Warmup Exercises

1. **Regression**. Find the equation for the regression line given the following data. In each case, the averages for x and y are 3 and 5 respecitvely.

$\text{sd}_x = 12 \quad \text{sd}_y = 3 \quad r = -0.1$

$\text{sd}_x = 3 \quad \text{sd}_y = 12 \quad r = 0.1$

$\text{sd}_x = 2 \quad \text{sd}_y = 4 \quad r = 0.5$

$\text{sd}_x = 5 \quad \text{sd}_y = 3 \quad r = 0.4$

$\text{sd}_x = 5 \quad \text{sd}_y = 2 \quad \text{RMS} = \sqrt{3}$

2. **Multiplication Rule**.

a) Cards are drawn at random from a well-shuffled deck. Calculate the following probabilities.

i) First card is K♡

ii) Second card is J♠

iii) Second card is J♠ given that the first was K♡

iv) First two cards are K♡ followed by J♠

v) First two cards are K♡ and J♠ (either order)

vi) First two cards are a ♡ followed by a ♢

vii) First five cards are four aces followed by a ♣

b) Two fair dice are tossed. Calculate the following probabilities

i) Sum is even given that it is less than 7

ii) Sum is even and less than 7

iii) One die shows a 6

3. **Sum Rule**.

a) Cards are drawn at random from a well-shuffled deck. Calculate the following probabilities.

i) First card is $K\heartsuit$ or J♣

ii) First card is $\heartsuit$ or J♣

iii) First card is an ace or $\diamondsuit$

iv) First card is not an ace or is $\diamondsuit$

v) First two cards are both $\heartsuit$ or both 10

b) Two dice are rolled. Calculate the following probabilities.

i) Sum is four or seven

ii) Sum is four or even

iii) Sum is four or seven or even