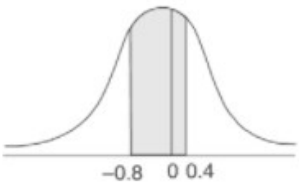
Solution. $n = 1000$, $\bar{x} = 14$, $\sigma = 2.5$

(*i*) $$z_1 = \frac{x-\bar{x}}{\sigma} = \frac{12-14}{2.5} = -0.8$$

$$z_2 = \frac{15-14}{2.5} = \frac{1}{2.5} = 0.4$$



The area lying between -0.8 to 0.4 = Area from 0 to -0.8 + area from 0 to 0.4

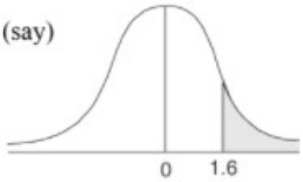
$= 0.2881 + 0.1554 = 0.4435$

The required number of students $= 1000 \times 0.4435 = 443.5 = 444$ (say)

(*ii*) $$z_1 = \frac{18-14}{2.5} = \frac{4}{2.5} = 1.6$$

Area right to 1.6 $= 0.5 -$ Area between 0 and 1.6

$= 0.5 - 0.4452 = 0.0548$



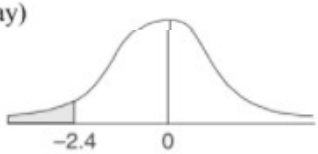
The required number of students

$= 1000 \times 0.0548 = 54.8 = 55$ (say)

(*iii*) $$z = \frac{8-14}{2.5} = -\frac{6}{2.5} = -2.4$$

Area left to -2.4 $= 0.5 -$ area between 0 and -2.4

$= 0.5 - 0.4918 = 0.0082$



The required number of students $= 1000 \times 0.0082 = 8.2 = 8$ (say)