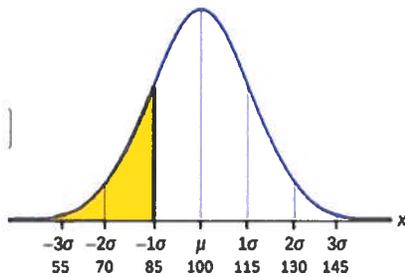Math 20-2 $x = \mu + z\sigma$ $z = \frac{x-\mu}{\sigma}$

L41 – Worksheet – z-Scores

Part 1 – Intelligence Quotient

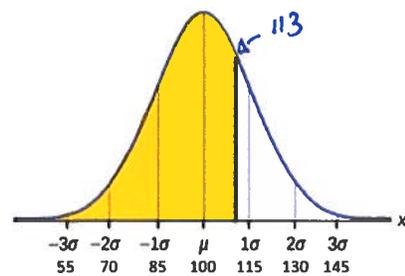**Q1:** What percentage of the population has an IQ below 85?

$z = \frac{x-\mu}{\sigma}$

$z = \frac{85 - 100}{15}$

$\boxed{z = -1.00}$

z-score table shows 0.1587
so 15.87% of the population is below this value.

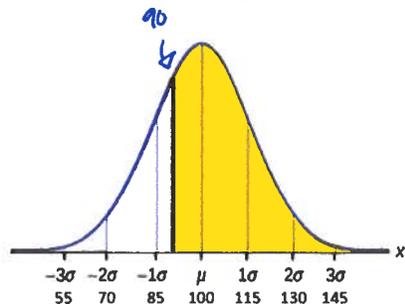**Q2:** What percentage of the population has an IQ below 113?

$z = \frac{x-\mu}{\sigma}$

$z = \frac{113 - 100}{15}$

$\boxed{z = 0.8\overline{6} \text{ or } 0.87}$

z-score table shows 0.8078
so 80.78% of the population is below this value.

Q3: What percentage of the population has an IQ **above** 90?

$z = \frac{x-\mu}{\sigma}$

$z = \frac{90 - 100}{15}$

$\boxed{z = -0.6\overline{6} \text{ or } -0.67}$

z-score table shows 0.2514
so 25.14% of the population is below this value.
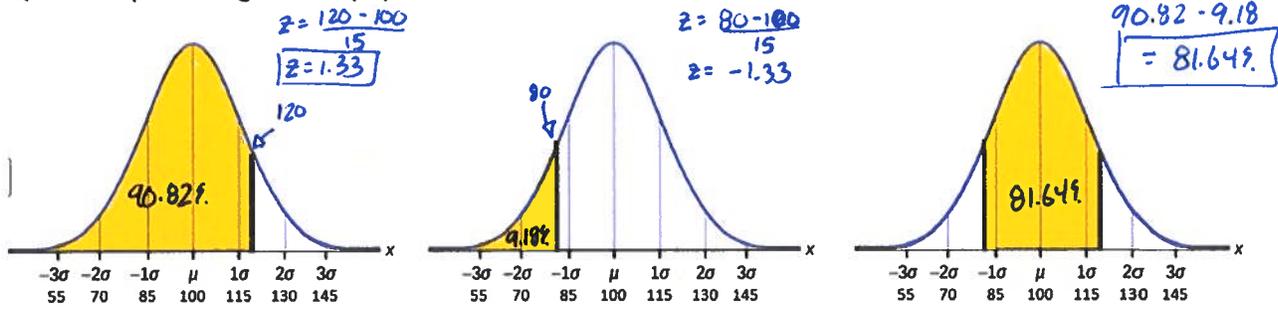
so 74.86% of the population is above this value.

Math 20-2 $\qquad x = \mu + z\sigma \qquad\qquad z = \frac{x-\mu}{\sigma}$

Q4: What percentage of the population has an IQ *between* 80 and 120?

$z = \frac{120 - 100}{15}$

$\boxed{z = 1.33}$

$z = \frac{80 - 100}{15}$

$z = -1.33$

$90.82 - 9.18$

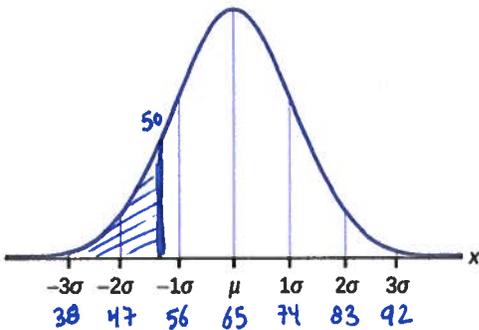$\boxed{= 81.64\%}$

90.82%   9.18%   81.64%

Part 2 – Test Scores

Use the following information to answer Q5-Q8:

Mr. Hopper's Grade 5 class marks have a mean of 65% and a standard deviation of 9%.

Q5: Fill in the horizontal axis will all relevant values.

	-3σ	-2σ	-1σ	μ	1σ	2σ	3σ
	38	47	56	65	74	83	92

Q6: If Mr. Hopper's Grade 5 class has 43 students, how many students are currently passing?

$z = \frac{x - \mu}{\sigma}$

$z = \frac{50 - 65}{9}$

$\boxed{z = -1.67}$

So z-score table shows 0.0475
So 4.75% of students are below 50%.
Therefore 95.25% of students are above 50% (passing).

↓

95.25% of 43 is 40.9575
So 41 students are passing.