Chapter 4 Problems of the Week Answers

1. Convert the proportion of each colour to a numerator, and use 26 as the denominator for a fraction representing the alphabet. The numerator represents the order in the alphabet. Therefore, red ($\frac{3}{26}$) represents C; blue ($\frac{9}{26}$) represents I; green ($\frac{4}{26}$) represents D; and yellow ($\frac{5}{26}$) represents E. The secret word is DICE.

2. a)

Year	Calculation	Percent
1		100%
2	100 × 0.02 = 2 100 – 2 = 98	98%
3	98 × 0.02 = 1.96 98 – 1.96 = 96.04	96%
4	96 × 0.02 = 1.92 96 – 1.92 = 94.08	94.1%
5	94.1 × 0.02 = 1.882 94.1 – 1.882 = 92.218	92.2%
6	92.2 × 0.02 = 1.844 92.2 – 1.844 = 90.356	90.4%
7	90.4 × 0.02 = 1.808 90.4 – 1.808 = 88.592	88.6%
8	88.6 × 0.02 = 1.772 88.6 – 1.772 = 86.828	86.8%
9	86.8 × 0.02 = 1.736 86.8 – 1.736 = 85.064	85.1%
10	85.1 × 0.02 = 1.702 85.1 – 1.702 = 83.398	83.4%
11	83.4 × 0.02 = 1.668 83.4 – 1.668 = 81.732	81.7%
12	81.7 × 0.02 = 1.634 81.7 – 1.634 = 80.066	80.1%
13	80.1 × 0.02 = 1.602 80.1 – 1.602 = 78.498	78.5%
14	78.5 × 0.02 = 1.57 78.5 – 1.57 = 76.93	76.9%
15	76.9 × 0.02 = 1.538 76.9 – 1.538 = 75.362	75.4%
16	75.4 × 0.02 = 1.508 75.4 – 1.508 = 73.892	73.9%
17	73.9 × 0.02 = 1.478 73.9 – 1.478 = 72.422	72.4%
18	72.4 × 0.02 = 1.448 72.4 – 1.448 = 70.952	71%
19	71 × 0.02 = 1.42 71 – 1.42 = 69.58	69.6%
20	69.6 × 0.02 = 1.392 69.6 – 1.392 = 68.208	68.2%

b) Yes, because any amount minus 2% will not equal 0.

3. Science: 0.83, $\frac{15}{18}$, 83%

Math: 0.87, $\frac{13}{15}$, 87%

Language Arts: 0.60, $\frac{25}{42}$, 60%

Social Studies: 0.67, $\frac{12}{18}$, 67%

4.

Carat Weight	Number	Total Carats	Percent of Total
$\frac{1}{2}$	13	$6\frac{1}{2}$	22.51%
$\frac{1}{4}$	27	$6\frac{3}{4}$	23.38%
$\frac{1}{8}$	125	$15\frac{5}{8}$	54.11%
Total		$28\frac{7}{8}$	100%

5. Answers will vary. Example: Depending on the cost of an item, you may get a better buy if the price is reduced by $5 rather than a 15% discount.

6. Disagree. One chessboard square represents $\frac{1}{64}$ of the chessboard or 1.5625% of the chessboard. This is more than 1%.

7. At the end of 1 h, there were 100 × 0.10 = 10; 100 − 10 = 90 people. At the end of 2 h, there were 90 × 0.10 = 9; 90 + 9 = 99 people. This represents 99% or $\frac{99}{100}$ of the original 100 people.

8. Group A: $\frac{8}{5}$ or $1\frac{3}{5}$, or 20%

Group B: $\frac{11}{6}$ or $1\frac{5}{6}$, or 16.67%

Example: I would join Group B to get more brownies.

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