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Chapter 2.3

① a) $60 - 45 = 15$

b) $\frac{47 + 48}{2} = 47.5$

$\frac{52 + 53}{2} = 52.5$

$52.5 - 47.5 = 5$

② a) $4 - 0 = 4$

b) $2 + 6 + 8 + 13 + 1 = 30$

$30/4 = 7.5 \rightarrow 1$

$30/4 * 3 = 22.5$

between 22nd & 23rd

$22 = 3 \rightarrow 3$

$3 - 1 = 2$

③ a) $48 - 40 = 8$

b) $2 + 15 + 11 + 3 = 31$

$31/4 = 8$th position

Q1 $42 \rightarrow 6$

$8 - 2 = 6$

$42 + \frac{6}{15} \times 2$

$= 42 + 0.8 = 42.8$

Q3 $3(31+1)/4 = 24$th

$24 - 17 = 7$

$44 + (7/11) * 2 = 44 + 1.27$

$= 45.27$

$45.27 - 42.8 = 2.37$

④ a) $\frac{5.0 + 5.3}{2} = 5.15$

$\frac{(3.8 + 4.0)}{2} = 3.8$

$\frac{(5.5 + 5.5)}{2} = 5.5$

$5.5 - 3.8 = 1.7$

median = 5.5 knots

IQR = 1.7 knots

b) The median daily mean windspeed was higher for 10 days in May and was less variability in windspeeds

⑤ a) $500g - 400g = 100g$

b) It will be less than this as it is unlikely that there is a value of 400g and there cannot be a value of 500g

c) $18 + 25 + 28 + 13 = 84$ kitten

$30 + n = 0.3 * 84 = 25.2$

$70 + n = 0.7 * 84 = 58.8$

25th value $425 \leq m < 450$

59th value $450 \leq m < 475$

$P_{30} = 425 + \left(\frac{25.2 - 18}{25} * (450 - 425)\right) = 432.2g$

$P_{70} = 450 + \left(\frac{58.8 - 43}{28} * (475 - 450)\right) = 464.1g$

$464.1g - 432.2g = \underline{31.9g}$

d) $425 \leq m < 450 \rightarrow 25$ kittens

$450 \leq m < 475 \rightarrow 28$ kittens

$\frac{7.2}{25} * 25 = 7.2$ kittens $\quad 25 - 7.2 = 17.8$

$\frac{14.1}{28} * 28 = 18.8$ kittens $\quad 18.8 + 77.8 = 33.6$

$= 34$ kittens

⑥ $6 + 18 + 27 + 32 + 17 = 100$

cumulative frequency: 6, 24, 51, 83, 100

80th percentile $= 0.8 * 100 = 18$

The 80% percentile is 15.625 minutes so the company is understating the wait times