# ANSWER KEY - SNAP 2011

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | b | **2** | a | **3** | d | **4** | c | **5** | d | **6** | d | **7** | a | **8** | b | **9** | b | **10** | c |
| **11** | c | **12** | d | **13** | c | **14** | d | **15** | a | **16** | d | **17** | c | **18** | d | **19** | a | **20** | a |
| **21** | c | **22** | a | **23** | c | **24** | c | **25** | d | **26** | c | **27** | c | **28** | d | **29** | c | **30** | d |
| **31** | d | **32** | a | **33** | d | **34** | b | **35** | b | **36** | b | **37** | a | **38** | a | **39** | a | **40** | d |
| **41** | c | **42** | d | **43** | a | **44** | a | **45** | d | **46** | d | **47** | d | **48** | b | **49** | a | **50** | a |
| **51** | c | **52** | c | **53** | c | **54** | b | **55** | d | **56** | a | **57** | c | **58** | b | **59** | a | **60** | a |
| **61** | b | **62** | | **63** | b | **64** | a | **65** | c | **66** | a | **67** | a | **68** | d | **69** | b | **70** | d |
| **71** | d | **72** | c | **73** | d | **74** | d | **75** | d | **76** | d | **77** | a | **78** | d | **79** | c | **80** | d |
| **81** | a | **82** | c | **83** | a | **84** | d | **85** | b | **86** | a | **87** | b | **88** | b | **89** | a | **90** | a |
| **91** | c | **92** | d | **93** | c | **94** | d | **95** | a | **96** | b | **97** | b | **98** | b | **99** | c | **100** | d |
| **101** | d | **102** | a | **103** | d | **104** | | **105** | a | **106** | d | **107** | d | **108** | | **109** | c | **110** | d |
| **111** | b | **112** | b | **113** | b | **114** | b | **115** | c | **116** | | **117** | b | **118** | c | **119** | c | **120** | b |
| **121** | a | **122** | c | **123** | b | **124** | a | **125** | b | **126** | c | **127** | a | **128** | d | **129** | b | **130** | c |
| **131** | b | **132** | c | **133** | b | **134** | b | **135** | d | **136** | a | **137** | a | **138** | c | **139** | a | **140** | c |
| **141** | b | **142** | b | **143** | d | **144** | a | **145** | d | **146** | a | **147** | b | **148** | d | **149** | d | **150** | d |

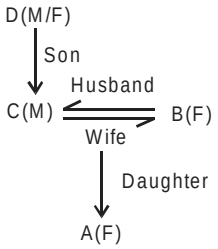
# SOLUTIONS - SNAP 2011

1. b The starting statement is G, the conclusion statement is H.
G - People are rewarded
B - People are rewarded > they may change their lifestyle >
F - They may change their lifestyle > temperature will not rise
D - Temperature will not rise > water level may not rise
H - Water level does not rise

2. a The starting statement is G, the conclusion statement is H.
G - Vina dances
F - Vina dances > Kumar Sings
B - Kumar Sings > Audiences Dances
C - Audiences Dances > Concert is successful
H - Concert is successful

**For questions 3 to 5:**
The data given in the question set is incomplete.

As there is no 'None of these' or 'Cannot be determined' options, in order to answer these questions one of the members must always speak the truth.
Only from D's statement, all the relationship can be determined. Therefore, D must be the one who always speak the truth.
The family chart can be shown as below.



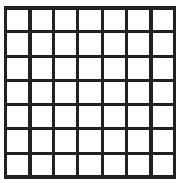

**Note:** 'M' represents male and 'F' represents female.

3. d D always speaks the truth.

4. c B is C's wife.

5. d B's daughter always tells lies. The answer cannot be option (c) as we don't know the gender of D.

**For questions 6 to 8:**
A cube kept in a corner of a room will have only three its faces visible. Each face of the larger cube will look like as:

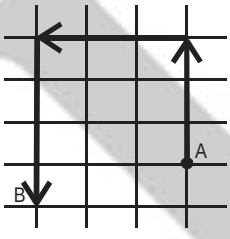


6. d Number of cubes with none of the face painted
= 343 – (7 × 7 + 7 × 6 + 6 × 6) = 216.

7. a Number of cubes with exactly one face painted
= 36 × 3 = 108
(Since, edges sharing boundary with wall will have only one face painted.)

8. b As there is only one cube with three faces painted, number of cubes with at most two faces painted is equal to 343 – 1 = 342.

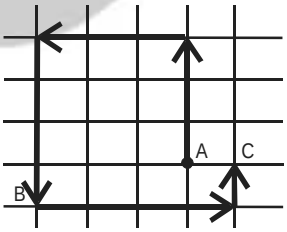
**For questions 9 and 10:**




The lines above represent roads at a distance of 1 km from each other.

9. b Let 'A' be the intersection of street number 7 and 8. After traveling 3 km North, 3 km West and 4 km South, Amit will be at point B.
Clearly, 1 km North and then 2 km south from point B will lead him back to point A.

10. c After traveling 4 km east and then 1 km North, he will finally be at point C as shown below.




Distance between points A and C = 1 km.

**For questions 11 to 15:**

**Step 1:** X = 2 × 3 = 6, Y = 2 + 1 = 3

**Step 2:** X = 6 × 3 = 18, Y = 3 + 1 = 4

**Step 3:** X = 18 × 4 = 72, Y = 4 + 1 = 5

**Step 4:** X = 72 × 5 = 360, Y = 5 + 1 = 6

11. c 12. d 13. c

14. d If N = 500 then it will stop after fifth step.
∴ x = 360 × 6 = 2160

15. a After 3 steps:

| Steps | x | y |
|---|---|---|
| 1 | 6 | 4 |
| 2 | 24 | 5 |
| 3 | 120 | 6 |

Therefore, at N = 120, value of y will be 6.

For N = 121, value of y will be 7.
∴ Minimum value of N = 121
(Among the given options best possible value is 300. Therefore, option A is correct)

**For questions 16 to 20:**

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Case I | Raman | | | | | | Tony |
| Case II | Sunil | | | | | | Deepak/Ankit |

Also, Vicky gets a higher rank than Priya who in turn got a higher rank than Ankit.

16. d As Sunil gets 5th rank, **Case I** is applicable.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Case I | Raman | | | | Ankit | Sunil | Tony |

Options (a), (b) and (c) cannot be true as per the given conditions.

17. c As Raman gets the highest marks, **Case I** is applicable.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Case I | Raman | | | | | | Tony |

As Vicky's rank is higher than that of Priya and Ankit, the lowest rank he could have got is 4th.

18. d The given condition in this question contradicts the mother data. Hence, none of the options is true.

19. a As Sunil is ranked 2nd, Case I is applicable.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Case I | Raman | Sunil | | | | | Tony |

Therefore, Vicky must have got either 3rd or 4th rank. Options (b), (c) and (d) cannot be true as per the given conditions.

20. a As Vicky is ranked 5th, Priya and Ankit must have ranked below Vicky, thus Ankit must have got 7th rank and hence Case II is applicable.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Case II | Sunil | | | | Vicky | Priya | Ankit |

Therefore, Sunil scores the highest.

21. c If only 35% people support party Z, this means that 65% people do not support it. In all the surveys the supporters of Party Y are more than 35%. Hence despite fluctuations, the number of supporters for Y is more than party Z.

22. a The nation stock exchange's reaction can be explained only if the effect of rising inflation is curbed/reversed. This can be done by taking corrective measures. Hence option (a) is correct. If inflation would continue, then the stock prices cannot remain steady. hence options (b) and (c) are ruled out. Option (d) states a likely reason for inflation, but no indication is given as to if the drought will continue or not. In this case of uncertainty, stock prices can get affected.

23. c Birth and Dirge signify beginning and end . Marriage signifies the beginning of a relation .Alimony is given in the event of a divorce which signifies the end of a relationship.

24. c The method of reasoning used in the argument is arriving at a general conclusion from specific data. The author uses 'large number of visitors to the city's beaches to conclude that Nature lovers like to visit beautiful beaches. Option (c) follows the same method of reasoning as it draws a general conclusion from a specific example.

25. d Refer to the line " at least some industry ….." . This means that there are at least some industries run entirely by self-employed industrialists that are not underground industries.

26. c The given argument assumes that not receiving a violation is a sufficient condition for being deemed a great pilot. Hence option (c) is correct.

27. c The argument generalizes about the deterrent effect of capital punishment from one specific example of Tom Hanks . Hence option (c) is correct.

28. d The number in the middle circle in each row is half of the sum of all the numbers in remaining circles of the row.
Therefore, required number is 6.

29. c The argument has the following line of reasoning -
Less restrictions > More lawyers will advertise services > Lawyers advertise services > charge less for that service >lower overall legal cost
Hence we can infer that if restrictions are removed, then more lawyers will advertise their services.

30. d The line of reasoning given in Q.29 will get weakened if the lawyers who are not advertising right now, begin advertising but do not lower the cost of service, this will weaken the argument because the overall legal cost will not go down.

| | | | | | |
|---|---|---|---|---|---|
| 31. d | 32. a | 33. d | 34. b | 35. b | 36. b |
| 37. a | 38. a | 39. a | 40. d | 41. c | 42. d |
| 43. a | 44. a | 45. d | 46. d | 47. d | 48. b |
| 49. a | 50. a | 51. c | 52. c | 53. c | 54. b |
| 55. d | 56. a | 57. c | 58. b | 59. a | 60. a |

61. b

62. **The exam conducting body has pronounced this question incorrect. Students shall not be marked on this question.**

| | | | | | |
|---|---|---|---|---|---|
| 63. b | 64. a | 65. c | 66. a | 67. a | 68. d |

69. b 70. d

71.d 'Triumph' means 'victory'.

72. c The answer is clearly stated in the passage where the author states "and ours only for a time", which is clearly depicted in option (c).

73. d 'Rapture' means 'joy'.

74. d The last line of the para states, "the mind has no existence by itself, it is only the glitter of the sun on the surface of the waters", which clearly shows that mind is a reflection.

75. d The author is philosophising about the purpose of being alive, about the origin/role and purpose of everything a common man is endowed with, including his mind. He isn't 'reflecting' or analysing any event/experience of his or anyone else's past.

76. d The passage talks about what the author feels about being alive and how one should live it. He is in a celebratory mood - celebrating the fact that he is alive! So, (d).

77. a Superfluous repetition or overlapping of words is 'Redundancy'.

78. d Like ink is used in a pen to further use it on a paper, similarly, colour is used on a brush to further use it on a canvas.

79. c 'Realia' means 'things that are real'.

80. d Since the verb outside the inverted commas is in the past tense, it acts as the qualifying verb for all that comes within the inverted commas. So, the question inside the inverted commas should be in the present tense, to avoid redundancy.

It is in the Simple Present and not in the continuous form because no action is taking place.

81. a This is a question that is testing the correctness of the usage of the 'articles'. In the sentences given, when I am introducing my house, it is just one out of many houses. So, it should be '...a house'. The same reason justifies the choice of "...a street..." ahead in the sentence. In the next sentence, Now that I am adding more information about the house that I have already introduced, I should use '...the house...". Hence, the correct choice is (a).

82. c Options (b) and (d) are logically wrong. Between (a) and (c), we boil down to (c) because we compare "**to** a person" and "**with** a thing". Here, the teachers are comparing their methods **with** ours. So, (c).

83. a This is a request in the question form. Once the main request is made, the details of the query/request have to be added using clauses that should be added to the main statement using the correspondingly adequate relative pronouns. For speaking more on the amount - a specific one - the relative pronoun **that** should be used. '...was sent' at the fag end of the sentence is in passive voice while the previous part is in active voice. This shows that this is another sentence of the kind - The cheque was sent by someone. To attach this to the main sentence, we need to convert it to a clause and use another relative pronoun with it, but this time, the sender of the cheque is not a specific person. So we use a generic relative pronoun 'which'.

84. d "Yesterday" signifies that the sentence refers to an event that simply took place in the past, without any other condition stated or implied. So, (d ) is the right choice.

85. b In English, when you dash against something which in turn, stops your movement and injures you or damages your vehicle, the idiom used is 'crash **into**'.

86. a 'Referred' means 'regarded as' or 'described as' hence option (a) is the most suitable answer.

87. b Although all four options seem to be quite close option (b) is right answer according to the context of the passage. Independent here means without any ties or inclination.

88. b 'Deter' is 'to discourage' or 'to prevent'. Thus option (b).

89. a 'Grievances' means 'complaints'.

90. a 'Ombudsman' is a government appointee who investigates complaints by private citizens against other officials or government agencies.

91. c When you discuss things, you discuss them and not **about** them. So, **about** should be deleted from there.

92. d No error.

93. c 'again' is redundant with 'repeat'.

94. d No error.

95. a PR is a mandatory pair and Q complements the end of the sentence.

96. b RQS forms a mandatory sequence.

97. b Comprise means 'consists of' so we do not use comprises of hence option (a) can be ruled out. Option (c) can be ruled out as consists means 'to be made up' so cannot be used without 'of'. Option (d) comprises to' is an incorrect usage.

98. b Objective pronoun 'me' would be used here as the action is being reflected on "my daughter and me".

99. c 'Hinterland' is "a land lying behind a coastal region."

100. d The given sentence in Active Voice and in Simple Present Tense. So, its Passive Voice is (d).

101. d The use of 'you' is implied in the passive voice.

102. a S1 introduces polymers Q continues with describing it. RS is a mandatory pair as R talks about those polymers as strong as metal and S talks about those particular polymers which are as strong as metals replacing the traditional chromium plated bumpers.

103. d 'Frugality' means 'the quality of being economical'.

104. **The exam conducting body has pronounced this question incorrect. Students shall not be marked on this question.**

'Harbinger' means 'anything that foreshadows a future eventor an omen'.

105. a 'Exodus' means 'departure or immigration of usually a large number of people', 'influx' means 'act of flowing in', thus, option (a) is the right answer.

106. d 'Equanimity' means 'mental or emotional stability' hence, option (d) 'excitement' would be the right answer.

107. d The common element implied in a, b and c is the use of violence to get your job done. Order is the only odd one out.

108. **The exam conducting body has pronounced this question incorrect. Students shall not be marked on this question.**

'Kernel' is the softer, usually edible part contained in the shell of a nut or the stone of a fruit. 'Lassitude' which means weariness of body or mind from strain is not related to 'syncope' which means the contraction of a word by omitting one or more sounds from the middle.

109. c The usage of the word 'since' in the sentence given, signifies that it is in the Present Perfect Continuous Tense. So, (c).

110. d The usage of 'Although' at the beginning of the sentence necessitates the usage of two contradictory information. Since, alongwith 'although', the given information is in the affirmative mood, the next sentence should negate the charge. Hence (d).

111. b Speed of train $= 36 \times \frac{5}{18} = 10 \text{ m/sec}$

Time taken by train to cross the man

$$= \frac{\text{Length of train } (L_1)}{\text{Speed of train}} = \frac{L_1}{10} = 10 \Rightarrow L_1 = 100 \text{ m}$$

Time taken by train to cross the platform

$$= \frac{100 + \text{Length of platform } (L_2)}{\text{Speed of train}} = \frac{100 + L_2}{10} = 20$$

$$\Rightarrow L_2 = 200 - 100 = 100 \text{ m}$$

112. b Let the original speed be 's' m/min and usual time be 't' minutes.

When speed decreases to $\frac{4}{5}$s, time taken will be $\frac{5}{4}$t.

(Since speed is inversely proportional to time taken.)

$$\frac{5}{4}t - t = 10 \Rightarrow t = 40$$

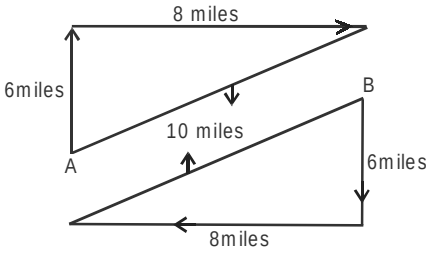
Usual time taken = 40 minutes.

113. b Woman (4 miles/hr) — 81miles — Man (5 miles/hr)

$$\text{Time taken to meet} = \frac{81}{4+5} = 9 \text{ hrs}$$

Distance travelled by woman = 9 × 4 = 36 miles.

114. b




Required distance = 10 miles.

115. c Let a man completes the job in 'm' days and a woman completes the job in 'w' days.

$$\frac{4}{m}+\frac{3}{w}=\frac{1}{6} \quad ...(i)$$

$$\frac{5}{m}+\frac{6}{w}=\frac{1}{4} \quad ...(ii)$$

On solving (i) and (ii), 'm' = 36 days and 'w' = 54 days.

$$\text{Required time} = \frac{3}{36}+\frac{2}{54}=\frac{108}{13} \text{ days}$$

(Best possible option is (c)).

116. **The exam conducting body has pronounced this question incorrect. Students shall not be marked on this question.**

Ram can complete $\frac{3}{5}$th of the work in 15 days and hence can complete the whole work in 25 days.
Rahim can complete the same work in 50 days.
Rachel can complete the same work in 100 days.
The three together can complete

$$\frac{1}{25}+\frac{1}{50}+\frac{1}{100}=\frac{7}{100} \text{th work in one day.}$$

Time required to complete 40% of the work

$$=\frac{\frac{2}{5}}{\frac{7}{100}}=\frac{40}{7} \text{ days.}$$

(None of the options is correct.)

117. b Let after 'n' days, 'A' leaves the work.

$$n\left(\frac{1}{21}+\frac{1}{24}\right)+\frac{9}{24}=1$$

Therefore, n = 7 days.

118. c Let the cost price of each article be Re.1 and selling price of each article be Rs.x.
S.P. of 100 articles = C.P of 100 articles + Profit
$\Rightarrow$ 100x = 100 + 75x
$\Rightarrow$ 25x = 100 or x = 4

$$\Rightarrow \text{Profit} = \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100 = \frac{4-1}{1} \times 100 = 300\%.$$

119. c Let speed of A be 'x' m/s and that of B be 'y' m/s.
When A gives B a start of 20m,

$$5+\frac{100}{x}=\frac{80}{y} \quad \ldots \text{(i)}$$

When A gives B a start of 40m,

$$\frac{100}{x}=\frac{60}{y} \quad \ldots \text{(ii)}$$

$$y=\frac{3}{5}x$$

Replacing value of 'y' in equation (i), we get

$$5+\frac{100}{x}=\frac{400}{3x} \Rightarrow \frac{400-300}{3x}=5 \Rightarrow x=\frac{20}{3}$$

Therefore, time taken by A to cover 200 m

$$=\frac{200}{\frac{20}{3}}=30 \text{ seconds}$$

120. b Total surface area of the 4cm cube $= 6a^2 = 6\times4\times4 \text{ cm}^2$
When 4 cm cube is cut into 1 cm cubes, we get 64 smaller cubes.
Total surface area of newly formed cubes

$$= 64\times6a^2 = 64\times6\times1 \text{ cm}^2$$

$$\text{Required percentage increase} = \frac{64\times6\times1-6\times4\times4}{6\times4\times4}\times100$$

$$=\frac{4-1}{1}\times100=300\%$$

121. a G 2 3 6 G 0
G could be 0, 2, 4, 6 or 8 for the number to be divisible by 4.
For the number to be divisible by 9, 11 + 2G must be divisible by 9.

$$\frac{11+2G}{9}=1+\frac{2+2G}{9}=1+2\left(\frac{1+G}{9}\right)$$

$\Rightarrow$ G = 8.

122. c Let total work be LCM (12, 15) = 60 units.

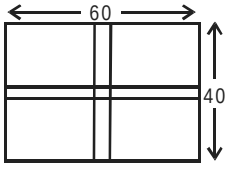
$$\text{Work done by Amit in one day} = \frac{60}{12} = 5 \text{ units}$$

$$\text{Work done by Sagar in one day} = \frac{60}{15} = 4 \text{ units}$$

Work done by Amit and Sagar together in one day
= 5 + 4 = 9 units
Work finished in 4 days = 9 × 4 = 36 units
Remaining work = 60 – 36 = 24 units

$$\text{Fraction of work left} = \frac{24}{60} = \frac{2}{5}$$

123. b




Let the width of the crossroads be x meters.
Area of crossroads
= 60x + (40 – x) × x
= 2400 – 2109 = 291

$$\Rightarrow x^2 - 100x + 291 = 0$$

$\Rightarrow$ x = 3 or 97
Width of crossroads = 3 m
(Since, x cannot be equal to 97)

124. a Required probability

$$= \frac{1}{2} \times \frac{5C_1 \times 3C_1}{8C_2} + \frac{1}{2} \times \frac{4C_1 \times 5C_1}{9C_2} = \frac{1}{2}\left(\frac{15}{28} + \frac{20}{36}\right) = \frac{275}{504}$$

125. b Consumption = Production – Exports
Consumption (in million kg) in:
2006 = 186.5 – 114 = 72.5
2007 = 202 – 114 = 88
2008 = 238 – 130 = 108
2009 = 221 – 116 = 105
2010 = 215 – 88 = 127

Percentage increase in:

$2007 = \frac{15.5}{72.5} \times 100 = 21.379\%$

$2008 = \frac{20}{88} \times 100 = 22.727\%$

2009 = (–ve) $\Rightarrow$ decrease

$2010 = \frac{22}{105} \times 100 = 20.95\%$

So, it is highest in the year 2008.

126. c 2008 $\rightarrow$ Consumption = 108 million kg
Percapita consumption = 38.7 kg

$\text{Population} = \frac{108}{38.7} = 2.79 \text{ million}$

127. a Ratio of Export to Consumption in:

$2006 = \frac{114}{72.5} = 1.57$

$2007 = \frac{114}{88} = 1.295$

$2008 = \frac{130}{108} = 1.203$

$2009 = \frac{116}{105} = 1.104$

Therefore, the ratio is highest in the year 2006.

128. d Population (in millions) in:

$2007 = \frac{88}{35.2} = 2.5$

$2008 = \frac{108}{38.7} = 2.79$

$2009 = \frac{105}{40.5} = 2.59$

$2010 = \frac{127}{42} = 3.02$

Therefore, population is highest in the year 2010.

129. b The percentage of time spent in school $= \frac{105}{360} \times 100 \approx 30\%.$

130. c Percentage of time spent in games in comparison to sleeping $= \frac{30}{120} \times 100 = 25\%.$

131. b Time spent on games increased from $30 \xrightarrow{+15} 45$

The sleeping decreased from $120 \xrightarrow{-15} 105$

So percentage decrease $= \frac{15}{120} \times 100 = 12.5\%$

132. c Time spent in school – Time spent in home work

$= \frac{60}{360} \times 24 = 4 \text{ hrs}$

133. b Total time spent in Mathematics home work

$= \frac{\text{Time spent in home work}}{3} = \frac{\frac{45}{360} \times 24}{3} = 1 \text{ hour.}$

Time spent on remaining subjects = 3 – 1 = 2 hrs

134. b By using basic proportionality theorem,

$\frac{AB}{BC} = \frac{DE}{EF} \Rightarrow \frac{2}{4} = \frac{1.5}{EF}$ or EF = 3 cm

135. d $\log_{10} 10 + \log_{10} 10^2 + \ldots \log_{10} 10^n = 1 + 2 + 3 + \ldots n$

$= \frac{n(n+1)}{2} = \frac{n^2 + n}{2}$

136. a Let the required number be 'a'.
According to question,

$a + \frac{1}{a} = 3\left\{a - \frac{1}{a}\right\} \Rightarrow \frac{4}{a} = 2a \text{ or } a^2 = 2 \Rightarrow a = \pm\sqrt{2}$

137. a Smallest natural number greater than 10, which is divisible by 9 is 18 and the largest natural number less than 300, which is divisible by 9 is 297.

Therefore, number of numbers $= \frac{297 - 18}{9} + 1 = 32$

138. c $^nC_x = 56$ … (i)

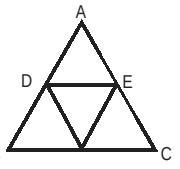
$^nP_x = {}^nC_x \times x! = 336$ … (ii)

Now, on dividing equation (ii) by (i), we get
x! = 6 or x = 3

Therefore, $^nC_3 = 56$

By using options, we get n = 8.

139. a




Here, DE || BC and $DE = \frac{1}{2}BC = 12 \text{ cm}$

Sum of perimeters of triangles so formed

$= 72 + 36 + 18 + \ldots \infty = 72\left\{1 + \frac{1}{2} + \frac{1}{4} + \ldots\infty\right\}$

$= 72 \times \frac{1}{1 - \frac{1}{2}} = 72 \times \frac{1}{\frac{1}{2}} = 144 \text{ cm}$

140. c A leap year has 52 complete weeks and 2 days i.e. 366 days.
Remaining two days should be in any one of the following formats:

| Case - I | Case - II | Case - III |
|---|---|---|
| $\overline{Sat}$ $\overline{Sun}$ | $\overline{Sun}$ $\overline{Mon}$ | $\overline{Mon}$ $\overline{Tue}$ |
| $\frac{1}{7}$ | $\frac{1}{7}$ | $\frac{1}{7}$ |

Required probability $= \frac{1}{7}+\frac{1}{7}+\frac{1}{7}=\frac{3}{7}$.

141. b $3x + 4y = 12$

**X – Intercept:**
At y = 0, 3x = 12 or x= 4

**Y – Intercept:**
At x = 0, 4y = 12 or y = 3

142. b As per the instructions given in the question,
Let 'a' be 36 – x and 'd' be 36 + x.
Let 'b' be 34 – y and 'c' be 34 + y.
Let 'a' be 30 – p and 'b' be 30 + p.
Let 'c' be 40 – q and 'd' be 40 + q.
Now, by using two values of b, we can find only one prime number between 30 and 34 i.e. 31.
So, y = 3 and p = 1
Also, a = 30 – p = 36 – x
$\Rightarrow$ 29 = 36 – x or x = 7
and d = 36 + x = 36 + 7 = 43
Required difference = d – a = 43 – 29 = 14.

143. d Let us assume that we have total of 8 kg Rasgullas. So the composition of flour and sugar will be 5 kg and 3kg respectively.
Let 3x and 7x be cost price of flour and sugar respectively.
Total cost (in Rs.) incurred
= 5 × 3x + 3 × 7x
= 15x + 21x = 36x
According to question,

$$S.P.=\left(1+\frac{66.66}{100}\right)\times C.P.$$

$$\Rightarrow 15\times 8=\left(1+\frac{2}{3}\right)\times 36x \text{ or } x = 2$$

So, cost of 1 kg sugar = Rs.7x = Rs.14

144. a Due to 20% reduction in price, the person can save Rs.48 and hence can purchase 6 kg extra sugar.

Therefore, new cost of sugar $= \frac{48}{6} = \text{Rs. } 8 \text{ per kg}$

As this new price is 20% less than the original price, original price of sugar is $\frac{8}{0.8} = \text{Rs. } 10 \text{ per kg.}$

145. d Volume of sphere = Volume of cone

$$\Rightarrow \frac{4}{3}\pi r^3 = \frac{1}{3}\pi r^2 h$$

$$\Rightarrow \frac{h}{r}=\frac{4}{1}$$

146. a Let speed (in m/s) of scooter, car and train be y, 4y and 16y respectively. Let they all cover equal distance of 'd' meters.

Time taken by each respectively is $\frac{d}{y}, \frac{d}{4y}$ and $\frac{d}{16y}$

Required ratio of time taken/velocity is given as:

$$\text{Scooter : Car : Train } = \frac{\frac{d}{y}}{y}:\frac{\frac{d}{4y}}{4y}:\frac{\frac{d}{16y}}{16y}$$

$$= 1:\frac{1}{4\times 4}:\frac{1}{16\times 16} = 256 : 16 : 1.$$

147. b As 'A' takes 15 days, B will take $\frac{15}{2}$ days.

Let for 'n' days both 'A' and 'B' work together.
'A' works for the 11 days and 'B' works for 'n' days,

$$\Rightarrow \frac{11}{A}+\frac{n}{B}=1$$

$$\Rightarrow \frac{11}{15}+\frac{2n}{15}=1$$

$$\Rightarrow \frac{2n}{15}=1-\frac{11}{15}=\frac{4}{15} \text{ or n = 2 days.}$$

148. d A + B + C + D = 56 lakhs
B + C + D = 4.6A
A + 4.6A = 56
A = 10 lakhs ...(i)

$$B\left(1+3\frac{2}{3}\right)=56$$

$$B\left(1+\frac{11}{3}\right)=56$$

$$B\frac{14}{3}=56$$

B = 12 lakhs ...(ii)

C = 0.4 × (A + B + D)
(A + B + D) (1 + 0.4) = 56
(10 + 12 + D) 1.4 = 56
22 + D = 40
D = 18 lakhs

149. d Let the salary of Saroj be Rs.100

| Raju | Ram | Saroj |
|---|---|---|
| Rs.80 | Rs.70 | Rs.100 |

Required percentage $= \frac{80-70}{70}\times 100 = 14.28\%.$

150. d Let the original length and the new length be $L_1$ and $L_2$ respectively.

$$\pi r^2 \times L_1 = \pi\left(\frac{r}{3}\right)^2 \times L_2$$

Therefore, $L_2 = 9L_1$