

Q 9 Calculate Standard deviation of the following distribution -

Sol →

Age	F	Mid Value	$d = Cx - 42.5$	$f_d$	$d^2$	$f_d^2$
25-30	10	27.5	-15	-150	225	2250
30-35	12	32.5	-10	-120	100	1200
35-40	25	37.5	-5	-125	25	625
40-45	40	42.5	0	0	0	0
45-50	10	47.5	5	50	25	250
50-55	3	52.5	10	30	100	300
	$N=100$			$\Sigma f_d = -315$		$\Sigma f_d^2 = 4625$

A. Assumed = 42.5

$$\sigma = \sqrt{\left[ \frac{\Sigma f_d^2}{N} - \left( \frac{\Sigma f_d}{N} \right)^2 \right]}$$

$$= \sqrt{\left[ \frac{4625}{100} - \left( \frac{-315}{100} \right)^2 \right]}$$

$$= \sqrt{(46.25 - 9.9225)}$$

$$= \sqrt{(36.3275)}$$

$$\boxed{S.D = 6.03 \text{ years}}$$