QUESTION 43

Choice A is the best answer because the conjunctive adverb "then" correctly shows that given previously stated information, the conclusion that can be drawn is that the transition between the Golden and Silver Ages of comic books was more successful than others.

Choices B, C, and D are incorrect because they do not indicate the correct relationship between the information presented earlier and conclusions that can be drawn from the information. "However," "nevertheless," and "yet" are ordinarily used to indicate that in spite of some action, a different or unexpected result occurs.

QUESTION 44

Choice C is the best answer because the singular pronoun "that" agrees in number with its singular antecedent "transition."

Choices A and B are incorrect because the plural pronouns "those" and "these" do not agree with the singular antecedent "transition." Additionally, choice B is incorrect because "these" implies that whatever is being referred to is at hand, not in the past. Choice D is incorrect because a pronoun is needed to complete the comparison of transitions between comic book ages.

Section 3: Math Test - No Calculator

QUESTION 1

Choice B is correct. The total amount T, in dollars, Salim will pay for n tickets is given by $T = 15n + 12$, which consists of both a per-ticket charge and a one-time service fee. Since n represents the number of tickets that Salim purchases, it follows that $15n$ represents the price, in dollars, of n tickets. Therefore, 15 must represent the per-ticket charge. At the same time, no matter how many tickets Salim purchases, he will be charged the $12 fee only once. Therefore, 12 must represent the amount of the service fee, in dollars.

Choice A is incorrect. Since n represents the total number of tickets that Salim purchases, it follows that $15n$ represents the price, in dollars, of n tickets, excluding the service fee. Therefore, 15, not 12, must represent the price of 1 ticket. Choice C is incorrect. If Salim purchases only 1 ticket, the total amount, in dollars, Salim will pay can be found by substituting $n = 1$ into the equation for T. If $n = 1$, $T = 15(1) + 12 = 27$. Therefore, the total amount Salim will pay for one ticket is $27, not $12. Choice D is incorrect. The total amount, in dollars, Salim will

pay for *n* tickets is given by $15n + 12$. The value 12 represents only a portion of this total amount. Therefore, the value 12 does not represent the total amount, in dollars, for any number of tickets.

QUESTION 2

Choice B is correct. Since Fertilizer A contains 60% filler materials by weight, it follows that *x* pounds of Fertilizer A consists of $0.6x$ pounds of filler materials. Similarly, *y* pounds of Fertilizer B consists of $0.4y$ pounds of filler materials. When *x* pounds of Fertilizer A and *y* pounds of Fertilizer B are combined, the result is 240 pounds of filler materials. Therefore, the total amount, in pounds, of filler materials in a mixture of *x* pounds of Fertilizer A and *y* pounds of Fertilizer B can be expressed as $0.6x + 0.4y = 240$.

Choice A is incorrect. This choice transposes the percentages of filler materials for Fertilizer A and Fertilizer B. Fertilizer A consists of $0.6x$ pounds of filler materials and Fertilizer B consists of $0.4y$ pounds of filler materials. Therefore, $0.6x + 0.4y$ is equal to 240, not $0.4x + 0.6y$. Choice C is incorrect. This choice incorrectly represents how to take the percentage of a value mathematically. Fertilizer A consists of $0.6x$ pounds of filler materials, not $60x$ pounds of filler materials, and Fertilizer B consists of $0.4y$ pounds of filler materials, not $40y$ pounds of filler materials. Choice D is incorrect. This choice transposes the percentages of filler materials for Fertilizer A and Fertilizer B and incorrectly represents how to take the percentage of a value mathematically.

QUESTION 3

Choice C is correct. For a complex number written in the form $a + bi$, *a* is called the real part of the complex number and *b* is called the imaginary part. The sum of two complex numbers, $a + bi$ and $c + di$, is found by adding real parts and imaginary parts, respectively; that is, $(a + bi) + (c + di) = (a + c) + (b + d)i$. Therefore, the sum of $2 + 3i$ and $4 + 8i$ is $(2 + 4) + (3 + 8)i = 6 + 11i$.

Choice A is incorrect and is the result of disregarding *i* and adding all parts of the two complex numbers together, $2 + 3 + 4 + 8 = 17$. Choice B is incorrect and is the result of adding all parts of the two complex numbers together and multiplying the sum by *i*. Choice D is incorrect and is the result of multiplying the real parts and imaginary parts of the two complex numbers, $(2)(4) = 8$ and $(3)(8) = 24$, instead of adding those parts together.

QUESTION 4

Choice A is correct. The right side of the equation can be multiplied using the distributive property: $(px + t)(px - t) = p^2x^2 - ptx + ptx - t^2$. Combining like terms gives $p^2x^2 - t^2$. Substituting this expression for the right side of the equation gives $4x^2 - 9 = p^2x^2 - t^2$, where *p* and *t* are

constants. This equation is true for all values of x only when $4 = p^2$ and $9 = t^2$. If $4 = p^2$, then $p = 2$ or $p = -2$. Therefore, of the given answer choices, only 2 could be the value of p.

Choices B, C, and D are incorrect. For the equation to be true for all values of x, the coefficients of x^2 on both sides of the equation must be equal; that is, $4 = p^2$. Therefore, the value of p cannot be 3, 4, or 9.

QUESTION 5

Choice D is correct. In the xy-plane, the graph of the equation $y = mx + b$, where m and b are constants, is a line with slope m and y-intercept $(0, b)$. Therefore, the graph of $y = 2x - 5$ in the xy-plane is a line with slope 2 and a y-intercept $(0, -5)$. Having a slope of 2 means that for each increase in x by 1, the value of y increases by 2. Only the graph in choice D has a slope of 2 and crosses the y-axis at $(0, -5)$. Therefore, the graph shown in choice D must be the correct answer.

Choices A, B, and C are incorrect. The graph of $y = 2x - 5$ in the xy-plane is a line with slope 2 and a y-intercept at $(0, -5)$. The graph in choice A crosses the y-axis at the point $(0, 2.5)$, not $(0, -5)$, and it has a slope of $\frac{1}{2}$, not 2. The graph in choice B crosses the y-axis at $(0, -5)$; however, the slope of this line is -2, not 2. The graph in choice C has a slope of 2; however, the graph crosses the y-axis at $(0, 5)$, not $(0, -5)$.

QUESTION 6

Choice A is correct. Substituting the given value of $y = 18$ into the equation $x = \frac{2}{3}y$ yields $x = \left(\frac{2}{3}\right)(18)$, or $x = 12$. The value of the expression $2x - 3$ when $x = 12$ is $2(12) - 3 = 21$.

Choice B is incorrect. If $2x - 3 = 15$, then adding 3 to both sides of the equation and then dividing both sides of the equation by 2 yields $x = 9$. Substituting 9 for x and 18 for y into the equation $x = \frac{2}{3}y$ yields $9 = \frac{2}{3}18 = 12$, which is false. Therefore, the value of $2x - 3$ cannot be 15. Choices C and D are also incorrect. As with choice B, assuming the value of $2x - 3$ is 12 or 10 will lead to a false statement.

QUESTION 7

Choice C is correct. By properties of multiplication, the formula $n = 7\ell h$ can be rewritten as $n = (7h)\ell$. To solve for ℓ in terms of n and h, divide both sides of the equation by the factor $7h$. Solving this equation for ℓ gives $\ell = \dfrac{n}{7h}$.

Choices A, B, and D are incorrect and may result from algebraic errors when rewriting the given equation.

QUESTION 8

Choice B is correct. This question can be answered by making a connection between the table and the algebraic equation. Each row of the table gives a value of x and its corresponding values in both $w(x)$ and $t(x)$. For instance, the first row gives $x = 1$ and the corresponding values $w(1) =$ −1 and $t(1) = −3$. The row in the table where $x = 2$ is the only row that has the property $x = w(x) + t(x)$: 2 = 3 + (−1). Therefore, choice B is the correct answer.

Choice A is incorrect because when $x = 1$, the equation $w(x) + t(x) = x$ is not true. According to the table, $w(1) = −1$ and $t(1) = −3$. Substituting the values of each term when $x = 1$ gives −1 + (−3) = 1, an equation that is not true. Choice C is incorrect because when $x = 3$, the equation $w(x) + t(x) = x$ is not true. According to the table, $w(3) = 4$ and $t(3) = 1$. Substituting the values of each term when $x = 3$ gives 4 + 1 = 3, an equation that is not true. Choice D is incorrect because when $x = 4$, the equation $w(x) + t(x) = x$ is not true. According to the table, $w(4) = 3$ and $t(4) = 3$. Substituting the values of each term when $x = 4$ gives 3 + 3 = 4, an equation that is not true.

QUESTION 9

Choice C is correct. The two numerical expressions in the given equation can be simplified as $\sqrt{9} = 3$ and $\sqrt{64} = 8$, so the equation can be rewritten as $\sqrt{x} + 3 = 8$, or $\sqrt{x} = 5$. Squaring both sides of the equation gives $x = 25$.

Choice A is incorrect and may result from a misconception about how to square both sides of $\sqrt{x} = 5$ to determine the value of x. Choice B is incorrect. The value of $\sqrt{x}$, not x, is 5. Choice D is incorrect and represents a misconception about the properties of radicals. While it is true that 55 + 9 = 64, it is not true that $\sqrt{55} + \sqrt{9} = \sqrt{64}$.

QUESTION 10

Choice D is correct. Jaime's goal is to average at least 280 miles per week for 4 weeks. If T is the total number of miles Jamie will bicycle for 4 weeks, then his goal can be represented symbolically by the inequality: $\dfrac{T}{4} \geq 280$, or equivalently $T \geq 4(280)$. The total number of miles