

Name:

Date:

## Disc Game

(PS01/CU02)

On-Demand (Check One)

Yes

No

You are working for a carnival as a game tester. For one carnival game, 50 plastic discs are put into a can. Twenty (20) disks are red, 15 are blue, 10 are green, and 5 are yellow. The carnival directors want you to test the probability of certain outcomes for the game. In each game described, the discs are mixed randomly and pulled without looking.

In one version of the game, one disc is pulled, the color noted, and that disc is placed back in the can. Then a second disc is pulled.

- 1) What is the probability of pulling two red disks? Show your work using words, numbers, and/or diagrams.

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- 2) What is the probability of pulling a blue disk, then a green? Show your work using words, numbers, and/or diagrams.

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3) Explain why you used the numbers you used for question #2.

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In the second game, one disc is pulled, the color noted, and that disc is set aside and **not** placed back in the can. Then a second disc is pulled.

4) What is the probability of pulling two red disks out? Show your work using words, numbers, and/or diagrams.

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5) What is the probability of pulling a blue disk, then a green? Show your work using words, numbers, and/or diagrams.

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6) Explain why you used the numbers you used for question #5.

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For the carnival game, the discs are given point values. Red discs are worth 1 point, blue are worth 2 points, green are worth 3 points and yellow are worth 4 points. To play the game, a player pulls one disc and the color is noted. That disc is put back into the can and then the player pulls the second disc. When the two discs are different colors, the two point values are added. When the two discs are the same color, the two point values are subtracted.

7) Make a chart to show all the possible point totals for this game and the color combinations of discs that will result in each point total. Be sure to include a title, labels for each column and for each row, all the possible point totals, and all the possible color combinations.

8) One of the carnival directors thinks that a player is twice as likely to get a result of zero points as they are to get a result of 5 points. She thinks this because there are 4 combinations that result in zero points and 2 combinations that result in 5 points. Use the probability of the color combinations to explain why this conclusion is **not** correct.

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