Name Solutions HWK APPLICATIONS OF NORMAL CURVES 1-28-19 Hour 1 2 3 4 5 6 7

The weight of a certain type of melon is normally distributed and typically is 8.4 kg. with a standard deviation of 0.4 kg :

1. You randomly selected a melon in the top 16% of all melons of this type

What is the probability statement for this scenario? $P(x > A) = 0.16$

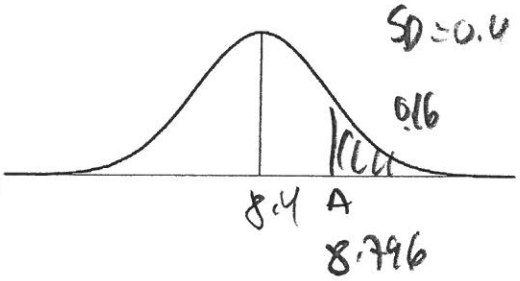
$P(x < A) = 0.84$

What is the associated weight with this problem? $A = 8.796$

$Z = 0.99$

$A = 8.4 + 0.4(0.99)$

Sketch the scenario on the provided normal curve



2. You randomly selected a plant in the bottom 38% of all melons of this type

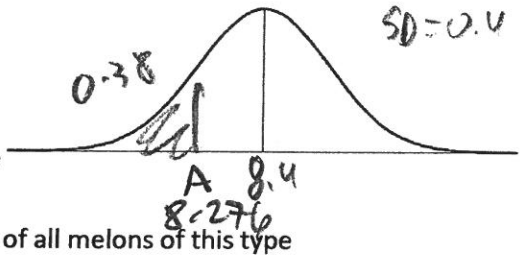
What is the probability statement for this scenario? $P(x < A) = 0.38$

What is the associated weight with this problem? 8.276

$Z = -0.31$

$A = 8.4 + 0.4(-0.31)$

Sketch the scenario on the provided normal curve



3. You randomly selected a melon in the middle 50% of all melons of this type

What is the probability statement for this scenario? $P(A < x < B) = 0.5000$

$P(x < A) = 0.25$

What is the associated range of weights with this problem? 8.132 & 8.668

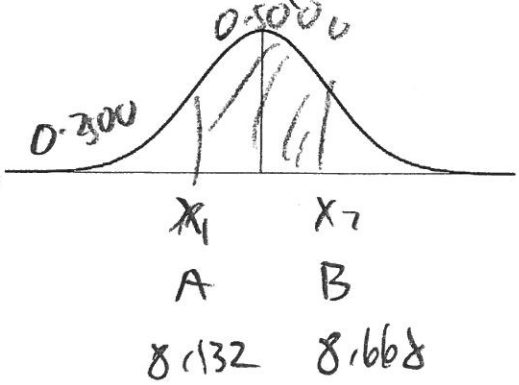
$Z = 0.67$

$A = 8.4 + 0.4(-0.67)$

Sketch the scenario on the provided normal curve

$Z = 0.67$

$B = 8.4 + 0.4(0.67)$



4. The length of a lane markers in the middle of the highway on the pavement are normally distributed and typically is 1.8 meters with a standard deviation of 0.1 meters:

You are told to determine the maximum length that would make the following statement true:

I.D.O.T. and the Commission on Public Safety states that 60% of all lane markers are between 1.65 meters and 1.843 meters

YOU MUST SHOW WORK TO RECEIVE CREDIT

What is the probability statement for this scenario? $P(1.65 < X < B) = 0.600$

$1.8 + 0.43(0.1)$

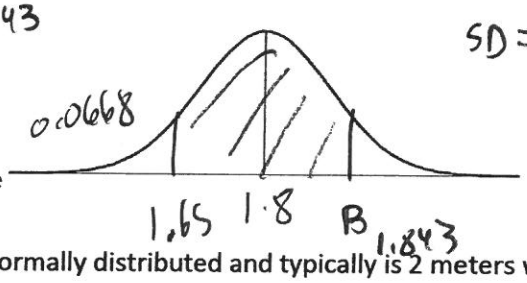
What is the associated length with this problem? 1.843 (round to four decimal places)

$z_{1.65} = -1.5$ $z_B = 0.43$ $SD = 0.1$

$P(X < 1.65) = 0.0668$

$P(X < B) = 0.6668$

Sketch the scenario on the provided normal curve



5. The height of road sign signs on the highway are normally distributed and typically is 2 meters with a standard deviation of 0.2 meters:

You are told to determine the minimum length that would make the following statement true:

I.D.O.T. and the Commission on Public Safety states that 35% of all road side signs are between 1.918 meters and 2.1 meters above the level of the highway

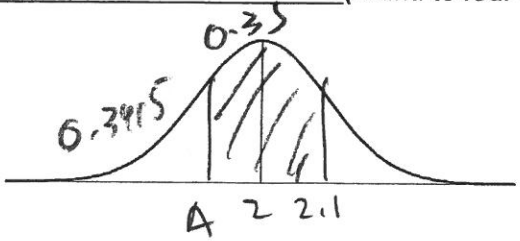
YOU MUST SHOW WORK TO RECEIVE CREDIT

What is the probability statement for this scenario? $P(A < X < 2.1) = 0.35$

$2 + 0.2(-0.41)$

What is the associated height with this problem? 1.918 (round to four decimal places)

$z_{2.1} = 0.5$ Sketch the scenario on the provided normal curve



$P(X < 2.1) = 0.6915$

$P(X < A) = 0.6915 - 0.35 = 0.3415$

1.918 $z_A = -0.41$