

Detailed Solution Model Test II

General Study Paper II

1. (c) Discussing some important determinants of Japanese values (Because the author has dwelt on Japanese values in historical perspective and the factors that have influenced Japanese values over the time)
2. (b) A gifted scientist and his protégé (Because the last para tells that "oyabun-kobun is parent-child relation in which "A party leader, supervisor, or professor, in return for loyalty, protects those subordinate to him and takes general responsibility for their interests throughout their entire lives")
3. (d) I, II, and III (Because the first para tells about "the strength of traditions and selective receptivity to foreign achievements and inventions" and the third para tells that "Today, democratic processes are clearly evident in the widespread participation of the Japanese people in social and political life")
4. (a) decisions about promotions are often based on personal feelings (Because the oyabun-kobun or parent child relation suggests that a leader will take care of its subordinates i.e, there is an element of personal feelings or partiality)
5. (b) Define a term (The author has defined the term "Japanese Character" and then dwelt on the factors that have influenced it)
6. (b) marked a return in government policies to conservative values (Because the first para tells about the government "turning back to the canons of Confucian thought in the Imperial Rescript of 1890" i.e conservative values and disregarding the "free and individualistic philosophy of the Education Code of 1872")
7. (c) A chronological analysis of historical events leading up to a description of the current situation (Because the author has described the evolution of Japanese character in historical perspective)
8. (a) The value system of Japan is based upon traditional and conservative values that have, in modern times, been modified by Western and other liberal values (Because the third para suggests that "Today, democratic processes are clearly evident in the widespread participation of the Japanese people in social and political life" and the fourth para tells that "Most Japanese people have consciously rejected Confucianism, but vestiges of the old order remain")
9. (a) neutral and objective (Because the author has been deliberating on the various factors that have influenced Japanese character and nowhere he has been critical or subjective)

10. (c) demonstrating that effects of microwave radiation are different from those of other forms of radiation (Because the second para tells that "Until recently it was assumed that organisms respond to microwave radiation in the same way that they respond to temperature changes caused by other forms of radiation" and then concludes that microwave radiations are different than other forms of radiation)

11. (b) I and II only (Because the first para tells about the innate mechanism as "The organism can also respond to changes in the temperature of the body core, as is the case during exercise; but such responses result from the direct stimulation of thermoreceptors distributed widely within the central nervous system, and the ability of these mechanisms to help the organism adjust to gross changes in its environment is limited")

12. (a) A suggestion for new research to be done on the effects of microwaves on animals and human beings (Because the last para tells that "Yet surprisingly, not long ago, an increase in the internal body temperature was regarded merely as "evidence" of a thermal effect" thereby suggesting further research on this topic)

13. (b) unfounded assumption (Because the use of the term "assumed" in "Until recently it was assumed that organisms respond to microwave radiation in the same way that they respond to temperature changes caused by other forms of radiation")

14. (c) scholarly and concerned (Because the author has taken up the issue in an intellectual manner and shown his concern for the regulation of body temperature)

15. (a) pointing out weaknesses in a popular scientific theory (Because the author has shown how the popular scientific theory which assumed that microwave radiations are similar to other forms of radiations is not correct and in the third para further describes the effects of microwave radiations)

16. (b) suggesting an approach to solving a problem (Because the author has taken up the problem of desertification its reasons and suggested an approach to find carrying capacity for pastures by using adequate statistical measures by the land managers)

17. (d) I, II, and III (Because the first para tells about "relatively large herds, marginal rangelands and the the onset of a series of dry years beginning at the end of the rainy season in 1967")

18. (d) expect a drastic change in weather conditions (Because the first para suggests that "The mistaken idea that drought is an unexpected event")

19. (a) still hypothetical rather than practical (Because the the second para tells that "Although there appears to be widespread agreement that such a determination would be significant, there has been little agreement on how to make operational the concept of carrying capacity")
20. (a) The scientist has not provided the manager with clear guidelines that can be used in regulating the productivity of land (Because the second para tells that "Such inconclusiveness within the scientific community, while understandable, creates confusion for the land managers")
21. (d) It is not always the result of drastic climate changes alone (Because in the first para the author tells that "that long-range planning has failed to take rainfall variability into account" thereby accepting that nature has a role to play in desertification and subsequently he suggests the calculation of "ecologically realistic carrying capacity" to combat desertification)
22. (c) complex (Because in the last para the author concludes that "no single number can adequately describe the climate regime of an arid or semiarid region")
23. (b) objective (Because throughout the autor has shown concern about finding means to combat desertification in an objective manner without using any loose statements or criticizing anybody)
24. (c) A generalization is advanced and supporting evidence is provided (Because a generalization of unsuccessful food innovations has been chosen as the topic and supporting evidence has been given)
25. (c) It is more susceptible to insects than are other varieties of maize (Because in the statement "For example, the better protein quality in tortillas made from opaque-2 maize will be of only limited benefit to a family on the margin of subsistence if the new maize is not culturally acceptable or is more vulnerable to insects", the author cites primary reason as "cultural acceptability" for a family on marginal subsistence whereas rather it should be the "susceptibility to insect")
26. (c) quality of the crop's protein (Because "Security of crop yield, practicality of storage, palatability, and costs are much more significant than had previously been realized by the advocates of new technologies")
27. (b) somewhat promising but very tentative (Because such innovations "seem more promising, but it is too early to predict their ultimate fate")
28. (b) be necessary to ensure that the benefits of the innovation will be spread throughout the society (Because the last paragraph tells about the

"government policy that takes into account the needs of all sectors of the economy")

29. (a) The introduction of technological innovations to reap profits might alleviate food shortages to some degree, but any permanent solution can come only from effective governmental intervention in the socioeconomic system (Because the last para tells that "Since large segments of the populations of many developing countries are close to the subsistence margin and essentially powerless, they tend to be the losers in this system unless they are aided by a government policy that takes into account the needs of all sectors of the economy")

30. (c) A food-product innovation can be technically feasible and still not be economically viable (Because the first para tells that "fish-protein concentrate and protein from algae grown on petroleum substrates, have since fallen by the wayside")

31. (c) Economic factors and governmental policies strongly influence the ultimate success of any innovation (Because the third para suggests the importance of "government policy that takes into account the needs of all sectors of the economy")

32. (b) difficulties of applying technological solutions to the problem of food shortages (Because the author has dwelt on the difficulties in "finding long-term technological solutions to the problem of world food shortages" and further elaborates on the various factors which influence the outcome of the success of new technological solutions)

33. Secondhand smoking can cause lung cancer, bronchitis and other respiratory diseases.

Cannot say

There is nothing in the passage to substantiate this claim.

34. Truck drivers working alone are not allowed to smoke under the new law.

Cannot say

The passage states that as a result of the new law, work vehicles used by more than one person must be smoke-free, however the passage does not tell us explicitly that the law extends to lone truck drivers (it just fails to mention either way), so we cannot say without further information.

35. It is no longer legal for internal smoking rooms to be provided for employees.

True

The passage states that "staff smoking rooms are no longer allowed; staff who want to smoke must go outside". Employees are the same as "staff" so we are in effect told this statement is true.

36. The CBI survey found that employees spend an average of ten days a year using the internet for work-related business.

False

The CBI survey found that employees spend an average of ten days a year using the internet for personal use, not work-related business. The passage states that the survey found that employees use the internet mostly for work. It can be taken from the passage that 'mostly' is more than the 10 hours spent on personal use.

37. One employee was dismissed for playing Second Life during working hours.

Cannot say

We are told that an employee was dismissed for playing a fantasy game, but the game is not named.

38. A survey found that staff sometimes visit social networking sites during working hours.

True

The Global Secure Systems survey found that employees spend an average of half an hour a day on such sites.

39. The CBI allows personal internet use as long as it is a social networking site.

Cannot say

40. If the number of annual births are distributed evenly across the year and they remain constant at the levels shown, then how many months will it take for Outer London's population to increase by 245,000?

(A) 34

(B) 36

(C) 38

(D) 42

Step 1 – calculate the total annual births

$35,811 + 34,189 = 70,000$

Step 2 – calculate the number of years and months required to reach 245,000

$245,000 / 70,000 = 3.5 \text{ years} = 42 \text{ months}$

Thus the correct answer is (D) 42

41. Which country or countries shown have a population of less than 2.9 million people?

(A) Wales, Scotland

(B) Northern Ireland, Wales, Scotland

(C) Scotland

(D) Northern Ireland, Wales

A country's population can be calculated using the Annual Birth rate - which is given per 1000 of total population – and the number of live births that when combined make up the annual birth rate.

	<i>Annual Birth rate (per 1000 of total population)</i>	<i>Number of births</i>	<i>Population</i>
<i>Scotland</i>	<i>12.2</i>	<i>28,693 + 27,086 = 55,779</i>	<i>1000 x 55,779/12.2 = 4,572,049.1</i>
<i>Northern Ireland</i>	<i>14.8</i>	<i>13,515 + 12,934 = 26,449</i>	<i>1000 x 26,449/14.8 = 1,787,094.5</i>
<i>Wales</i>	<i>12.5</i>	<i>18,640 + 16,800 = 35,440</i>	<i>1000 x 35,440/12.5 = 2,835,200</i>

So the correct answer is (D) Northern Ireland, Wales

42. What is the population of Inner and Outer London combined (to the nearest 100,000)?

- (A) 8,000,000
- (B) 4,600,000
- (C) 3,000,000
- (D) 7,600,000**

	<i>Annual Birth rate (per 1000 of total population)</i>	<i>Number of births</i>	<i>Population</i>
<i>Inner London</i>	<i>16.4</i>	<i>24,735 + 23,461 = 48,196</i>	<i>1000 x 48,196/16.4 = 2,938,780.4</i>
<i>Outer London</i>	<i>15.1</i>	<i>35,811 + 34,189 = 70,000</i>	<i>1000 x 70,000/15.1 = 4,635,761.5</i>

Inner and Outer London population = 2,938,780.4 + 4,635,761.5 = 7,574,541.9

Thus the correct answer is (D) 7,600,000

43. How many babies are born on average as twin births in Wales over five years?

- (A) 4,430
- (B) 886
- (C) 2,215
- (D) 443

Step 1 – calculate the total number of births in Wales

$$18,640 + 16,800 = 35,440$$

Step 2 – calculate the annual number of twin births

$$35,440 \times 1.25\% = 443$$

Step 3 – number of babies over 5 years

$$443 \times 2 \times 5 = 4,430$$

So the correct answer is (A) 4,430

44. What percent of births are male across the 5 Regions shown?

- (A) 49.5%
- (B) 50%
- (C) 50.5%
- (D) 51.4%

Step 1 – calculate the total number of male births

$$24,735 + 35,811 + 30,258 + 53,141 + 34,745 = 178,690$$

Step 2 – calculate the total births

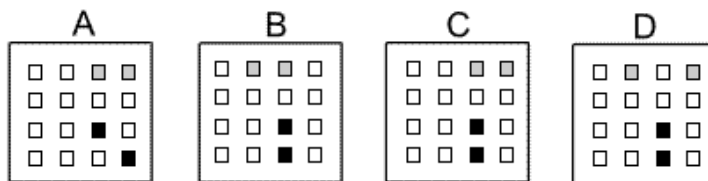
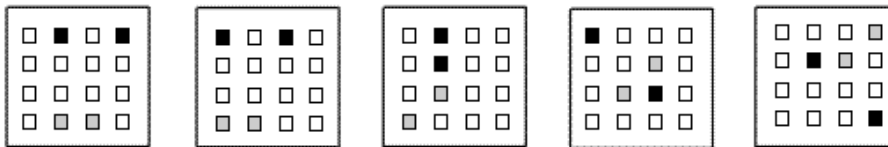
$$178,690 + 23,461 + 34,189 + 28,747 + 50,099 + 32,564 = 347,750$$

Step 3 – put into a %

$$100\% \times (178,690/347,750) = 51.4\%$$

So the correct answer is (D) 51.4%

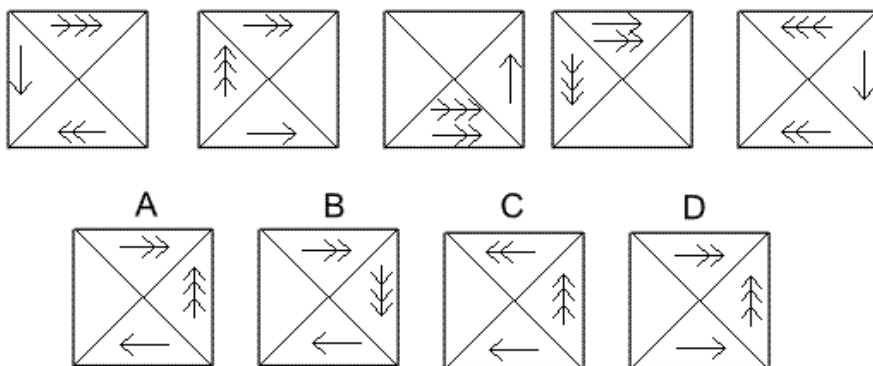
45.



Solution: C
Explanation:

In this question there are two grey and two black squares that follow their own paths. The two grey squares start in the bottom row of the grid and follow a Z-shaped path, moving one place each time - firstly towards the left in the bottom row, then up the diagonal of the Z-shape, then left again across the top row. The two black squares start in the top row of the grid and follow a backwards Z-shaped path, moving one place each time - firstly towards the left along the top row, then down the diagonal of the backwards Z-shape, then towards the left again in the bottom row. The correct answer, therefore, is C.

46.

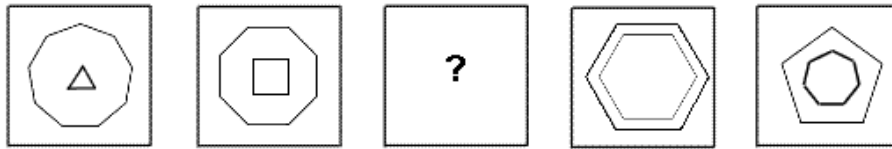


Solution: A

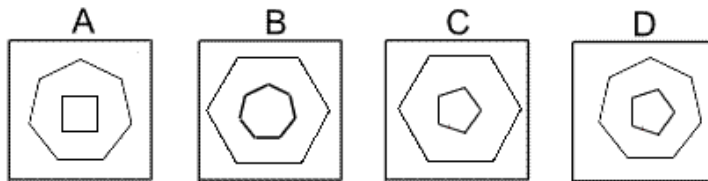
Explanation:

In this question the arrows move around the outside of the grid according to the direction of the arrowheads and a number of places given by the number of arrowheads. However, when two arrows occupy the same quarter of the diagram, the direction of the arrowheads on both arrows reverses. For the next diagram of the sequence, therefore, the arrow with one arrowhead moves one place clockwise, the arrow with two arrowheads moves two places clockwise and the arrow with three arrowheads moves three places anticlockwise. Since none of them then occupy the same quarter of the diagram, none of the arrowheads are reversed. The correct answer, therefore, is A.

47.



Which of the following replaces the question mark in the sequence?



Solution: D

Explanation:

In this question each diagram shows a regular polygon inside another regular polygon.

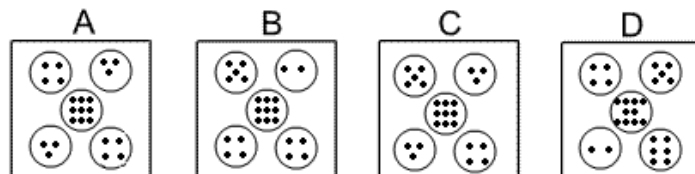
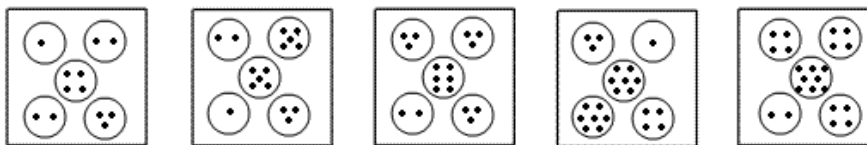
The number of sides of the outer polygon decreases by one each time. The number of sides of the inner polygon increases by one each time. The sum of the sides of the two polygons is always 12.

For the missing diagram of the sequence, therefore, there should be a regular pentagon (five sided polygon) inside a regular heptagon (seven-sided polygon).

The correct answer, therefore, is

D.

48.



Solution: C

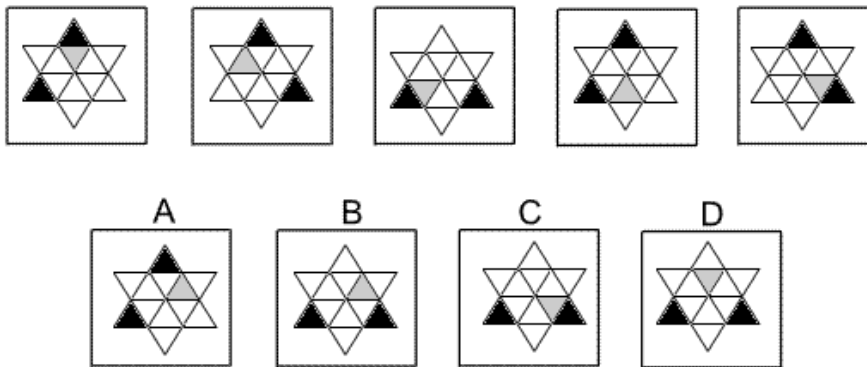
Explanation:

In this question there are two rules to follow.

The first rule is that the number of dots in the centre circle increases by one each time. Following this rule, for the next diagram of the sequence, there should be nine dots in the centre circle. The correct answer, therefore, could be A, B or C.

The second rule is that the number of dots in the centre circle is always equal to the sum of the numbers of dots in the top left and bottom right circles, and the product of the numbers of dots in the top right and bottom left circles. Since $5 + 4 = 9$ and $3 \times 3 = 9$, the correct answer must be C.

49.



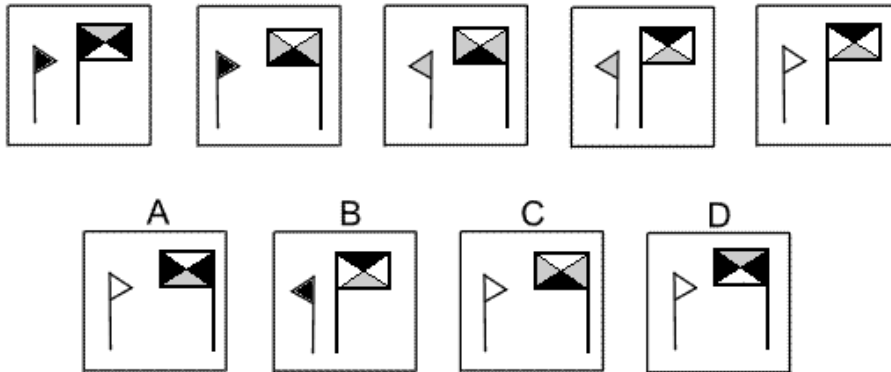
Solution: B

Explanation:

In this question the six triangles around the outside of the shape rotate by 120° clockwise each time and the six triangles in the middle of the shape rotate by 60° anticlockwise each time.

Following these rules, the next diagram of the sequence must be B.

50.



Solution: D

Explanation:

In this question there are two rules to follow. The first rule is that the two flags take it in turns to change direction. For the next diagram of the sequence, therefore, the big flag should change direction. The correct answer could be A, C or D.

The second rule concerns the colours of the five triangles. If a flag does not change direction, then the colours stay the same. However, if a flag does change direction then the colours change as follows: black changes to grey, grey changes to white and white changes to black. For the next diagram, since only the big flag changes direction, the colour of the small flag should remain as white, but the colours of the big flag should change according to this rule. The correct answer, therefore, is D.

51. **c.** The first letters are in alphabetical order with a letter skipped in between each segment: C, E, G, I, K. The second and third letters are repeated; they are also in order with a skipped letter: M, O, Q, S, U.

52. **a.** In this series, the third letter is repeated as the first letter of the next segment. The middle letter, A, remains static. The third letters are in alphabetical order, beginning with R.

53. **d.** In this series, the letters remain the same: DEF. The subscript numbers follow this series: 1,1,1; 1,1,2; 1,2,2; 2,2,2; 2,2,3.

54. **c.** There are two alphabetical series here. The first series is with the first letters only: STUVW. The second series involves the remaining letters: CD, EF, GH, IJ, KL.

55. **b.** The guitar, violin, and cello are stringed instruments; the flute is a wind instrument.

56. **c.** Tulip, rose, and daisy are all types of flowers. A bud is not.

57. **d.** Tire, steering wheel, and engine are all parts of a car

58.**b.** *Leli* means yellow; *broon* means hat; *pleka* means flower; *froti* means garden; *mix* means salad. Therefore, *lelipleka* means yellow flower.

59.**d.** From *wilkospadi*, you can determine that *wilko* means bicycle and *spadi* means race. Therefore, the first part of the word that means racecar should begin with *spadi*. That limits your choices to **b** and **d**. Choice **b**, *spadiwilko*, is incorrect because we have already determined that *wilkomeans* bicycle. Therefore, the answer must be choice **d**, *spadivolo*.

60. **a.** *Dafta* means advise; *foni* is the same as the suffix *-ment*; *imo* is the same as the prefix *mis-*; *lokti* means conduct. Since the only word in the answer choices that hasn't been defined is *krata*, it is reasonable to assume that *krata* means state. Therefore, *kratafoni* is the only choice that could mean statement.

61.**b.** See the table above. The thermometer
Costume logically would be worn by the doctor. According to the information, none of the men is a doctor. Also, Sarah is a florist, so Rachel must be the doctor wearing the Thermometer costume.

62. **d.** Ulysses cannot be a doctor, because that is Rachel. Quentin is an accountant, Thomas must be a photographer, and Sarah is a florist. That leaves chef for Ulysses. We also know The chef must be a man, because neither of the women is dressed as a spoon.

63.**d.** The Whippets cannot be in Jersey, Hudson, or Fulton, since they have beaten those teams. The Antelopes are in Groton, so the Whippets are in Ivy.

64. **d.** The Panthers cannot be in Ivy or Groton, because the Whippets and Antelopes are there. Fulton has beaten the Panthers, so they cannot be in Fulton. Fulton has also beaten the Kangaroos, so the only town left for the Kangaroos is Jersey. That leaves Hudson for the Panthers.

65. **b.** Every team and town is matched up, except Fulton and the Gazelles, so the Gazelles must be in Fulton.

66. **d:** Total area of square - sum of the areas of triangles ADE and DCF) will give the area of the quadrilateral $9 - (2 \times \frac{1}{2} \times 3 \times 1.5) = 4.5$

67. b: First you must realize that the sum of two 2-digit numbers cannot be more than 198 (99 + 99). Therefore in the given problem D must be 1. Now use trial and error to satisfy the sum $5A + BC = 143$

A + C must give 3 in the units place, but neither can be 1 since all the digits have to be different. Therefore A + C = 13. With one to carry over into the tens column, $1 + 5 + B = 14$, and B = 8. $A + C + B + D = 13 + 8 + 1 = 22$

68. d: If the radius is 7, the circumference = 14π . The length of the arc is $100/360$ of the circumference. Taking π as $22/7$ we get $(100 \times 14 \times 22) / (360 \times 7)$ which reduces to $440/36 = 12.22$ (i.e. approx. 12)

69. d: Since the angles of BCD are all equal, it is an equilateral triangle. Therefore. Since one side is 2, BD and CD are also 2. These sides (totaling 4 units) represent half the perimeter of the parallelogram. Total perimeter = 8.

70. d: Multiplying two negatives (or any even multiple) results in a positive. But multiplying three negatives (or any odd multiple) gives a negative. If the result of multiplying 6 negatives is odd, the largest number of negative integers will be the largest odd number (i.e.5)

71. a: You can find the integers which when divided by 5 have a remainder 2 by adding 2 to all multiples of 5. So we have $n = 9, 12, 17, 22$ etc. From this series we can see that n does not have to be odd. Also $n + 1$ can be a prime because, for example, $12 + 1 = 13$ and $(n + 2) / 7$ has a remainder 2 in some cases but not all. Remember the question asks us for what MUST be true, and we see that none of the statements are true in all cases.

72. c: When the larger cube is cut into smaller cubes, the corner cubes will have paint on three sides. The cubes in the middle of the faces will have paint on only one side, but the cubes cut from the edges will have paint on two sides. In this case, there will be only one cube on each edge (excluding the corners), and since there are 12 edges, there will be 12 cubes with paint on two sides. (Drawing a diagram will make this much clearer.)

73. b: To determine the length of side \overline{BC} , apply the definition of the tangent of an angle θ in a right triangle: the tangent of θ is equal to the length of the side opposite angle θ divided by the length of the side adjacent to angle θ . Thus in this case, $\tan 22^\circ = \frac{BC}{AC} = \frac{BC}{10}$, which gives $BC = 10 \tan 22^\circ$. Use a calculator, set to degree mode, to compute that $10 \tan 22^\circ \approx 4.0$.

74. d: Let E2 = Event of getting '2' balls are blue and '1' is red.
 = Total no. of ways $\rightarrow n(E2) = 8C2 \times 6C1$
 = $\frac{8!}{(2! \times 6!)} \times \frac{6!}{(1! \times 5!)}$
 = $(8 \times 7) / 2 \times 6 / 1 = 168$

$$P(E_2) = 168 / 816 = 7/34$$

75. b: $n(S)$ = Total number of ways of selecting 1 card out of 52 cards.

$$= {}^{52}C_1 = 52$$

$n(E)$ = Total number of selections of a card, which is either a king or a queen.

$$= {}^4C_1 + {}^4C_1 = 4 + 4 = 8$$

$$P(E) = n(E) / n(S) = 8 / 52 = 2 / 13$$

76. d: The correct answer was $1/2$.

The result of the first three tosses doesn't influence the fourth. The odds between heads and tails are always even.

77. b: The correct answer was $1/45$.

You have two chances out of ten to guess the first number, or $1/5$. Only one of the remaining nine is correct, so you have one chance out of nine to guess that one too. $1/5 \times 1/9 = 1/45$.

$$78. -2 - 3 = (-2)(3) - (-2 + 3) = -6 - (1) = -7 \text{ (B)}.$$

79. Since $x - 5 = x - 10$

$$5x - (5 + x) = 10x - (10 + x)$$

$$5x - 5 - x = 10x - 10 - x$$

$$4x - 5 = 9x - 10$$

$$5x = 5 \Rightarrow x = 1 \text{ (D)}.$$

$$80. y - y = y^2 - 2y = y^2 - 3y = 0.$$

$$\text{So, } y(y - 3) = 0 \Rightarrow y = 0 \text{ or } y = 3.$$

There is only 1 positive solution, 3 (D).