Quiz Date: 13th June 2020

Directions (1-5): In the given questions, two quantities are given, one as 'Quantity I' and another as 'Quantity II'. You have to determine relationship between two quantities and choose the appropriate option:

Q1. Train A cross a platform of length 520 meters in 22.8 sec and a man in 7.2 sec.
Quantity I —If train A cross train B running in same direction at 96 km/hr in 63 seconds then find the length of train B.
Quantity II — What is length of train C having speed of 90 km/hr and cross train A in 7.2 sec running in opposite direction.
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or no relation

Q2. Ratio of age of Bhavya & Veer three years before was 7 : 8 and after six year it will be 10 : 11. Ankit is two years older than Bhavya, while Ayush is four years younger than that of Veer. The time when Bhavya and Veer completed their graduation, the ratio of their respective ages at that time was 20 : 23
Quantity I — Sum of age of Ankit & Ayush at the time when Bhavya & Veer respectively completed their graduation.
Quantity II — Average age of P, Q & R, two years hence will be 38 years and ratio of present age of Q & R be 16 : 9. P is 33 years order, ratio of age of R & T eight years hence will be 7 : 8. M is four years older than Q and ratio of present age of M & N is 13 : 14. Find average age of N & Q.
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or no relation

Q3. Length of body diagonal of a cube is $60\sqrt{3}$ cm, if cube is melted and formed some smaller cubes with side of 4 cm each or cube is melted and formed some cuboids of each having length of 8 cm, width of 5 cm & height of 2 cm.
Quantity I — Find the difference between increase in total surface area of all smaller cubes with respect to original cube & increase in total surface area of all cuboids formed with respect to original cube (in m²).
Quantity II — 3.16 m²
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or no relation

Q4. Quantity I: A man has two solid balls. Ratio between radius of first ball and second ball is 4 : 3. If man cut the second ball from middle then difference between total surface area of first ball and total surface area of a part of second ball is 1424.5 cm². Find value of radius of bigger ball?
Quantity II: Height of a cylindrical vessel is equal to side of a square, having area is 256 cm². If volume of cylindrical vessel is 22176 cm³ then find the radius of cylindrical vessel.
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or no relation

Q5. Quantity I: Overall profit percentage if the cost prices of two shirts are equal. One shirt is sold for 20% profit and the other is sold for 10% loss.
Quantity II: Profit % made in selling each meter if the profit made in selling 20 m of a cloth equals the cost price of 5 m of that cloth.
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or No relation

Directions (6-10): In the following number series only one number is wrong. Find out the wrong number.
Q6. 9050, 5675, 3478, 2147, 1418, 1077, 950
(a) 950
(b) 1418
(c) 5675
(d) 2147
(e) 1077

Q7. 1, 4, 25, 256, 3125, 46656, 823543
(a) 4
(b) 823543

(c) 46656
(d) 25
(e) 256

Q8. 380, 188, 92, 48, 20, 8, 2
(a) 8
(b) 20
(c) 48
(d) 188
(e) 380

Q9. 4.5   16   25   33   38.5   42   43.5
(a) 33
(b) 38.5
(c) 42
(d) 43.5
(e) 25

Q10.   7,   8,   16,   52,   209,   1046,   6277
(a) 6277
(b) 7
(c) 1046
(d) 16
(e) 8

Directions (11-15): In the following questions, two equations numbered I and II are given. You have to solve both the equations and give answer-

Q11.I. $4x+3y=(1600)^{1/2}$
    II. $6x-5y=(484)^{1/2}$
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x ≤y
(e) if x = y or relationship cannot be established

Q12. I. $2x^2-(4+\sqrt{13})x+2\sqrt{13}=0$
    II. $10y^2-(18 + 5\sqrt{13})y+9\sqrt{13}=0$
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x ≤y
(e) if x = y or relationship cannot be established

Q13. I. $x^2-7\sqrt{3}x +35\sqrt{15} -5\sqrt{5}x=0$

II. $y^2 - 5\sqrt{5}y + 30 = 0$
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x ≤y
(e) if x = y or no relation can be established between x and y.

Q14.   (i) $5x^2 + 59x + 44 = 0$
(ii) $2y^2 + 13y + 15 = 0$
(a) If $x < y$
(b) If $x > y$
(c) If $x \geq y$
(d) If $x \leq y$
(e) If $x = y$ or no relation can be established

Q15.   (i) $x^2 - 36x + 315 = 0$
(ii) $y^2 - 23y + 120 = 0$
(a) If $x < y$
(b) If $x > y$
(c) If $x \geq y$
(d) If $x \leq y$
(e) If $x = y$ or no relation can be established

Solutions

S1. Ans.(e)
Sol.
Let length of train A be ℓ meter
Speed of train A $= \frac{(\ell+520)}{22.8}$
Also train crosses a man so,
Speed of train $= \frac{\ell}{7.2}$
ATQ,
$\frac{\ell}{7.2} = \frac{(\ell+520)}{22.8}$
$22.8\ell - 7.2\ell = 3744$

$15.6\ell = 3744$

$\ell = 240$ meter

Speed of train A $= \frac{(520+240)}{22.8}$

$= \frac{100}{3}$ m/s

Quantity I —

Let length of train B 'b' meter

$= \left(\frac{100}{3} - 96 \times \frac{5}{18}\right) = \frac{240+b}{63}$

$\frac{20}{3} = \frac{240+b}{63}$

b= 420 – 240

b = 180 meter

Quantity II —

Let length of train C be 'c' meter

$\left(\frac{100}{3} + 90 \times \frac{5}{18}\right) = \frac{240+C}{7.2}$

$\frac{175}{3} = \frac{240+C}{7.2}$

1260 = 720 + 3C

C = 180 meter

 Quantity I = Quantity II

S2. Ans.(b)

Sol.

Let age of Bhavya & Veer three years before be 7x & 8x respectively.

ATA,

$\frac{7x+9}{8x+9} = \frac{10}{11}$

77x + 99 = 80x + 90

3x = 9

x = 3 years

Present age of Bhavya = 3 × 7 + 3 = 24 years

Present age of Veer = 3 × 8 + 3 = 27 years

Let Bhavya and Veer completed their graduation 'n years' before

$\frac{24-n}{27-n} = \frac{20}{23}$

552-23n = 540 – 20n

n = 4 years

Quantity I —

Age of Ankit at the time of Bhavya completed his graduation = 26 -4 = 22 years

Age of Ayush when Veer completed his graduation = 23 – 4 = 19 years

Required sum = 22 + 19 = 41 years

Quantity II →

Total present age of P, Q & R = 38 × 3 – 2 × 3

= 108 years

Let age of Q & R be 16y & 9y respectively

ATQ

33 + 16y + 9y = 108

25y = 75

y = 3years

Age of Q = 16 × 3 = 48 years

Age of R = 9 × 3 = 27 years

Eight years hence age of R = 27 + 8 = 35 years

Present age of T = $\frac{35}{7} \times 8 - 8 = 32$ yrs

Age of M = 48 + 4 = 52 years

Age of N = $\frac{52}{13} \times 14 = 56$ yrs

Required average age of N & Q

$= \frac{56+48}{2} = \frac{104}{2}$

= 52 years

So, Quantity I < Quantity II

S3. Ans(a)

Sol.

Body diagonal of a cube = side × $\sqrt{3}$

$60\sqrt{3}$ = side × $\sqrt{3}$

Side = 60 cm

Volume of larger cube = 60 × 60 × 60 = 216000

Total surface area of larger cube = 6 × 60 × 60 = 21600 cm² = 2.16 m²

Volume of each smaller cube = 4 × 4 × 4 = 64 cm²

Number of smaller cube formed = $\frac{216000}{64}$ = 3375

Volume of each cuboids having length of 8 cm, width 5 cm & height 2 cm

= 8 × 5 × 2 = 80 cm³

Number of cuboids of each having length of 8 cm, width 5 cm & height 2 cm

= $\frac{216000}{80}$ = 2700

Quantity I − Total surface area of all smaller cube = 3375 × 6 × 4 × 4 = 324000cm² =32.4 m²

Total surface area of all cuboids = 2700 × 2 (8 × 5 + 5 × 2 + 8 × 2) = 356400 cm²

= 35.64 m²

Required difference = (35.64 – 2.16) − (32.4 − 2.16)

= 33.48 −30.24

= 3.24 m²

Quantity II − 3.16 m²
So, Quantity I > Quantity II

S4. Ans.(b)
Sol.
Quantity I —
Let radius of first and second ball be 4r cm and 3r cm respectively
When man cut second ball, it become two hemispheres
So,
$4\pi r^2 - 3\pi r^2 = 1424.5$ cm²
$4 \times \frac{22}{7} \times (4r)^2 - 3 \times \frac{22}{7} \times (3r)^2 = 1424.5$
$r^2 = 12.25$
$r = 3.5$ cm
Radius of bigger ball = 4 × 3.5 = 14 cm

Quantity II —
Height of cylindrical vessel = side of square
Side of square = 16 cm
Given,
$\pi r^2 h = 22176$
$\frac{22}{7} \times r^2 \times 16 = 22176$ cm³
$r^2 = \frac{22176 \times 7}{22 \times 16}$
$r^2 = 441$
r = 21 cm
So, Quantity I < Quantity II

S5. Ans.(b)
Sol. Quantity I: Let C.P. of both shirts be Rs. 100
Total C.P. = Rs. 200
Total S.P. of both shirts = 1.2 × 100 + 0.9 × 100 = Rs. 210
Overall profit = $\frac{(210-200)}{200} \times 100 = 5\%$

Quantity II : Let C.P. of one-metre cloth be Rs. x
And S.P. of one-metre cloth be Rs. y
Then,
$20y - 20x = 5x$
$\Rightarrow 20y = 25x$
$\Rightarrow \frac{y}{x} = \frac{5}{4}$
Profit% $\frac{(5-4)}{4} \times 100 = 25\%$
So, Quantity II > Quantity I

S6. Ans.(e)
Sol.

The pattern of the number series is :
$9050 - 15^3 = 9050 - 3375 = 5675$
$5675 - 13^3 = 5675 - 2197 = 3478$
$3478 - 11^3 = 3478 - 1331 = 2147$
$2147 - 9^3 = 2147 - 729 = 1418$
$1418 - 7^3 = 1418 - 343 = 1075$ not 1077
$1075 - 5^3 = 950$
Wrong number=1077

S7. Ans.(d)
Sol. The pattern of the number series is :
$1^2 = 1$
$2^2 = 4$
$3^3 = 27$ not 25
$4^4 = 256$
$5^5 = 3125$
$6^6 = 46656$
$7^7 = 823543$

Wrong number=25

S8. Ans.(c)
Sol. The pattern of the number series is :
$380 \div 2 - 2 = 188$
$188 \div 2 - 2 = 92$
$92 \div 2 - 2 = 44$ Not 48
$44 \div 2 - 2 = 20$
$20 \div 2 - 2 = 8$
$8 \div 2 - 2 = 2$

Wrong number=48

S9. Ans.(e)
Sol.
The pattern of the number series is :
  $4.5 + 11.5 = 16$
  $16 + 9.5 = 25.5$, not 25
  $25.5 + 7.5 = 33$
  $33 + 5.5 = 38.5$
  $38.5 + 3.5 = 42$
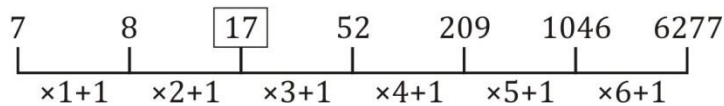 $42 + 1.5 = 43.5$
Wrong number=25

S10. Ans.(d)

Sol.

7   8   17   52   209   1046   6277

×1+1   ×2+1   ×3+1   ×4+1   ×5+1   ×6+1

S11. Ans (a)

Sol. $4x + 3y = 40$

$6x - 5y = 22$

or $24x + 18y = 240$

$24x - 20y = 88$

$38y = 152$

$y = 4, x = 7$

$x > y$

S12. Ans (b)

Sol. $2x^2 - 4x - \sqrt{13}x + 2\sqrt{13} = 0$

$2x(x - 2) - \sqrt{13}(x - 2) = 0$

$x = \frac{\sqrt{13}}{2}, 2$

$10y^2 - 18y - 5\sqrt{13}y + 9\sqrt{13} = 0$

$2y(5y - 9) - \sqrt{13}(5y - 9) = 0$

$y = \frac{\sqrt{13}}{2}, \frac{9}{5}$

S13. Ans. (a)

Sol. $x^2 - 7\sqrt{3}x - 5\sqrt{5}x + 35\sqrt{15} = 0$

$x(x - 7\sqrt{3}) - 5\sqrt{5}(x - 7\sqrt{3}) = 0$

$x = 5\sqrt{5}, 7\sqrt{3}$

$y^2 - 2\sqrt{5}y - 3\sqrt{5}y + 30 = 0$

$y(y - 2\sqrt{5}) - 3\sqrt{5}(y - 2\sqrt{5}) = 0$

$y = 2\sqrt{5}, 3\sqrt{5}$

$x > y$

S14. Ans.(e)

Sol.

(i) $5x^2 + 59x + 44 = 0$

$5x^2 + 4x + 55x + 44$

$x = \frac{-4}{5}, -11$

(ii) $2y^2 + 13y + 15 = 0$

$2y^2 + 3y + 10y + 15 = 0$

$y = \frac{-3}{2}, -5$

∴ No relation

S15. Ans.(c)
Sol.
(i) $x^2 - 36x + 315 = 0$
$x^2 - 15x - 21x + 315 = 0$
x = 15, 21
(ii) $y^2 - 23y + 120 = 0$
y = 8, 15
∴ x ≥ y

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