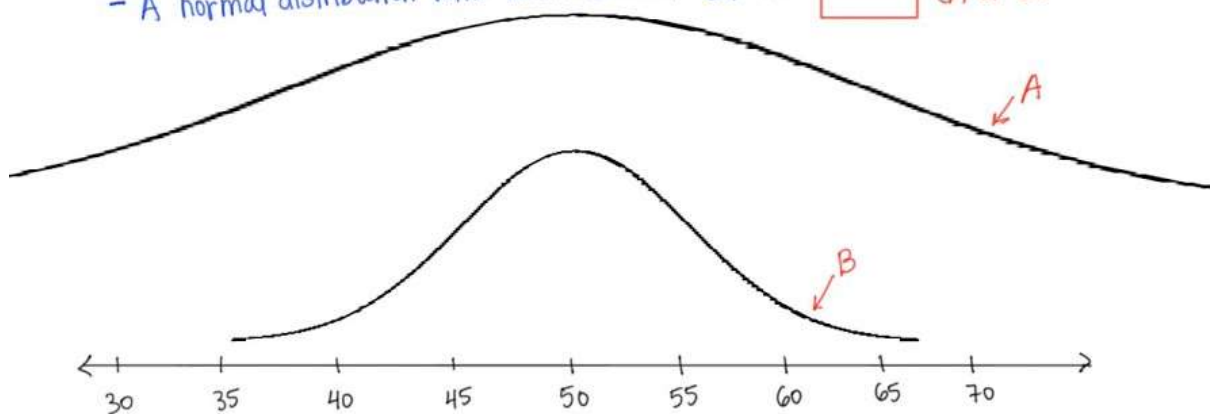


Problem Set – Lesson 5

Q1

Which distribution corresponds to

- A normal distribution with mean 50 and sd 5 (A or B)
- A normal distribution with mean 50 and sd 10 (A or B)



Q2

A normal distribution has mean 20 and sd 3.

$$\mu = 20$$
$$\sigma = 3$$

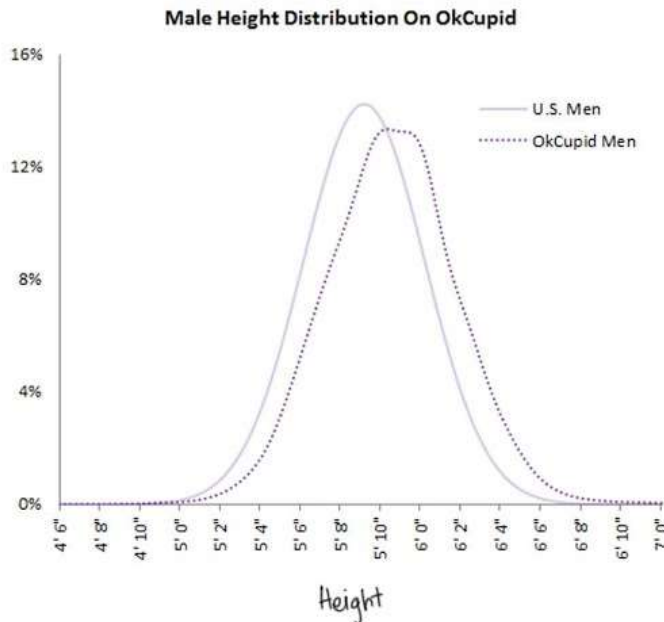
What are the z-scores for the following scores :

20

17

21.5

Q3

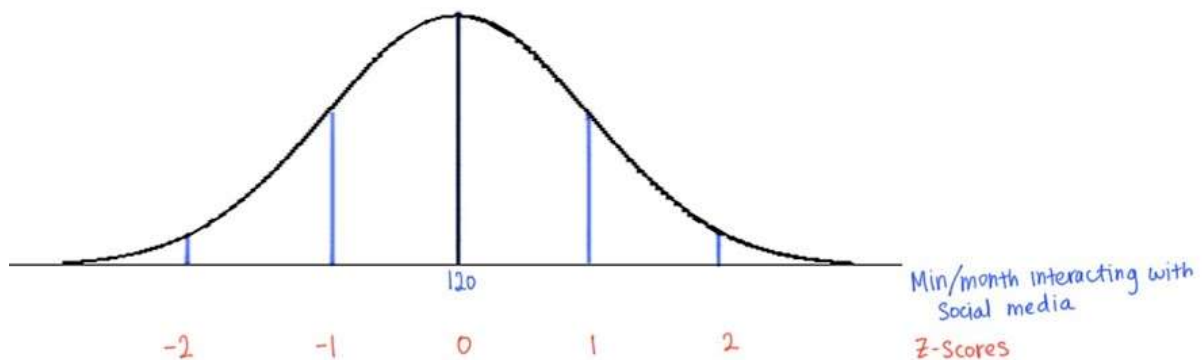


The OkCupid blog shared this graph. The solid curve represents the height distribution of all males in the United States. The dotted curve represents the distribution of heights males report on OkCupid, a dating website.

What is going on here? 😊

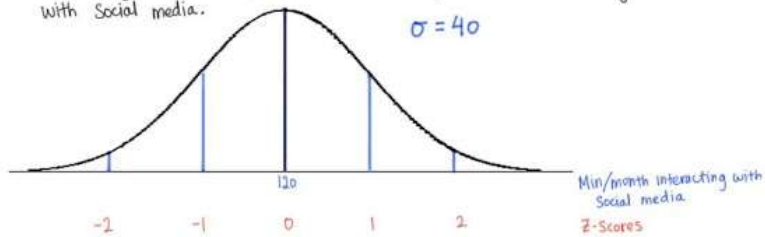
Q4

According to Nielsen's 2012 State of the Media: Social Media Report, the average web user spends 120 minutes per month interacting with social media. If time interacting with social media is normally distributed with standard deviation 40, enter the times that correspond to the number of standard deviations below and above the mean in the distribution below.



Q5

According to Nielsen's 2012 State of the Media: Social Media Report, the average web user spends 120 minutes per month interacting with Social media.

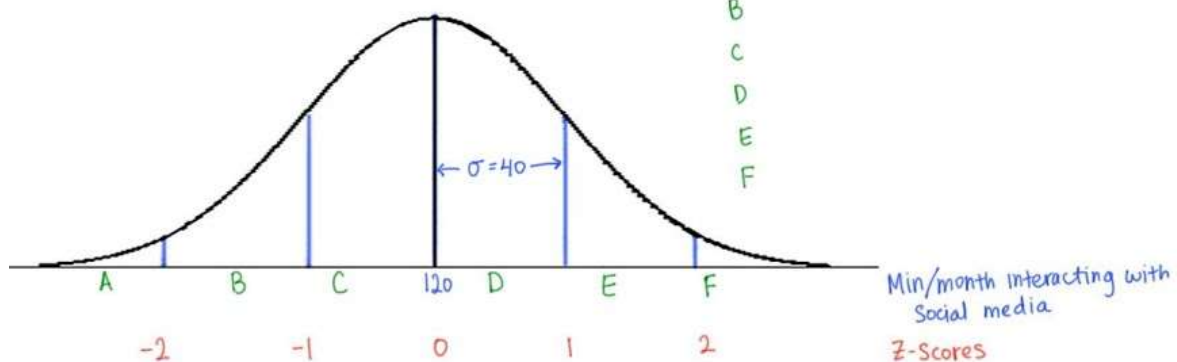


Andy, Chantee, Vidya, and Luis all use social media. Calculate their Z-scores in the table below.

Name	Min/month interacting with social media	Z-Score
Andy	205	
Chantee	137	
Vidya	20	
Luis	90	

Q6

According to Nielsen's 2012 State of the Media: Social Media Report, the average web user spends 120 minutes per month interacting with Social media.



Where do Andy, Chantee, Vidya, and Luis fall on the normal distribution of min/month interacting with social media? Type their names for the corresponding letter. If no one is at the location of the letter, write NA.

Q7

A distribution of exam scores has mean 90 and standard deviation 10. ($\mu=90$, $\sigma=10$)

Sharon's score is 9 points above the mean, Jill has a z-score of +1.20, Steve's score is $\frac{1}{2}$ a standard deviation above the mean, and Roman has a score of $X=110$. Fill in the table.

Student	Score (X)	Z-score
Sharon		
Jill		
Steve		
Roman		

Q8

In your psychology class, the mean exam score is $\mu=72$ and the standard deviation is $\sigma=12$. You scored 78.

In your biology class, the mean exam score is $\mu=56$ and the standard deviation is $\sigma=5$. You scored 66.

If your professors grade "on a curve" (i.e. according to the distribution of scores), for which exam would you expect to get a better grade? (Hint: Convert your exam scores to z-scores.)

- o psychology
- o biology

Q9

For a normal distribution of scores, which of the following z-scores represents the most extreme location on the left side of the distribution?

-1.89

-2.17

+1.65

+2.99

Q10

A population of scores has mean $\mu = 40$. In this population, a score of $x = 46$ has a z-score of $z = 3.0$. What is the population standard deviation (σ)?

Q11

Last week, Frans had exams in statistics and economics. He scored 15 points above the mean on both exams. You can conclude that (select all that apply):

- ☐ Frans has identical z-scores for the two exams.
- ☐ Both of Frans' z-scores are positive.
- ☐ Frans will have a higher z-score for the exam with a lower mean.
- ☐ We can't conclude any of the above.

Q12

Your score on the first statistics exam was 48 and the average was $\mu = 36$. Which value for standard deviation would give you a higher position in the grade distribution for this exam?

- ☐ $\sigma = 5$
- ☐ $\sigma = 10$
- ☐ $\sigma = 15$
- ☐ Cannot be determined

Q13

Which of the following z-scores is closest to the mean?

- ☐ + 0.10
- ☐ - 0.02
- ☐ + 2.00
- ☐ - 1.75
- ☐ + 0.05

Q14

True or False?

	True	False
Z-scores close to 0 are located on the tails of a normal distribution.		
The standard deviation can be negative.		
Z-scores can be negative.		
It is rare to find scores more than 3 standard deviations above or below the mean.		
A score equal to the mean has a z-score of 0.		