

## Mix it Up – Answer Key

- 75%, because 3 of 4 scoops contain red beads, and  $3/4 = 75\%$ .
- 60%, because 2 of 5 scoops contain red beads, and  $2/5 = 60\%$ .
- Answers will vary.
- Answers will vary, but if the beads were well mixed, students should find that slightly more than half the beads in the sample will be red.
  - Answers will vary.
  - The answer in 4a is likely more accurate since it is based on a representative sample (assuming the beads were well mixed).
- The table should be completed as follows:

	CONTAINER 1	CONTAINER 2	CONTAINER 3
% CONCENTRATION OF RED BEADS	75% (3 of 4 scoops)	40% (2 of 5 scoops)	52% (approximately)

- Take the percent concentration in Container 1 and multiply by the number of scoops; then, take the percent concentration from Container 2 and multiply by the number of scoops. Finally, divide by the total number of scoops. With 1 scoop of a 75% mixture and 2 scoops of a 40% mixture, the result will be:

$$\frac{1(75\%) + 2(40\%)}{1 + 2} = \frac{155\%}{3} \approx 51.67\%$$

This result should agree with the estimate in 4a.

- Take the percent concentration in Container 1 and multiply by the number of scoops; then, take the percent concentration from Container 2 and multiply by the number of scoops. Finally, divide by the total number of scoops. Algebraically, the percent concentration of Container 3 ( $P_3$ ) can be found with the following formula:

$$P_3 = \frac{P_1S_1 + P_2S_2}{S_1 + S_2}$$

- Answers will vary, but students should get results similar to those in Question 4a-c.
- Answers will vary.

**10.** Answers will vary, but students should eventually arrive at the following answer:

$$\frac{3(0.04)+5(0.01)}{3+5} = \frac{0.17}{8} \approx 2.1\%$$

**11.** An answer of 2.1% is reasonable. The percent concentration of the resulting mixture should be less than 4% and greater than 1%. Because more of the 1% milk was used, the result should be closer to 1% than 4%.

**12.** A mixture containing three cups of 4% whole milk and five cups of 1% low-fat milk has approximately 2.1% fat.