AP Statistics
2000 Student Samples

(a) Based on the scatterplot, describe the effect of drug A __and__ how it is related to strength in milligrams.

Drug A gives a post surgical pain relief of about 60 to 70 (on a scale 0-100). The amount of relief is not affected by the strength in milligrams

(b) Based on the scatterplot, describe the effect of drug B __and__ how it is related to strength in milligrams.

Drug B has little effect on pain relief for about 210-270 mg dosages. The amount of relief then increases linearly with strength (in mg), reaching a maximum relief of about 90 for a 400 mg dosage

(c) Which drug would you give __and__ at what strength, if the goal is to get pain relief of at least 50 at the lowest possible strength? Justify your answer based on the scatterplot.

I would give Drug A at a strength of 210 mg. Drug A is consistently above 50 in relief and it is essentially independent of strength, so one can use small dosages. The smallest dosage of Drug B that one can use for a relief of above 50, on the other hand, is about 330 mg

(a) Based on the scatterplot, describe the effect of drug A and how it is related to strength in milligrams.

Drug A seems to give the postsurgical patients a pain relief rating of 50 to 70, regardless of the dosage amount. Pain relief with drug A and the dosage strength have a linear relationship with a slope of approx. 0, meaning changing the strength of the dosage does not change pain relief.

(b) Based on the scatterplot, describe the effect of drug B and how it is related to strength in milligrams.

Drug B seems to bring more pain relief with higher doses. Pain relief with Drug B and the dosage strength have a positive linear relationship which means they increase with each other. The higher the dosage of Drug B, the more pain relief there is.

(c) Which drug would you give and at what strength, if the goal is to get pain relief of at least 50 at the lowest possible strength? Justify your answer based on the scatterplot.

By looking at the scatterplot, one can see that:

- Drug A consistently gives a pain relief level of 60, from 210 to 400 mg.

- Drug B must be given at a 325 mg. dosage to provide level 50 relief.

Therefore, to give the least medication and achieve a relief level of at least 50, give drug A at the lowest dosage, 210 mg., to give relief of at least 50 w/ less mg. of medication.

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(a) Based on the scatterplot, describe the effect of drug A and how it is related to strength in milligrams.

Because the relationship is almost horizontal, the effect of drug A remains about the same with increasing strength (from 200 mg to 400 mg). Drug A is shown to relieve about 65% of the pain at any strength.

(b) Based on the scatterplot, describe the effect of drug B and how it is related to strength in milligrams.

Drug B's effectiveness in pain relief and its strength have a positive relationship. It is almost ineffective from about 210 mg to about 270 mg but its effectiveness in pain relief increases as strength increases thereafter. At 400 mg, the pain relief is about 90%.

(c) Which drug would you give and at what strength, if the goal is to get pain relief of at least 50 at the lowest possible strength? Justify your answer based on the scatterplot.

I would give drug A at 210 milligrams given the preconditions. Drug A has the lowest strength at which at least 50% of the pain is relieved (about 65%) and thus is the best choice.