

Math2 practice quiz 8-30

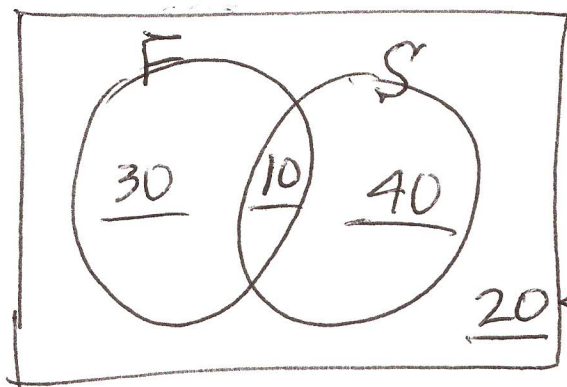
$$(1) \mu = \frac{a-1 + a + a+1 + a+3}{4} = \frac{4a+3}{4} = a + \frac{3}{4}$$

$$\begin{aligned} (b) \sigma^2 &= \frac{(a-1)^2 + a^2 + (a+1)^2 + (a+3)^2}{4} - \left(\frac{4a+3}{4}\right)^2 \\ &= \frac{a^2 - 2a + 1 + a^2 + a^2 + 2a + 1 + a^2 + 6a + 9}{4} - \frac{16a^2 + 24a + 9}{16} \\ &= \frac{4a^2 + 6a + 11}{4} - \frac{16a^2 + 24a + 9}{16} \\ &= \frac{16a^2 + 24a + 44}{16} - \frac{16a^2 + 24a + 9}{16} \\ &= \frac{35}{16} \end{aligned}$$

(c) Since 5 has been added to every data value given in (a), $\mu = \left(a + \frac{3}{4}\right) + 5 = a + \frac{23}{4}$

(d) Since 4 has been multiplied by every value given in (a), the variance is $\sigma^2 = 16 \cdot \frac{35}{16} = 35$

2



$$P(F' \cap S') = 0.20$$

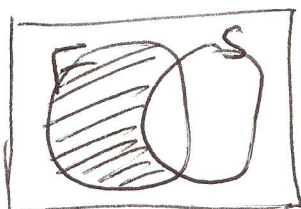
$$\Rightarrow (0.20)(100) = 20 \text{ students}$$

$$40 + 50 = 90$$

$$90 - 80 = 10$$

$$(a) P(F \cap S) = \frac{10}{100} = 0.1$$

$$(b) P(F \cap S') = \frac{30}{100} = 0.3$$



$$(c) P(F' \cup S') = P(F') + P(S') - P(F' \cap S') \quad \text{addition rule}$$

$$= \frac{60}{100} + \frac{50}{100} - \frac{20}{100} = \frac{90}{100} = 0.9$$

$$(3) (a) P(A') = 1 - P(A) = 1 - 0.4 = 0.6$$

(b) Addition rule:

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.8 = 0.4 + P(B) - 0.2$$

$$0.6 = P(B)$$

$$(c) P(A' \cap B) = 0.4$$

