Name:

Class:

Date:

Discriminating Machines: How AI is Unfair

STEP 5: ANSWER the multiple choice and short answer questions

1) [Google video] Fill in the blank:
   a) In _____, people hand-code solutions to a problem step-by-step; meanwhile, in _____, computers learn the solutions by finding patterns in data.
   b) Say a dataset contains many examples of athletic shoes, but few examples of high heels, thus preventing the machine from learning to recognize high heels. This is an example of _____ bias.

2) The Google video provides examples of how machine learning (AI) is used in everyday life. For each example, can you think of a relevant app on your phone which uses AI?
   a) Navigation   _____
   b) Suggestions   _____
   c) Translation   _____
   d) Voice recognition   _____

3) [Google video] When training a machine to recognize human faces, how can you mitigate selection bias?
   a) Add more photos to your dataset
   b) Make sure photos in your dataset represent everyone
   c) Limit dataset to photos of a certain type, e.g. faces of celebrities

4) [TED Talk] Write true or false:
   a) _____ Humans programming a machine might have bias which leads to unfair decisions.
   b) _____ If you're turned down for a mortgage or credit increase, we know exactly why AI made that decision.

5) [TED Talk] How could the programmers of Microsoft Chatbot's Tay done a better job?

6) [NPR interview] In the example of teachers' "growth scores," what is the negative consequence of trusting numbers too much? What else should be taken into consideration?

7) [NPR Interview] What are three characteristics of algorithms (machines) that worry Cathy? Briefly describe each one. If you could choose one characteristic ro remove from unfair AI, which would it be?

Characteristic	Description

Bonus) Below are two figures, each with an example of unfair AI. For each describe (a) what the AI is trying to predict (b) how the AI is being unfair.

	WHITE	AFRICAN AMERICAN
Labeled Higher Risk, But Didn't Re-Offend	23.5%	44.9%
Labeled Lower Risk, Yet Did Re-Offend	47.7%	28.0%

Overall, Northpointe's assessment tool correctly predicts recidivism 61 percent of the time. But blacks are almost twice as likely as whites to be labeled a higher risk but not actually re-offend. It makes the opposite mistake among whites: They are much more likely than blacks to be labeled lower risk but go on to commit other crimes. (Source: ProPublica analysis of data from Broward County, Fla.)

Fig2: The bias in COMPAS. (from Larson et al. ProPublica, 2016)

Search query	Work experience	Education experience	Profile views	Candidate	Xing ranking
Brand Strategist	146	57	12992	male	1
Brand Strategist	327	0	4715	female	2
Brand Strategist	502	74	6978	male	3
Brand Strategist	444	56	1504	female	4
Brand Strategist	139	25	63	male	5
Brand Strategist	110	65	3479	female	6
Brand Strategist	12	73	846	male	7
Brand Strategist	99	41	3019	male	8
Brand Strategist	42	51	1359	female	9
Brand Strategist	220	102	17186	female	10

TABLE II: Top k results on www.xing.com (Jan 2017) for the job serach query "Brand Strategist".