S1 Unit 2 Measures of Location and Spread

Exercise 2D

Q5b Use interpolation to estimate the 65th percentile.

31.85	P_{65}	16	34	40 - 50

Time	Class boundary	Frequency	Cumulative Frequency
$20 \leq t < 30$	20 - 30	6	6
$30 \leq t < 40$	30 - 40	10	
$40 \leq t < 50$		18	34 (P_{65})
$50 \leq t < 60$	50 - 60	13	47
$60 \leq t < 70$	60 - 70	2	49

P_{65} position = $\frac{65}{100}$ x 49 = 31.85th data value

(31.85th data value is in class $40 \leq t < 50$)

Lower boundary		Upper boundary
40	P_{65}	50
16	31.85	34
Cumulative frequency **before** P_{65} class		Cumulative frequency **for** P_{65} class

$$\frac{\text{Class boundary}}{\text{Position}} \Rightarrow \frac{-40}{50-40} = \frac{-16}{-16}$$

P_{65} = 48.8

LIVEWORKSHEETS