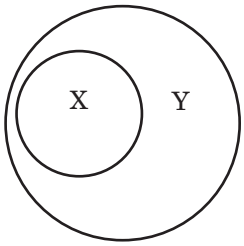
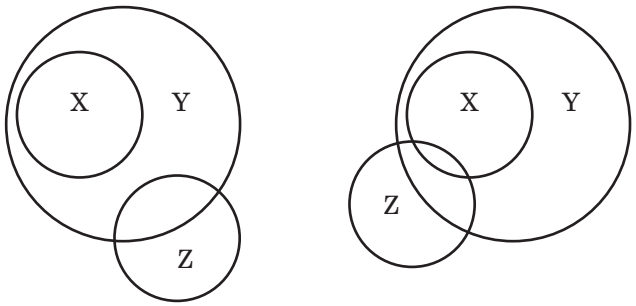
17. (**A**) To answer this question correctly, it is important to understand the relationships among the memberships of the three clubs. According to the question, every member of club X is also a member of club Y. It is helpful to draw a diagram to illustrate this relationship:



The question says that some members of club Z are also members of club Y. There are two possibilities for representing this relationship. With the information given, we cannot determine which possibility is correct.



The question says that Sonya is in exactly two of these clubs, but does not specify which ones. She could be in clubs X and Y, or clubs Y and Z. She cannot be in clubs X and Z because membership in club X implies membership in club Y, which adds up to membership in three clubs, not two.

Read each option and evaluate whether it **must** be true, based on the information given. Option A must be true; if Sonya is in club X, then her second club is Y, not Z. The other options may or may not be true, but we cannot conclude that any of them **must** be true. Option C looks appealing, but it has changed the information given in the question. "Every member of club X is also a member of club Y" does not mean "Every member of club Y is also a member of club X."

18. and 19. *These directions differ from the directions for the code in Sample Form B. They state that the position of a letter is* **never** *the same as that of the word it represents. For example, in the first sentence,* M *cannot represent "this." To answer these questions, you need not find out what every letter represents.*

18. (**K**) The word "states" appears in the first two sentences, but not the third. W can be ruled out because it is in the same position as "states." X cannot be correct; it does not appear in the first sentence. N and Q are ruled out because they appear in the third sentence, which does not include "states." That leaves M, which is the correct answer.

19. (**C**) W appears in all three sentences, as do Q and N and the words "this," "train," and "crosses." W cannot represent "this" because both appear in the first position in the third sentence. N and Q cannot represent "crosses" since they are in the same position as "crosses" in the second and third sentences, respectively. Therefore, W must represent "crosses."

20. (**H**) The problem says that two circumstances, a full moon and the sight of a cat, will cause my dog to bark. We **do not** know that these are the only two circumstances because the information given does not say so. Therefore, you can rule out options F and G. J is wrong because the information given says nothing about what the dog would do when the moon is not full. K is wrong because it incorrectly combines two pieces of information. H is correct. If my dog does not bark, then the moon cannot be full; otherwise it will bark. It also has not seen a cat; again, it will bark otherwise.

Reading

(Saber-Tooth)

21. (**D**) This question asks you to determine the general theme of the passage. Option A is a small detail and does not apply to the entire passage. Option B, though important, also is a detail. Options C and E are not discussed. The passage describes what we know about saber-toothed cats based on the study of bones preserved in the tar pits. Thus, the best answer is Option D.

22. (**J**) You can approach this question by eliminating the options mentioned in the passage. Charging prey is mentioned in lines 26-27, so Option F can be ruled out. Option G is eliminated by lines 5-8 and 29-31, which describe the saber-tooth's use of its lethal canine teeth. Option H is incorrect since sharing the kill with wounded comrades is described in lines 42-44. Option K is eliminated by line 51, in which purring ability is mentioned. Option J remains, and since the passage does **not** mention this topic, it is the correct answer.

23. (**C**) The word "imply" means you must look for information to support an inference not directly stated. The passage says nothing about saber-tooths being attacked by their prey, so Option A is incorrect. Nor can Option B be inferred from information given; in fact, the opposite is more likely. Option D is contradicted by line 11, which mentions the animals' presence on several continents. Option E is contrary to fact since the passage mentions that mastodon bones were found with saber-tooth bones in the tar pits. The "elephant-like" mastodon is described in lines 8-9 as the saber-tooth's most frequent prey, and the phrase in line 31, "even a mastodon" suggests that it was larger than a saber-tooth. Therefore Option C is the correct inference.

24. (**K**) The phrase "have a heart" suggests soft, kind feelings. Option F is wrong, since the saber-tooth was a fierce hunter. Options G, H, and J were not discussed in the passage. Options G and J would be difficult to support because it is impossible to know what emotions the cats felt. Option K is the best answer; it suggests that the act of sharing resembles an act of kindness (lines 41-44).

25. (**B**) Since the saber-tooth roamed several continents (line 11), Option A is not a likely reason for their extinction. Option C is not true, according to lines 46-47. Option D has no support in the passage, which never mentions that saber-tooths were themselves prey for other predators. Option E might seem likely from lines 36-37, but we have no information to judge the vulnerability of the cats compared with other animals. Option B is best; lines 12-14 suggest that when the mastodon became extinct, the extinction of the cat followed.

26. (**J**) To define the "grisly service" provided by the tar pits, look at the context of the phrase. The complete sentence says that the tar pits provided a service for modern scientists. The previous sentence (lines 15-18) says that much of scientific knowledge about the saber-tooth has resulted from the study of bones found in the tar pits. The best answer is Option J. The tar pits have preserved animal skeletons that scientists study to learn more about saber-tooths and other extinct species. The other options are incorrect because they do not state how the tar pits helped scientists. Option H contradicts the passage, which says that the pits trapped both predator and prey (lines 20-22). Option K is ruled out because the passage says that the pits trapped the animals (line 20), not that the animals willingly went there to die.

(Tea Ceremony)

27. (**C**) The passage does not describe tea ceremonies in other countries, so Option A cannot be correct. Nor does it contrast the tea ceremony with other Japanese traditions, ruling out Option B. Option D is an important detail, but it does not describe the broad theme of the passage. Option E can be ruled out because Rikyu is mentioned only once, and he did not "invent" the tea ceremony. Option C is the best answer; the passage describes the history of the Japanese tea ceremony, from the first tea brought to Japan until the present time.

28. (**J**) The first sentence says that tea had a long history of medicinal use in India and China before it was brought to Japan. The Zen master Yaesai treated the tea plant as a sacred remedy (lines 10-12). Option J is the only answer choice that summarizes this information correctly. Options F, H, and K are contradicted by the passage, and Option G—the capability of curing almost any disease—is never claimed by the passage writer.

29. (**A**) The question asks specifically about the present-day tea ceremony, implying the shortened ceremony, which is discussed in the last paragraph. Option A is supported by the passage, which states, "The 'weak tea' part of the ceremony is often the only one practiced today …." The passage does not specify where tea ceremonies are held in the present day, but the full tea ceremony was traditionally held in the host's tea room, and it seems likely that the present-day ceremony takes place in the host's home, thereby ruling out Option B. Options C, D, and E refer to practices that occur in the full tea ceremony, not in the weak tea portion.

30. (**G**) Rikyu established the rules and etiquette for the tea ceremony as it is practiced today (lines 33-37). Option G restates what the passage says and is the correct answer. Option F is incorrect; Rikyu lived in the sixteenth century. Option H is also incorrect; thick tea is only one of three parts of the full tea ceremony. Options J and K can be ruled out because the passage says that, by the fifteenth century, the tea ceremony had become an essential part of the cultural life of Japan, not limited to Buddhist monks or members of the aristocracy.

31. (**C**) *Wabi* is defined in lines 42-43: simplicity and absence of luxury, one of the principles that define the tea ceremony. (Be careful not to confuse *wabi* with *shibui,* another important principle with a very different meaning.) Options A and B can be ruled out because little information is provided about wine-tasting parties and tea tournaments, except that they were social events for tasting beverages. We cannot determine whether or not these activities exhibited the quality of *wabi*. Option C refers to the simple design of the tea room, lacking in pretension (lines 46-47). This quality matches the definition of *wabi,* and Option C is the correct answer. Option D does not have any relationship with *wabi.* Option E does not demonstrate *wabi* (though it may demonstrate *shibui,* impeccable taste).

32. (**J**) You are asked to infer the most likely reason that the tea ceremony has survived to the present day. Option F can be ruled out; tea is no longer considered a luxury, and the tea ceremony has been part of the cultural life of Japan since the fifteenth century (lines 25-32). Options G, H, and K are incorrect because they characterize tea drinking in earlier centuries, not the tea ceremony as it is practiced today. Option J is the best answer. The author commented that part of the ceremony is still conducted to celebrate special days, and it "provides busy people an opportunity for quiet reflection in a gracious setting" (lines 68-69).

(Swahili Trade)

33. (**A**) Option B may seem correct; however, the term "revival" in the passage refers to European, not African, culture and art. Options C and D are details. Option E is not mentioned. Option A is the best answer because it gives an excellent summary that is neither too broad nor too detailed.

34. (**H**) The earliest known trading partners mentioned are groups from the African interior (lines 26-27). The other options list later trading partners.

35. (**B**) Options A, C, D, and E are aspects of the trade network, but none is related to the Swahili's success in establishing trade along the dangerous coast of Africa. Lines 20-23 directly relate the Swahili's knowledge of the coastal waters to their expanded influence. Option B is the best answer.

36. (**K**) The answer is found in lines 34-37, which state that the Red Sea traders sought African gold, ivory, and crystals. Thus the correct answer is Option K. Options G and J are products offered, not sought, by the Red Sea traders. Option F refers to a product traded by another group, the Persian Gulf merchants, and Option H is not mentioned as a medium of exchange for any group.

37. (**B**) The Swahilis were described as coastal traders (lines 17-19), so we can eliminate Option A. Options C and E are incorrect because the passage did not mention that they sailed outside the East African coast. We can eliminate Option D because traders from the Red Sea came to exchange goods (line 35). Thus the coast of East Africa is the only possible place where the trade took place.

38. (**F**) The first paragraph says that European artists obtained some of their materials through the Swahili trading network. Lines 34-37 state that Muslim traders from the Red Sea bought African gold, ivory, and crystals from Swahili traders to sell to Mediterranean Europe (Option F). Options G, J, and K are incorrect because the Swahili traders did not deal directly with the Europeans, nor did they purchase European art. Option H is contradicted by lines 28-33.

(Comets)

39. (**C**) Option C best summarizes the main idea, encompassing all five paragraphs of the passage. The other options are important details that do not describe the overall theme.

40. (**J**) This question is similar to the question raised in lines 15-17: "Why, then, did they [comets] inspire such terror and forecasts of doom in virtually every culture of the world for thousands of years?" The passage continued, "It may well be because . . . people could not fit comets into what they knew about the universe, and because fear is a very human reaction to the unknown." Later, the passage stated, "With no apparent rhyme or reason for their appearances, comets became objects of awe and fear" (lines 36-38). In other words, comets inspired fear because they were unpredictable, which is Option J. Options F and H are contradicted by lines 13-14. Option G is not mentioned in the passage, and Option K is ruled out by the same reasoning that supports Option J.

41. (**E**) The answer is found in the fourth paragraph, which gives examples of how various cultures once regarded comets. Most people considered comets premonitions of doom, but the !Kung people believed that comets brought good luck (lines 63-66), which is Option E. Options A and C describe other cultures, not the !Kung people. Options B and D are not supported by the passage.

42. (**F**) The correct answer requires you to combine information from several places in the passage. The Tongan name for comets is "stars of dust" (line 55). Their name comes closest to the truth because the scientific description of a comet includes a tail composed of gases and dust (lines 46-47). Option G refers to the English name, not the Tongan name. Comets are not actually stars, ruling out Option H. Option J is contradicted by the scientific description, and Option K is incorrect because it was the !Kung people, not the Tongans, who believed that comets brought good luck.

43. (**C**) The question asks for an inference based on information in the passage but not directly stated. The T-shirt's inscription, mentioned in lines 6-8, supports the statement in lines 4-5, "a comet is frequently the occasion for celebration." Note the use of the word "however" in the sentence that follows: "For most of the history of the human race, however, the appearance of a comet has inspired fear, dire predictions, and irrational behavior." This implies that the sight of a comet in 1985-86 inspired

interest and curiosity rather than fear. Option C best summarizes this inference. Option A is incorrect; a comet that cannot be seen would not inspire T-shirts and posters. Options B and D are contradicted by the passage. Option E incorrectly assumes that the appearance of Halley's comet predicted a disaster.

44. (**F**) The passage describes how people once feared comets because their apparitions were unpredictable. Then it provides scientific information about comets' composition and apparitions. Coincidence, not cause and effect, best characterizes the relationship between comet sightings and bad luck. Options G and H incorrectly assume that comets cause disasters. Option J is false; the passage says that in earlier times, people were in closer touch with the natural world than are most people today, yet those early people did not understand the relationship. Option K is contradicted by lines 15-17 and 56-58. Option F is best because it summarizes the correct understanding of the relationship between comets and disasters.

(Urban Street Performers)

45. (**A**) Option B mentions only one function of traditional folk artists. No information is provided to support Option C. Options D and E may represent the writer's beliefs, but they do not describe the main theme of the passage: Indian street performers who used to be traveling artists have had to change as India changed. Thus Option A is the best answer.

46. (**K**) All the options describe threats to traveling performers. However, Option F, television, arrived after 1947 (lines 12-15). Option G names laws that were instituted after India's independence in 1947 (lines 12-13). Industrialization, Option H, is described as following court-centered entertainment (lines 7-12), an earlier threat to traveling performers. Option J can be eliminated since the slum clearances occurred after the performers moved to the cities. Option K is correct because the threat of court-based entertainment, which took place in the sixteenth century, came first.

47. (**B**) The author would not likely agree with Option A, since the passage describes changes for the better for modern-day street performers. Option C contradicts the facts presented in lines 32-35. Option D might be reasonable if the government still considered street performers beggars, but with their right to form cooperatives, this is no longer true. Option E may be true, but there is no evidence to support it; in fact, the opposite conclusion is suggested (lines 30-32). Option B is the best answer since the passage describes how these professions have moved to the cities.

48. (**H**) Lines 32-35 state that the government treats street performers like businesspeople. Careful reading of the passage eliminates the other options.

49. (**E**) It is easiest to check each option against the article. Options A and B state major strengths of the current folk artists, as described in this passage. Option C is a positive change that has occurred as a result of the new cooperatives. Option D can be eliminated because the urban street performers are indeed trying new methods such as allowing women to perform roles once reserved for men. Option E is correct. The last sentence suggests that street artists may return to their country villages to visit, but they always return home to the city.

50. (**F**) The passage describes the rediscovery as a turning point in the fortunes of the performers (lines 31-32). It is a turning point for the better; the artists have gained a world-wide audience (lines 35-40). With their new audiences, you may conclude that the artists have regained some of their former popularity (Option F). The other options are contradicted by information in the passage. The artists' legal status has been established (lines 32-35); they continue to live in cities (lines 55-58), and they have accepted many changes, including the participation of women and children (third paragraph).

51. (**D**) Find the greatest common factor by factoring each number into prime factors.

$$105 = 3 \cdot 5 \cdot 7$$
$$126 = 2 \cdot 3^2 \cdot 7$$

Therefore, the GCF is $3 \cdot 7 = 21$.

52. (**F**) Assume that Evon's share of the profit is A. Simonne and Marco each received twice as much profit as Evon received, so Simonne received 2A and Marco received 2A. Now you can set up the equation:

$$A + 2A + 2A = \$1{,}800$$
$$5A = \$1{,}800$$
$$A = \$360$$

53. (**E**) Since the ratio of MN:NQ is 3:2, and NQ is 30 cm, MN must be 45 cm. The ratio of NP:PQ is 2:1, and their sum (NQ) is 30 cm, so NP must be 20 cm and PQ 10 cm. Therefore, MP is 45 cm + 20 cm = 65 cm.

54. (**J**) $48.762 \times 100 = 4.8762 \times 10 \times 10^2$
$= 4.8762 \times 10^3$

Options G and K are numerically equivalent to the correct answer J, but they are incorrect because they are not written in the correct format for scientific notation: a number between 1 and 10, multiplied by a power of 10.

55. (**D**) The midpoint of two numbers on a number line is their average. Hence Q is at the average of $^-10$ and $^-2$, i.e., $^-6$. P is at 3. $\overline{PQ}$ is the distance between 3 and $^-6$, which is $(3 - {}^-6)$ units = 9 units.

56. (**G**) Form an equation for the perimeter of the polygon with the information given:

$$3x + 6(2x) + 12 + 13 = 100$$
$$3x + 12x + 25 = 100$$
$$15x = 75$$
$$x = 5$$

57. (**B**) $3|{}^-7| - 5|{}^-11| = 3 \times 7 - 5 \times 11 = 21 - 55 = {}^-34$

58. (**H**) $(\sqrt{36})(\sqrt{16}) = (6)(4) = 24$

59. (**A**) Three 14-hour shifts total 42 hours. It is easiest to figure time in blocks of 24 hours or 12 hours, because it will be the same time of day after 24 hours, and the same time on the clock after 12 hours. Note that 42 = 24 + 12 + 6. 24 hours from 9:00 a.m. is 9:00 a.m. the next day. 12 hours after that is 9:00 p.m. 6 hours after that is 3:00 a.m. on the following day. So 42 hours after 9:00 a.m. is 3:00 a.m.

60. (**J**) First simplify the fraction:

$$\frac{4.2N}{1.2} = \frac{42N}{12} = \frac{7N}{2}$$

This number is an integer. This means that N must be an even number, otherwise, $\frac{7N}{2}$ will not be an integer. We also know that N is an element of the set S. The only even number in S is 2.0. Therefore, $N = 2.0$. (Note that 0.2 and 1.4 are not even numbers, as only integers can be even or odd.)

61. (**E**) Numbers that have 10 as a factor always end with 0. Numbers that have 5 as a factor always end with 5 or 0. Therefore, numbers that have 5 as a factor but do not have 10 as a factor always end with 5. Only one number ends with 5 in a consecutive group of 10 numbers. Notice that the given set can be divided into 18 groups:

1–10, 11–20, 21–30, . . . , 161–170, and 171–178

Each of these groups contains exactly one number ending with 5. Therefore, there are 18 such numbers in the set.

62. (**H**) The possible values of n are 12, 14, 16, 18. (Note that 10 is *not* included.) Without computation, one can see that the mean is 15, as the numbers are equally distributed around 15.

63. (**D**) Note that the length of three squares together is exactly the diameter of the circle, which is 30 cm. The length of one side of a square is therefore 10 cm. The area of one square is 100 sq cm, so the area of five squares is 500 sq cm.

64. (**H**) $\dfrac{40}{\frac{2}{5}} = \dfrac{40 \bullet 5}{2} = 100$

65. (**E**) Number of hours Elliott worked this week = $6\frac{1}{2}$ hr $\times$ 3 = 19.5 hr.
Amount Elliott should be paid for this week = \$3.78 $\times$ 19.5 = \$73.71.

66. (**H**) Whenever you see a formula written in words, it is best to translate it into symbols first.
$\dagger (w, x, y, z)$ = add w and x, multiply this result by y, then subtract z
$= (w + x)y - z$
Therefore, $\dagger (3, 5, 6, 3) - \dagger (4, 6, 3, 5)$
$= [(3 + 5)(6) - 3] - [(4 + 6)(3) - 5]$
$= 45 - 25$
$= 20$

67. (**E**) If 12 of the 25 picked the game as their favorite, then 13 of 25 did not. Therefore, the fraction of the class that did not pick the game is $\frac{13}{25}$.
To change a fraction into percent, multiply the fraction by 100%:

$\frac{13}{25} = \frac{13}{25} \times 100\% = 52\%$

68. (**G**) The only set of 3 different positive integers that fit this requirement is 1, 2, and 5 ($1 \times 2 \times 5 = 10$). The sum of these integers is 8.

69. (**D**) The formula for the area of a circle is $A = \pi r^2$, so $p = \pi r^2$. The formula for the circumference of a circle is $C = 2\pi r$, so $q = 2\pi r$.

$p = 2.5q$
$\pi r^2 = (2.5)(2\pi r)$
$\pi r^2 = 5\pi r$
$r^2 = 5r$
$r = 5$
So the radius of the circle is 5 ft.

70. (**J**) The area of a trapezoid is
$\frac{1}{2}$ • height • sum of the lengths of the // sides.
The area of this trapezoid is therefore
$\frac{1}{2}$ • 15 • (20 + 30) sq cm = 375 sq cm.

71. (**A**) Just solve the equation. Write it as $\dfrac{x^2}{20} = \dfrac{4}{5}$.
Then multiply both sides of the equation by 20.

$\dfrac{x^2}{20} = \dfrac{4}{5}$

$x^2 = \dfrac{4}{5} \bullet 20$

$x^2 = 16$

$x = 4$ *or* $^-4$

Since x is positive, it is 4.

72. (**K**) Express the four numbers and their sum as:
$x + (x + 10) + (x + 20) + (x + 30) = 300$
$4x + 60 = 300$
$4x = 240$
$x = 60$

73. (**D**) The perimeter of the triangle is 24 cm. A square with a perimeter of 24 cm has a side of 6 cm. Thus its area is 6^2 sq cm, or 36 sq cm.

74. (**H**) The relationship between Jorge's age (x) and his brother's age (y) is $x = (3 \bullet y) - 5$.
If his brother's age is 8, then Jorge's age is $3 \bullet 8 - 5 = 19$.

75. (**D**) According to the chart, 12-year-olds consume 16% of the total; 16% of 10,000 is 1,600 pounds.

76. (**H**) To find the median, first put the numbers in order from least to greatest: 16, 17, 17, 18, 19, 20, 21, 21, 21. The middle number (the fifth one) is 19.

77. (**E**) The values of variables x and y are given, and they can be substituted into the equation:
$5x(x - y) = 5\ (14)\ (14 - 11)$
$= 70\ (3)$
$= 210$

78. (**H**) $\triangle WXZ$ and $\triangle XYZ$ are similar. This means that $\angle XWZ$ corresponds to $\angle YXZ$ and both are equal to 20°. Also, $\angle WXZ$ corresponds to $\angle XYZ$ and they are equal. Let the measure of $\angle WXZ$ be $x°$. Then the measure of $\angle XYZ$ is also $x°$. These four angles together form the angles of $\triangle WXY$, so the sum of their measures is 180°. We thus have the equation:

$$\begin{aligned} 20 + x + 20 + x &= 180 \\ 2x + 40 &= 180 \\ x &= 70 \end{aligned}$$

Therefore, the measure of $\angle WXY$ is $70° + 20° = 90°$. (Note the convention for similar and congruent triangles. When we say that $\triangle ABC$ is similar or congruent to $\triangle XYZ$, it also means that A corresponds to X, B corresponds to Y, and C corresponds to Z.)

79. (**E**)
$$\begin{aligned} 3(p - 4) &= 2(p + 1) \\ 3p - 3 \bullet 4 &= 2p + 2 \bullet 1 \\ 3p - 12 &= 2p + 2 \\ 3p - 2p &= 2 + 12 \\ p &= 14 \end{aligned}$$

80. (**K**) The probability of drawing a green candy from a jar of 20 candies is $\frac{1}{4}$, which is equivalent to $\frac{5}{20}$. Of the 20 candies, then, five are green. The problem asks you to reduce the probability of drawing a green candy to $\frac{1}{6}$ by adding yellow candies to the jar. That means the number of green candies remains at 5, while the total number of candies in the jar is increased. Suppose y yellow candies are added. The total number of candies is now $20 + y$. The probability of picking a green candy is then $\frac{5}{20 + y}$. This probability is to be $\frac{1}{6}$. Thus you can set up an equation:

$$\frac{1}{6} = \frac{5}{20 + y}$$

Cross-multiply to get $20 + y = 30$, and $y = 10$.

81. (**D**) After Monday, John still has $\frac{1}{2}$ his work left. If he does $\frac{1}{4}$ of that on Tuesday, he has finished another $\frac{1}{8}$ of his work. $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$, leaving $\frac{3}{8}$ of the work to be done the rest of that week.

82. (**F**) Note that if 1 in. is equivalent to 2 ft, 1 sq in. is equivalent to 4 sq ft. Bedroom B consists of 6 • 4 full squares and 6 half-squares. So its area in the floor plan is 27 sq in., which is equivalent to 27 • 4 sq ft = 108 sq ft. Next, convert to square yards: 1 sq yd = 9 sq ft. So 108 sq ft = 12 sq yd.

83. (**A**) Nicki has n stamps. That is half the stamps that Mark has. So Mark has $2n$ stamps. Nicki and Mark together have $3n$ stamps, which is 100 more than Basilio has. So Basilio has $3n - 100$ stamps.

84. (**J**) Since arc BED is part of a circle centered at A, the straight line segment $\overline{AE}$ (not shown) has the same length as $\overline{AB}$, both being radii of that circle. Likewise, $\overline{BE}$ (not shown) and $\overline{AB}$ are the same. So BE = AB = AE, and triangle AEB is equilateral. The measure of angle EBA must be 60°.

85. (**D**) To solve this problem, look first for a known value. If Jae-Lynn will be 16 in 10 years, she is 6 now. Paula, who is 4 times older than Jae-Lynn, is 24 now. Four years ago, then, Paula was 20. Notice how the other options reflect possible misreadings of the question.

86. (**G**) The winner received 55% of 17,000 votes, or (0.55)(17,000) = 9,350 votes. The loser received the remaining votes, 17,000 – 9,350 = 7,650 votes. To calculate how many more votes the winner received than the loser, subtract 7,650 from 9,350 to get 1,700. If you did not read the problem carefully, you might have stopped after calculating the number of votes received by the winner and selected Option K, or stopped after calculating the number of votes received by the loser and selected Option J.

There is a simpler way to obtain the answer. The winner received 55% of the votes, so the loser received 45%. The difference between the number of votes received by the winner and loser is 10% of the votes, which is 1,700.

87. (**A**) Divide 142 by 15 to obtain the number of boxes Javial will fill. The remainder will be the number of candles in the last box. The answer is 9 full boxes with 7 candles left to go in the last box.

88. (**G**) The diagonals ($\overline{WY}$ and $\overline{XZ}$) are lines of symmetry of square WXYZ. Since points W, X, Y, and Z are points on the circle, the entire figure is also symmetrical along $\overline{WY}$ and $\overline{XZ}$. The axis of symmetry for a circle is the diameter, so the diagonal of the square is equal to the diameter of the circle. Since the diagonal is 16 cm, the diameter is also 16 cm and the circumference is 16π.

89. (**B**) You are given the following relationships:

$$660 \text{ ft} = 1 \text{ furlong}$$

$$1 \text{ yd} = \frac{1}{2} \text{ fathom}$$

The problem asks you to determine the relationship between fathoms and furlongs.

$$1 \text{ yd} = 3 \text{ ft} = \frac{1}{2} \text{ fathom}$$

$$1 \text{ fathom} = 2 \text{ yd} = 6 \text{ ft}$$

$$1 \text{ furlong} = 660 \text{ ft} = \frac{660}{6} \text{ fathoms} = 110 \text{ fathoms}$$

90. (**H**) Since x is known to be 3, insert it into the equation and solve for y:

$$\begin{aligned} 6 \bullet 3 (2y - 3 \bullet 3) &= 18 \\ 18 (2y - 9) &= 18 \\ 2y - 9 &= 1 \\ 2y &= 10 \\ y &= 5 \end{aligned}$$

91. (**D**) The values of variables n and k are given, and they can be inserted into the equation:

$$\frac{4}{20} = \frac{13}{x}$$

Solve the equation by cross-multiplying:

$$\begin{aligned} 4x &= 260 \\ x &= 65 \end{aligned}$$

92. (**H**) It is given that QS = 6 centimeters and that QR = RS. We can use that information to find the length of $\overline{RS}$.

QS = QR + RS
Using substitution because QR = RS:
QS = RS + RS
QS = 2(RS)
6 = 2(RS)
3 = RS
Now we can calculate the length of $\overline{ST}$.
We know RT = 7 cm from the diagram and we know RS = 3 cm.
RT = RS + ST
7 = 3 + ST
4 = ST
The length of $\overline{PT}$ is:
PT = PS + ST = 10 + 4 = 14 cm.

93. (**B**) If Ralston Theater has x seats, and Baker Theater has twice as many seats plus another three, then y (Baker Theater) = $2x + 3$.

94. (**J**) The perimeter of rectangle ABCD is given (48 cm), but its length and width are not known. From the information about the circle, we can determine that the length is equal to the diameter of the circle and the width is equal to the radius. Therefore, the length is twice the width. Set up two equations that express what is known about length L and width W:

Perimeter = $2L + 2W$, and

L = $2W$

Substitute the terms:

Perimeter = $2(2W) + 2W$

$48 = 4W + 2W = 6W$

$8 = W$

The width of the rectangle is 8 cm. Now calculate the area A of the circle. Use the formula $A = \pi r^2$ $= \pi\ 8^2$ sq cm $= 64\pi$ sq cm.

95. (**E**) Simply perform the calculations:

$$\begin{aligned} \left(\frac{1}{2} + \frac{2}{5}\right) \div \frac{2}{3} &= \left(\frac{5}{10} + \frac{4}{10}\right) \div \frac{2}{3} \\ &= \frac{9}{10} \div \frac{2}{3} \\ &= \frac{9}{10} \bullet \frac{3}{2} \\ &= \frac{27}{20} \end{aligned}$$

96. (**F**) Let x represent the score for the third game and set up an equation for calculating the mean score of the three games:

$$\begin{aligned} \frac{60 + 50 + x}{3} &= 51 \\ 110 + x &= 153 \\ x &= 43 \end{aligned}$$

97. (**A**) One side of the square is on the x-axis, and another side is on the y-axis. That means one corner of the square must be at the point where the axes intersect, which is the origin (0, 0). Depending on where the square is placed, the points in Options B through E might or might not be corners.

98. (**K**) Of the 27 marbles, 7 were black, 4 were yellow, and 16 were red. After 3 black marbles were removed, 24 marbles remained. Since none of the 3 marbles removed were red, there are still 16 red marbles in the can. The probability of a red marble being drawn next is $\frac{16}{24}$, or $\frac{2}{3}$.

99. (**C**) If Jasmine ate twice as much as Zoe, she ate $\frac{2}{8}$ of the pizza. Together they ate $\frac{3}{8}$, leaving $\frac{5}{8}$ remaining. Thus, the ratio of the amount they ate to the amount remaining is 3:5.

100. (**H**) This question can be solved only by evaluating each option to see which one **cannot** be odd. Since x is even, $x + 1$ must be odd as it is the number after an even number. Likewise, $2x + 1$ and $2x - 1$ must be odd, as $2x$ is always even. So F, J, and K cannot be the correct answers. $\frac{x}{2}$ can be either odd or even. (For example, if x is 6, then $\frac{x}{2}$ is odd; if x is 8, then $\frac{x}{2}$ is even.) So G is not correct. $\frac{x}{3}$, on the other hand, **cannot** be odd. If it were odd, its product when multiplied by 3 (the product of two odd numbers) would be an odd number. However, the product of $\frac{x}{3}$ and 3 is x, which is given to be an even number. So $\frac{x}{3}$ cannot be odd, and H is the correct answer. (Note that $\frac{x}{3}$ may not be an integer. This does not matter, because if it is not an integer, it cannot be an odd integer.)

Answer Key for Sample Form A

Paragraph 1: T R S U Q
Paragraph 2: Q T R S U
Paragraph 3: Q S U R T
Paragraph 4: U T R Q S
Paragraph 5: Q U S T R

11. A	21. D	31. C	41. E	51. D	61. E	71. A	81. D	91. D
12. F	22. J	32. J	42. F	52. F	62. H	72. K	82. F	92. H
13. D	23. C	33. A	43. C	53. E	63. D	73. D	83. A	93. B
14. J	24. K	34. H	44. F	54. J	64. H	74. H	84. J	94. J
15. A	25. B	35. B	45. A	55. D	65. E	75. D	85. D	95. E
16. K	26. J	36. K	46. K	56. G	66. H	76. H	86. G	96. F
17. A	27. C	37. B	47. B	57. B	67. E	77. E	87. A	97. A
18. K	28. J	38. F	48. H	58. H	68. G	78. H	88. G	98. K
19. C	29. A	39. C	49. E	59. A	69. D	79. E	89. B	99. C
20. H	30. G	40. J	50. F	60. J	70. J	80. K	90. H	100. H