lands showing an odd number. It is rolled again and lands showing a 6.

         Independent

      ii. One student in the class is chosen. Then another student in the class is chosen. *Dependent*

   b. Probability of Independent Events: $P(A \ and \ B) = P(A) \cdot P(B)$
      i. What is the probability of rolling a 2 three times in a row?

         $$\frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{216}$$

      ii. What is the probability of rolling an even number, then a 5?

         $$\frac{3}{6} \cdot \frac{1}{6} = \frac{3}{36} = \frac{1}{12}$$

   c. Probability of Dependent Events: $P(A \ and \ B) = P(A) \cdot P(B \ after \ A)$
      i. There are 10 pens in a drawer and two of them have no ink.
         1. A pen is selected and not replaced before another pen is selected, what is the probability both pens have no ink?

            $Dep \quad \frac{2}{10} \cdot \frac{1}{9} = \frac{2}{90} = \frac{1}{45}$

         2. A pen is selected, put back, and another is selected. What is the probability both pens had no ink?

            $Ind \quad \frac{2}{10} \cdot \frac{2}{10} = \frac{4}{100} = \frac{1}{25}$

3. Two Way Frequency Tables
   a. Fill in a table
   b. Create a relative frequency table
   c. Answer marginal and joint frequency problems

4. Odds:
   a. In favor and Against
   b. Odds and probability relationship
      1. A single coin is tossed.
         a) What is the probability of tossing a head? $\frac{1}{2}$

         b)   What are the odds of tossing a head? $1:1$

         c)   What are the odds of tossing a tail? $1:1$

      2. Mel has 5 quarters and six dimes in his pocket. He pulls out a coin.
         a) What are the odds in favor of the coin being a quarter?

            $5:6$

         b) What are the odds in favor of the coin being a dime?

            $6:5$

      3. Suppose you have a bag with 3 white balls, 7 green balls and 5 red balls. You randomly select one.
         a) What are the odds of selecting a red ball?

            $5:10 \rightarrow 1:2$

         b) What are the odds of not selecting a red ball?

            $10:5 \rightarrow 2:1$

      4. You roll a die.
      a) What are the odds of rolling a number greater than 3?

         $3:3 \rightarrow 1:1$

      b) What are the odds of rolling a multiple of 2?

         $3:3 \rightarrow 1:1$

      c) What are the odds of rolling a number that is not a 4?

         $5:1$

d) What are the odds of rolling a number divisible by 3? $2:4 \rightarrow 1:2$

5. If the probability of an event occurring is 2/3, what are the odds of the event occurring?

$$2:1$$

6. If the probability of an event occurring is 2/7, what are the odds of the event occurring?

$$2:5$$

7. If the odds in favor of an event occurring are 7:5, what is the probability of the event occurring?

$$\frac{7}{12}$$

8. If the odds against an event occurring are 9:14, what is the probability of the event occurring?

$$\frac{14}{23}$$

5. Stem/Leaf?

Algebra I

Two-Way Frequency Tables

Name _____

Date _____

1. The students in a seaside school are to have extra swimming lessons if they cannot swim. The table below gives information about the students in grades 7, 8 and 9.

	Can swim	Cannot swim	Total
Grade 7	120	60	180
Grade 8	168	11	179
Grade 9	172	3	175
Total	460	74	534

	Can swim	Cannot swim	Total
Grade 7	.23	.11	.34
Grade 8	.32	.02	.34
Grade 9	.32	.01	.33
Total	.87	.13	1.00

a. Complete the table

b. How many students need swimming lessons? 74

c. How many students are there in 8th grade? 179

d. How many of the 7th grade students cannot swim? 60

e. How many students in grades 7 and 8 can swim? 71

f. How many students are there altogether in grades 7, 8, and 9? 534

g. Create a two-way relative frequency table for the above data.

h. What is the relative frequency of students who are in 8th grade and cannot swim? .02

i. What percentage of 9th grade students can swim? 32%

j. What percentage of students cannot swim? 13%

k. What percentage of students are 9th graders? 33%

2. A principal of a school with 484 students collected information about how many of the students wear glasses.

	Always wears glasses	Sometimes wears glasses	Never wears glasses	Total
Boys	40	48	161	249
Girls	36	55	144	235
Total	76	103	305	484

a. Complete the table

b. How many boys sometimes wear glasses? 48

c. How many students wear glasses some of the time? 103

d. How many students never wear glasses? 305

e. Are there more boys or girls in the school? Boys

f. Create a two-way relative frequency table for the above data.

g. What is the relative frequency of boys who sometimes wear glasses? .10

h. What percentage of girls never wear glasses? $\frac{144}{434} = 33\%$

i. What percentage of students are boys? $249/434 = 57\%$

j. What percentage of students always wear glasses?

$$\frac{76}{434} = 17.5\%$$

3. Draw your own two-way table for the given information to answer the question.

In a class of 32 students, there were 8 girls who played basketball and 5 boys who did not.

	Play	Did Not	Total
Boys	12	5	17
Girls	8	7	15
Total	20	12	32

a. How many boys played basketball if there were 15 girls in the class? 12
b. Create a two-way relative frequency table for the data.

	P	DNP	T
B	38%	16%	54%
G	25%	22%	47%
T	63%	38%	100%

c. What is the relative frequency of girls who played did not play basketball? 22%
d. What percentage of boys played basketball? 38%
e. What percentage of students played basketball? 63%
f. What percentage of students are girls? 47%