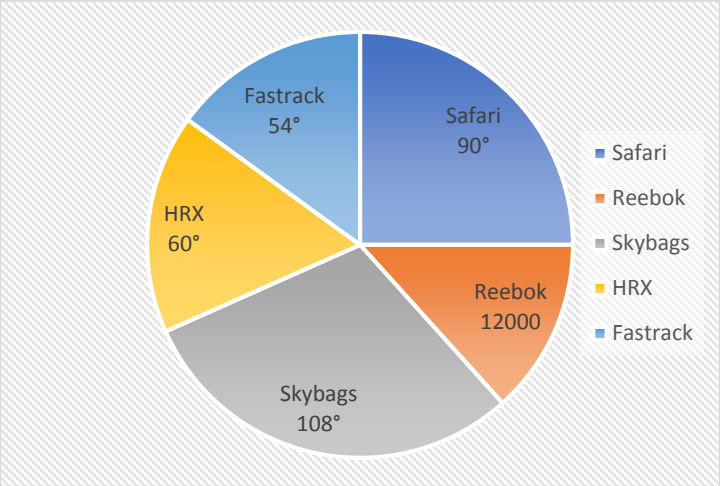
Quiz Date: 28th March 2020

Directions (1-5): The following pie-chart shows the degree wise distribution of backpacks sold by various companies in the month of October 2018 and an absolute value is also given. The table shows the percentage of different sizes of sold backpacks in which some data are missing.
Study the graph carefully to answer the related question. Calculate the missing data if necessary.



Backpacks	Size	
	20cm	24cm
Skybag	60%	30%
Fastrack	45%	40%
Reebok	—	—
Safari	40%	—
HRX	70%	—

Note: Rest backpacks are of size 28 cm, only 3 size of backpacks are present.

Q1. Total sold units of Skybags of size 28 cm is what percent more or less than the total sold units of Safari backpacks of same size. (it is given that sold units of Safari backpacks of size 28 cm are 25% of 20 cm size backpacks of same company)
(a) 20% less
(b) 20% more
(c) 25% more
(d) 25% less
(e) 30% more

Q2. What is the ratio of sold units of fastrack backpacks and HRX backpacks of size 20 cm together to the total sold units of Safari and Reebok backpacks together of same size? (sold units of Reebok backpacks of 20 cm size are $\frac{20}{3}$% of total sold backpacks of all companies)?
(a) 221 : 200
(b) 200 : 221
(c) 100 : 121
(d) 121 : 100
(e) 99 : 200

Q3. What is the difference between sold units of Skybag backpacks of size 20 cm and 28 cm together and HRX backpacks of size 20 cm and 28 cm together? (HRX backpacks of 24 cm size are 100% more than that of 28 cm size of same company)
(a) 4900
(b) 5900
(c) 9600
(d) 6900
(e) 7900

Q4. If price of one backpack of Reebok of size 24 cm is Rs. 3200 and ratio of price of each Reebok backpacks of size 20 cm, 24 cm and 28 cm is 6 : 8 : 9 respectively, then what is the total price of 20 cm and 28 cm backpacks of same companies? (Ratio of sold units of backpacks of size 20 cm, 24 cm and 28 cm of Reebok are 5 : 4 : 1)
(a) 2.87 crore
(b) 18.72 crore
(c) 1.872 crore
(d) can't be determined
(e) 0.872 crore

Q5. If average of sold units of backpacks of Skybag, Reebok and Safari of size 20 cm is 10,400 then what is the total units of backpacks of Reebok of size 20 cm sold in the given month?
(a) 6000
(b) 8000
(c) 5500
(d) 6500
(e) 7000

Direction (6-10): Simplify the following problems and find the value of (?).

Q6. $77\frac{7}{9}\%$ of 3456 + $66\frac{2}{3}\%$ of 1881 – $16\frac{2}{3}\%$ of 12354=?
(a) 1838
(b) 1883
(c) 1683
(d) 2021
(e) 1388

Q7. $\sqrt[5]{108\% \text{ of } 75 + 32 \times 5 + 2}$ + 45% of 460 =?
(a) 410
(b) 120
(c) 210
(d) 310
(e) 190

Q8. $4\frac{3}{5}$ of $6\frac{2}{3}$ of 360 – 32% of 950 =?
(a) 12215
(b) 11736
(c) 9736
(d) 10736
(e) 13376

Q9. $981 \div 3 \times 5 + 105 - 54$ % of 1645 =?
(a) 851.7
(b) 85.17
(c) 8.517
(d) 8517.7
(e) 751.7

Q10. $\frac{3}{5}$ of ? = 48% of 550 + 36% of 750 – 40% of?
(a) 438
(b) 544
(c) 534
(d) 435
(e) 634

Direction (11 – 15): In each of these equations, two equations (I) and (II) are given. You have to solve both the equations and give answer among the following options.
(a) $x \geq y$
(b) $x \leq y$
(c) $x > y$
(d) Relationship between x and y cannot be established
(e) $x < y$

Q11. I. $20x^2 - 9x + 1 = 0$
II. $12y^2 - 7y + 1 = 0$

Q12. I. $12x^2 = 6x$
II. $y^2 = 4$

Q13. I. $88x^2 - 19x + 1 = 0$
II. $132y^2 - 23y + 1 = 0$

Q14. I. $6x^2 - 7x + 2 = 0$
II. $20y^2 - 31y + 12 = 0$

Q15. I. $28x^2 - 8x - 11 = 0$
II. $28y^2 + 32y + 9 = 0$

Solutions

S1. Ans.(b)
Sol.
No. of Skybag backpacks of size 28 cm
$= \frac{10}{100} \times \frac{108}{48} \times 12000$
$= 2700$
No. of Safari backpacks of same size i.e. 28 cm
$= \frac{25}{100} \times \frac{40}{100} \times \frac{90}{48} \times 12000$
$= 2250$
∴ Required percentage $= \frac{2700-2250}{2250} \times 100 = 20\%$ more

S2. Ans.(a)
Sol.
Total sold units of fastrack and HRX backpacks of 20 cm size together
$= \frac{45}{100} \times \frac{54}{48} \times 12000 + \frac{70}{100} \times \frac{60}{48} \times 12000$
$= 6075 + 10{,}500$
$= 16{,}575$
Total sold units of Safari and Reebok backpacks of 20 cm size together

$= \frac{40}{100} \times \frac{90}{48} \times 12000 + \frac{20}{300} \times \frac{360}{48} \times 12000$
= 9000 + 6000
= 15000
∴ Required ratio = $\frac{16575}{15000} = \frac{221}{200}$

S3. Ans.(d)
Sol.
Total sold backpacks of skybag of size 20 cm and 28 cm together
$= \frac{(60+10)}{100} \times \frac{108}{48} \times 12000$
= 18,900
HRX backpacks of size 24 cm and 28 cm together (in percentage) = 100 – 70 = 30%
So, HRX backpacks of 24 cm size = 20%
HRX backpacks of 28 cm size = 10%
∴ HRX backpacks of size 20 cm and 28 cm together
$= \frac{(70+10)}{100} \times \frac{60}{48} \times 12000$
= 12000
So, Required difference = 18,900 – 12,000 = 6,900

S4. Ans.(c)
Sol.
Reebok backpacks of size 20 cm= $\frac{5}{10} \times 12000 = 6000$
Reebok backpacks of size 24 cm = $\frac{4}{10} \times 12000 = 4800$
Reebok backpacks of size 28 cm = $\frac{1}{10} \times 12000 = 1200$
∴ Required price = $\frac{6}{8} \times 3200 \times 6000 + \frac{9}{8} \times 3200 \times 1200$
= 1,44,00,000 + 43,20,000
= 1,87,20,000
= 1.872 crore

S5. Ans.(a)
Sol.
Average of sold units of backpacks of skybag, Reebok and Safari of size 20 cm
= 10,400
According to question
$\frac{1}{3} \times \left(\frac{60}{100} \times \frac{108}{48} \times 12000 + x + \frac{40}{100} \times \frac{90}{48} \times 12000\right)$
= 10400
⇒ 16,200 + x + 9000 = 31,200
Where x = Sold units of Reebok backpacks of size 20 cm
⇒ x = 31,200 – 25,200
⇒ x = 6,000

S6. Ans. (b)

Sol.

$? = \frac{700}{900} \times 3456 + \frac{200}{300} \times 1881 - \frac{50}{300} \times 12354$

$= 7 \times 384 + 2 \times 627 - 2059$

$= 2688 + 1254 - 2059$

$= 1883$

S7. Ans. (c)

Sol.

$? = \sqrt[5]{\frac{3}{4} \times 108 + 160 + 2} + \frac{45}{100} \times 460$

$= \sqrt[5]{243} + \frac{45}{100} \times 460$

$= 3 + 207$

$= 210$

S8. Ans. (d)

Sol.

$? = \frac{23}{5} \times \frac{20}{3} \times 360 - \frac{32}{100} \times 950$

$= 11040 - 304$

$= 10736$

S9. Ans. (a)

Sol.

$? = 327 \times 5 + 105 - \frac{54}{100} \times 1645$

$= 851.7$

S10. Ans. (c)

Sol.

$\left(\frac{3}{5} + \frac{2}{5}\right) of\ ? = \frac{48}{100} \times 550 + \frac{36}{100} \times 750$

$\Rightarrow ? = 534$

S11. Ans.(b)

Sol.

I. $20x^2 - 9x + 1 = 0$

$\Rightarrow 20x^2 - 5x - 4x + 1 = 0$

$\Rightarrow 5x(4x-1) - 1(4x-1) = 0$
$\Rightarrow (4x-1)(5x-1) = 0$
$\Rightarrow x = \frac{1}{4}, \frac{1}{5}$
II. $12y^2 - 7y + 1 = 0$
$\Rightarrow 12y^2 - 4y - 3y + 1 = 0$
$\Rightarrow (3y-1)(4y-1) = 0$
$\Rightarrow y = \frac{1}{3}, \frac{1}{4}$
$y \geq x$

S12. Ans.(d)
Sol.
I. $12x^2 - 6x = 0$
$\Rightarrow 6x(2x-1) = 0$
$\Rightarrow x = 0, \frac{1}{2}$
II. $y^2 = 4$
$y = -2$ or 2
No relation

S13. Ans.(a)
Sol.
I. $88x^2 - 19x + 1 = 0$
$\Rightarrow 88x^2 - 11x - 8x + 1 = 0$
$\Rightarrow 11x(8x-1) - 1(8x-1) = 0$
$\Rightarrow x = \frac{1}{8}, \frac{1}{11}$
II. $132y^2 - 23y + 1 = 0$
$\Rightarrow 132y^2 - 11y - 12y + 1 = 0$
$\Rightarrow (12y-1)(11y-1) = 0$
$\Rightarrow y = \frac{1}{12}, \frac{1}{11}$
$x \geq y$

S14. Ans.(e)
Sol.
I. $6x^2 - 7x + 2 = 0$
$\Rightarrow 6x^2 - 3x - 4x + 2 = 0$
$\Rightarrow 3x(2x-1) - 2(2x-1) = 0$
$\Rightarrow (2x-1)(3x-2) = 0$
$\Rightarrow x = \frac{1}{2}, \frac{2}{3}$
II. $20y^2 - 31y + 12 = 0$
$\Rightarrow 20y^2 - 15y - 16y + 12 = 0$
$\Rightarrow (4y-3)(5y-4) = 0$
$\Rightarrow y = \frac{3}{4}, \frac{4}{5}$
$y > x$

S15. Ans.(a)
Sol.
I. $28x^2 - 8x - 11 = 0$
$\Rightarrow 28x^2 + 14x - 22x - 11 = 0$
$\Rightarrow 14x(2x+1) - 11(2x+1) = 0$
$\Rightarrow (14x-11)(2x+1) = 0$
$\Rightarrow x = \frac{11}{14}, -\frac{1}{2}$
II. $28y^2 + 32y + 9 = 0$
$\Rightarrow 28y^2 + 14y + 18y + 9 = 0$
$\Rightarrow (2y+1)(14y+9) = 0$
$\Rightarrow y = -\frac{1}{2}, -\frac{9}{14}$
$x \geq y$