Mystery Bags

Let's make predictions based on what we know.

1.1 Going Fishing

Andre and his dad have been fishing for two hours. In that time, they have caught 9 bluegills and 1 yellow perch.

The next time Andre gets a bite, what kind of fish do you think it will be? Explain your reasoning.

1.2 Playing the Block Game

Your teacher will give your group a bag of colored blocks.

1. Follow these instructions to play one round of the game:
   a. Write the color written on the bag in the first column of the table.
   b. Without looking in the bag, one person takes out one of the blocks and shows it to the group.
   c. If the block is the same color as the bag label, they earn 1 point.
   d. The person puts the block back into the bag, shakes the bag to mix up the blocks, and passes the bag to the next person in the group.
   e. Repeat these steps until everyone in the group has had 4 turns for the round.
2. At the end of the round, record each person's score in the table.

	color on bag	person 1's score	person 2's score	person 3's score	person 4's score
round 1					
round 2					
round 3					

3. After each person in the group has had 4 chances to choose a block, pause so your teacher can give you a new bag of blocks for the next round.
4. Repeat the previous steps to play rounds 2 and 3 of the game.

Are you ready for more?

Tyler's class played the block game using purple, orange, and yellow bags of blocks.

- During round 1, Tyler's group picked 4 purple blocks and 12 blocks of other colors.
- During round 2, Tyler's group picked 11 orange blocks and 5 blocks of other colors.
- During round 3, Tyler forgot to record how many yellow blocks his group picked.

For a final round, Tyler's group can pick 1 block from any of the three bags. Tyler's group decides that picking from the orange bag would give them the best chance of winning, and that picking from the purple bag would give them the worst chance of winning. What results from the yellow bag could have led Tyler's group to this conclusion? Explain your reasoning.

Lesson 1 Summary

One of the main ways that humans learn is by repeating experiments and observing the results. Babies learn that dropping their cup makes it hit the floor with a loud noise by repeating this action over and over. Scientists learn about nature by observing the results of experiments repeated again and again. With enough data about the results of experiments, we can begin to predict what may happen if the experiment is repeated in the future. For example, a baseball player who has gotten a hit 33 out of 100 times at bat might be expected to get a hit about 33% of his times at bat in the future.

In some cases, we can predict the chances of things happening based on our knowledge of the situation. For example, a coin should land heads up about 50% of the time due to the symmetry of the coin.

In other cases, there are too many unknowns to predict the chances of things happening. For example, the chances of it raining tomorrow are based on similar weather conditions we have observed in the past. In these situations, we can experiment, using past results to estimate chances.