

# Practice for Quiz 1, Math 125

(The quiz will be on Thursday, September 21)

Math 125 *Kovitz* Fall 2023

On the quiz, show your work.

A distribution of the heights of a certain group of women followed the normal curve rather closely.

1. The height of a particular member of that group was 1.95 SDs below average.

About what percentage of the women were shorter than her?

What was her height in standard units?

2. The height of another member of that group was 0.80 SDs above average.

About what percentage of the women were shorter than her?

What was her height in standard units?

3. The height of a third member of that group was 1.85 SDs above average.

About what percentage of the women were shorter than her?

What was her height in standard units?

4. Another member of the group had height of +2.37, expressed in standard units.

How many SDs was she above or below average in height?

*The answers are found on the next page.*

1. 2.56%,  $-1.95$ .
2. 79%, 0.80.
3. 97%, 1.85.
4. She was 2.37 SDs above average in height.

## Solutions.

1. By the box on page 79, she has standard units of  $-1.95$ .

From sections 5.2 and 5.3, find the area to the left of  $-1.95$  on the normal curve.

The central area from  $-1.95$  to  $1.95$  is 94.88%.

Subtract from 100%, then divide by 2.

Answer: 2.56%.

2. By the box on page 79, she has standard units of  $+0.80$ .

From sections 5.2 and 5.3, find the area to the left of 0.80 on the normal curve.

The central area from  $-0.80$  to 0.80 is about 58%.

Divide that area by 2 to show that the area from 0 to 0.80 under the normal curve is about 29%.

The total area below 0.80 is the area below 0, added to the area from 0 to 0.80.

The answer is  $50\% + 29\% = 79\%$ .

3. By the box on page 79, she has standard units of  $+1.85$ .

From sections 5.2 and 5.3, find the area to the left of 1.85 on the normal curve.

The central area from  $-1.85$  to 1.85 is about 94%.

Divide that area by 2 to show that the area from 0 to 1.85 under the normal curve is about 47%.

The total area below 1.85 is the area below 0, added to the area from 0 to 1.85.

The answer is  $50\% + 47\% = 97\%$ .

4. Use box on page 79.

The standard units was the result of seeing how many SDs she was above or below the average.