25th November

Completed Exercises from the lecture on < Conditional Probability >

L. Hard, Pages 2-7;

Can be found below.

## Hard

(1) e29586d5 SHORT ANSWER Case-Insensitive

Number of Contestants by Score and Day							
	5  out of  5	4  out of  5	3 out of 5	2  out of $5$	1  out of  5	0 out of 5	Total
Day 1	2	3	4	6	2	3	20
Day 2	2	3	5	5	4	1	20
Day 3	3	3	4	5	3	2	20
Total	7	9	13	16	9	6	60

### <u>Number of Contestants by Score and Day</u>

The same 20 contestants, on each of 3 days, answered 5 questions in order to win a prize. Each contestant received 1 point for each correct answer. The number of contestants receiving a given score on each day is shown in the table above. No contestant received the same score on two different days. If a contestant is selected at random, what is the probability that the selected contestant received a score of 5 on Day 2 or Day 3, given that the contestant received a score of 5 on one of the three days?

7: got 5

(2) d4413871 Short answer Case-Insensitive

	Blood type			
Rhesus factor	А	В	AB	0
+	33	9	3	37
3	7	2	1	x

Human blood can be classified into four common blood types-A, B, AB, and O. It is also characterized by the presence (+) or absence (-) of the rhesus factor. The table above shows the distribution of blood type and rhesus factor for a group of people. If one of these people who is rhesus negative (-) is chosen at random, the probability that the person has blood type B is  $\frac{1}{9}$ . What is the value of x?

$$\frac{2}{3}$$
 is  $\frac{1}{9}$ th => 18 People in total  
7+2+1+x = 18

# 8

#### (3) 6626cac3 SHORT ANSWER Case-Insensitive

	Phone	Email
Dinner	55%	80%
dance	0070	8070
Football	20%	10%
game	2070	1070
Picnic	20%	5%
Pool	5%	5%
party	070	570
Total	100%	100%

An alumni association survey asked each high school graduate to select the one activity he or she preferred for the association's next event. Some of the people responded by phone, and the others responded by email. The table above shows the distribution of preferred activity, in percent, for each response type used. For the survey, the number of email responses was twice the number of phone responses. If a person who preferred a picnic is selected at random, what is the probability that the person responded by email?

20%·P + 2P.5% = 30P%

$$\frac{10\%}{30\%} = \frac{1}{3}$$

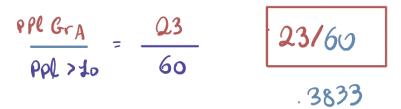
### (5) 6a715bed Short Answer Case-Insensitive

The table summarizes the distribution of age and assigned group for 90 participants in a study.

_		0-9 years	10-19 years	20+ years	Total	
	Group A	7	14	9	30	
	Group B	6	4	20	30	
	Group C	17	12	1	30	
	Total	30	30	30	90	

0.40

One of these participants will be selected at random. What is the probability of selecting a participant from group A, given that the participant is at least 10 years of age? (Express your answer as a decimal or fraction, not as a percent.)

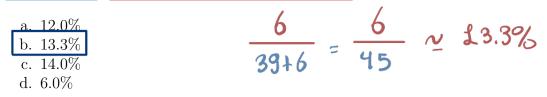


(6) 5dc386fb MULTIPLE CHOICE One answer only

The table below shows the distribution of US states according to whether they have a state-level sales tax and a statelevel income tax.

	2013 State-Level Taxes		
	State sales tax		
c1 1	No state sales tax		
State income	State income tax-	39	
ton	4		
No state	No state income tax	6	
NO State income tax	1		

To the nearest tenth of a percent, what percent of states with a <u>state-</u>level sales tax do not have a state-level income tax?



(7) ecd09c38 MULTIPLE CHOICE One answer only

Employees working for a customer service line at an electric company recorded all the calls last Monday and noted whether the caller asked for repairs and whether the caller asked about a bill. The results are summarized in the table below.

_		Asked for repairs	Did not ask for repairs	Total	
	Asked about a bill	48	623	671	
_	Did not ask about a bill	130	90	220	
	Total	178	713	891	

If a caller last Monday who asked about his or her bill is selected at random, which of the following is closest to the probability that the customer also asked for repairs?

a. 0.05	48
b. 0.20	121
c. 0.07	671
d. 0.27	

Total of marks: 29