13

PERCENT

2005B

6. **(B)** To earn an A on at least 80% of her quizzes, Lisa needs to receive an A on at least $(0.8)(50) = 40$ quizzes. Thus she must earn an A on at least $40 - 22 = 18$ of the remaining 20. So she can earn a grade lower than an A on at most 2 of the remaining quizzes.

2007A

6. **Answer (A):** Between 2002 and 2003, the increase was

$$\frac{6}{60} = \frac{1}{10} = 10\%.$$

Between the other four pairs of consecutive years, the increases were

$$\frac{4}{66} < \frac{4}{40} = \frac{1}{10}, \quad \frac{6}{70} < \frac{6}{60} = \frac{1}{10}, \quad \frac{2}{76} < \frac{2}{20} = \frac{1}{10}, \quad \text{and} \quad \frac{7}{78} < \frac{7}{70} = \frac{1}{10}.$$

Therefore the largest percentage increase occurred between 2002 and 2003.

2018A   6. **Answer (B):**   Let N be the number of votes cast. Then $0.65N$ of them were like votes, and $0.35N$ of them were dislike votes. The current score for Sangho's video is then $0.65N - 0.35N = 0.3N = 90$. Thus $N = 90 \div (0.3) = 300$.

2007A   7. **Answer (D):**   After paying the federal taxes, Mr. Public had 80% of his inheritance money left. He paid 10% of that, or 8% of his inheritance, in state taxes. Hence his total tax bill was 28% of his inheritance, and his inheritance was $\$10{,}500/0.28 = \$37{,}500$.

2009A   7. **Answer (C):** Suppose whole milk is $x\%$ fat. Then 60% of x is equal to 2. Thus

$$x = \frac{2}{0.6} = \frac{20}{6} = \frac{10}{3}.$$

2014B   7. **Answer (A):**   The fraction by which A is greater than B is simply the positive difference $A - B$ divided by B. The percent difference is 100 times this, or $100\left(\frac{A-B}{B}\right)$.

2009A   8. **Answer (B):** Grandfather Wen's ticket costs \$6, which is $\frac{3}{4}$ of the full price, so each ticket at full price costs $\frac{4}{3} \cdot 6 = 8$ dollars, and each child's ticket costs $\frac{1}{2} \cdot 8 = 4$ dollars. The cost of all the tickets is $2(\$6 + \$8 + \$4) = \$36$.

2009B

8. **Answer (B):** Let p denote the price at the beginning of January. The price at the end of March was $(1.2)(0.8)(1.25)p = 1.2p$. Because the price at the end of April was p, the price decreased by $0.2p$ during April, and the percent decrease was

$$x = 100 \cdot \frac{0.2p}{1.2p} = \frac{100}{6} \approx 16.7 \,.$$

To the nearest integer, x is 17.

2011A

8. **Answer (C):** Because 75% of the birds were not swans and 30% of the birds were geese, it follows that $\frac{30}{75} \cdot 100\% = 40\%$ of the birds that were not swans were geese.

2001

9. **(B)** If Kristin's annual income is $x \geq 28{,}000$ dollars, then

$$\frac{p}{100} \cdot 28{,}000 + \frac{p+2}{100} \cdot (x - 28{,}000) = \frac{p + 0.25}{100} \cdot x.$$

Multiplying by 100 and expanding yields

$$28{,}000p + px + 2x - 28{,}000p - 56{,}000 = px + 0.25x.$$

So, $1.75x = \frac{7}{4}x = 56{,}000$ and $x = 32{,}000$.

2013A

9. **Answer (B):** If Shenille attempted x three-point shots and $30 - x$ two-point shots, then she scored a total of $\frac{20}{100} \cdot 3 \cdot x + \frac{30}{100} \cdot 2 \cdot (30 - x) = 18$ points.

Remark: The given information does not allow the value of x to be determined.

2013A 10. **Answer (E):** Because six tenths of the flowers are pink and two thirds of the pink flowers are carnations, $\frac{6}{10} \cdot \frac{2}{3} = \frac{2}{5}$ of the flowers are pink carnations. Because four tenths of the flowers are red and three fourths of the red flowers are carnations, $\frac{4}{10} \cdot \frac{3}{4} = \frac{3}{10}$ of the flowers are red carnations. Therefore $\frac{2}{5} + \frac{3}{10} = \frac{7}{10} = 70\%$ of the flowers are carnations.

2013B 10. **Answer (C):** Let x denote the number of three-point shots attempted. Then the number of three-point shots made was $0.4x$, resulting in $3(0.4x) = 1.2x$ points. The number of two-point shots attempted was $1.5x$, and they were successful on $0.5(1.5x) = 0.75x$ of them resulting in $2(0.75x) = 1.5x$ points. The number of points scored was $1.2x + 1.5x = 54$, so $x = 20$.