Quiz Date: 17th March 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:
(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

Q1. Quantity I – height of cylindrical vessel (in cm), A Conical vessel with the radius and slant height of 21 cm and 29 cm respectively and it's 2/3rd part is filled with alcohol. If total alcohol from the vessel transferred into 35 same cylindrical vessels whose diameter is 8 cm long.
    Quantity II. Radius of circle (in cm), if circumference of a circle is 44 cm.

Q2. The quantity of mixture of water and milk in two vessel A & B is (x+15) lit and (x+35) lit respectively. The ratio of milk & water in the vessel A and B is in the ratio of 1:4 and 2:3 respectively.
Quantity I. find the quantity of water in vessels A.
If 19 times of mixture of Vessel A and 15 times of mixture of Vessel B are numerically same.
Quantity II. Quantity of milk in Vessels B.

Q3. **Quantity I –** Side of equilateral triangle.
If the area of the equilateral triangle is $36\sqrt{3}$ cm².
    Quantity II – Side of square.
Circumference of a circle is 44 cm and area of circle is 105 cm² more than area of square.

Q4. A can complete a piece of work in 20 days while B can complete the same work in 16 days. The efficiency of C is 4/9th efficiency of A and B together.
Quantity I. Time taken by all together to complete the same work if all work their own efficiency.
Quantity II. Time taken by B and C together when B work with his twice efficiency and C work with his ¾ efficiency.

Q5. The speed of boat in still water and speed of current is in the ratio of x:1. If time taken by boat to cover a certain distance in downstream and that of in upstream is in the ratio of (x-1) : (2x-3). The boat covers same distance in still water in $11\frac{1}{4}$ $hours$.
Quantity I. Speed of boat in still water, if time taken by boat to cover 45 km in upstream is 15 hours. (Numerically in kmph)
Quantity II. Time taken by boat to cover 2 times more distance in downstream. (Numerically in hours)

Directions (6 − 10): 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:
(a) Quantity I > Quantity II
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(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or no relation

Q6. Train A cross a platform of length 520 meters and a man in 22.8 sec and 7.2 sec respectively.
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.

Q7. Ratio of age of Bhavya & Veer three years ago 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 old, 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.

Q8. 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 m^2).
Quantity II − 3.16 m^2

Q9. A circle with center 'o' is circumscribed with an equilateral triangle ABC of side $24\sqrt{3}$ cm
Quantity I − Find the height of triangle (in cm).
Quantity II – Find the length of rectangle (in cm) having perimeter 120 cm and breadth equal to radius of circle.

Q10. **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 cm^2. Find radius of bigger ball?

Quantity II: Height of a cylindrical vessel is equal to side of a square, having area is 256 cm^2. If volume of cylindrical vessel is 22176 cm^3 then find the radius of cylindrical vessel.

Directions (11-15): 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.

Q11. A box contains 4 Red balls, 6 white balls, 2 orange balls and 8 black balls.
Quantity I: Two balls are drawn at random probability that both balls are either red or white.
Quantity II: Three balls are drawn. The probability that all are different.
(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I = Quantity II

Q12. B is thrice as efficient as C. B and C can compete a work together in 45/2 days. A takes 50% more days than the days taken by A and B to complete the same work together.
Quantity 1: No. of days taken by fastest among them to complete the work alone.
Quantity 2: Time taken (in days) by A and C to complete the work together.
(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

Q13. **Quantity I→ The profit earned by selling an item(in Rs)** if the difference b/w the SP

and the CP is $117\frac{2}{3}\%$ of 600. (S.P. > C.P.)

Quantity II→ The cost price of an article (in Rs) if the selling price of the article is 1000 Rs and he got 25% profit after selling the item.

(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I = Quantity II
(e) No relation

Q14. The largest possible right circular cylinder is cut out from a wooden cube of edge 7 cm.
Quantity I: volume of the cube (in cm³) eft over after cutting out the cylinder
Quantity II: Surface area (in cm²) of cube remained after cutting out the cylinder.
Note: compare the magnitudes of both quantities.
(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

Q15. **Quantity 1: difference between the largest and the smallest part of sum.** A sum of Rs. 1440 is lent out in three parts in such a way that the interests on first part at 2% for 3 years, second part at 3% for 4 years and third part at 4% for 5 years are equal.
Quantity 2: 460
(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

Solutions

S1. Ans. (b)
Sol.
Quantity I.
Height of conical vessel $= \sqrt{29^2 - 21^2} = \sqrt{400}$
$= 20 \ cm$
Quantity of alcohol in conical vessel $= \frac{2}{3} \times \frac{1}{3} \times \frac{22}{7} \times 21 \times 21 \times 20$
Let required height be h cm.
ATQ
$35 \times \frac{22}{7} \times 4 \times 4 \times h = \frac{2}{3} \times \frac{1}{3} \times \frac{22}{7} \times 21 \times 21 \times 20$
h= 3.5 cm

Quantity II.

Required radius = $\frac{44 \times 7}{2 \times 22}$

          =7 cm.

Quantity I < Quantity II

S2. Ans. (a)
Sol.
Quantity I
ATQ,
$19 \times (x + 15) = 15 \times (x + 35)$
x=60
So, Quantity of vessel A = 60+15=75 lit.
And, quantity of vessel B = 60 + 35= 95 lit
Quantity of Water in vessel A = $\frac{4}{5} \times 75 = 60\ lit$
Quantity II.
Quantity of Milk in Vessel B = $\frac{3}{5} \times 95 = 57\ lit$
Quantity I > Quantity II

S3. Ans. (a)
Sol.
Quantity I

Side of Equilateral Triangle = $\sqrt{\dfrac{36\sqrt{3}}{\frac{\sqrt{3}}{4}}}$

= 12 cm
Quantity II.
Circumference of Circle = 2πr=44
r=7 cm
area of Circle = πr^2
          = $\frac{22}{7} \times 7 \times 7 = 154$
So, area of Square = 154-105= 49 cm² .
Side of Square = 7 cm.
 Quantity I > Quantity II

S4. Ans. (e)
Sol.
1 day efficiency of A = 1/20 unit
1 day efficiency of B = 1/16 unit
So, 1 day efficiency of C = $\frac{4}{9}\left(\frac{1}{20} + \frac{1}{16}\right) = \frac{1}{20}\ unit$
Quantity I.
Total efficiency = $\frac{1}{20} + \frac{1}{16} + \frac{1}{20} = \frac{13}{80}$
Required time = $\frac{80}{13}\ days$.

Quantity II.
New efficiency of B = 1/8
New efficiency of C = 3/80
Total efficiency = $\frac{1}{8} + \frac{3}{80} = \frac{13}{80}$
Required time = $\frac{80}{13} \ days$.
Quantity I = Quantity II

S5. Ans. (b)
Sol.
Let speed of boat in still water and speed of current be xa and a respectively.
Let certain distance be D unit.
ATQ,
$\frac{D}{a(x+1)} : \frac{D}{a(x-1)} = (x-1):(2x-3)$
And $D = \frac{45}{4}x$
x=4 unit.
So, D = 45 unit.
ATQ
$\frac{45}{3a} = 15$
$a = 1$
Quantity I.
Speed of Boat in still water = 4 kmph.
Quantity II.
Time taken by boat to Cover 2 times more distance in downstream
=$\frac{135}{4+1} = 27 \ unit$.

S6. Ans.(e)
Sol.

Let length of train A be ℓ meter

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

Also train cross a man so,

Speed of train A $= \frac{\ell}{7.2}$

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

Q7. Ans.(b)

Sol.

Let age of Bhavya & Veer three years ago was 7x & 8x respectively.

Atq,

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

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 →

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

= 108 yrs

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

ATQ

33 + 16y + 9y = 108

25y = 75

y = 3years

Age of Q = 16 × 3 = 48 yrs

Age of R = 9 × 3 = 27 yrs

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

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

Age of M = 48 + 4 = 52 yrs

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

Required average age of N & Q

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

= 52 yrs

So, **Quantity I < Quantity II**

S8. Ans(a)

Sol.

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

$60\sqrt{3}$ = side $\times \sqrt{3}$

Side = 60 cm

Volume of larger cube = 60 $\times$ 60 × 60 = 216000 cm³

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

$= 324000 cm^2 = 32.4\ m^2$

Total surface area of all cuboids $= 2700 \times 2\ (8 \times 5 + 5 \times 2 + 8 \times 2)$

$= 356400\ cm^2 = 35.64\ m^2$

Required difference $= (35.64 - 2.16) - (32.4 - 2.16)$

$= 33.48 - 30.24$

$= 3.24\ m^2$

Quantity II $- 3.16\ m^2$

So, **Quantity I > Quantity II**

S9. Ans(e)
Sol.

Quantity I $-$

Height of equilateral triangle $= \frac{\sqrt{3}}{2} \times side$

$= \frac{\sqrt{3}}{2} \times 24\sqrt{3}$

$= 36\ cm$

Quantity II –

Height of equilateral triangle $= \frac{\sqrt{3}}{2} \times side$

$= \frac{\sqrt{3}}{2} \times 24\sqrt{3}$

$= 36\ cm$

As per property of equilateral triangle = AO : OD= 2 : 1

AO = radius $= \frac{2}{(2+1)} = 36$

$= 24\ cm$

Breadth of rectangle = 24 cm

Let length of rectangle be l cm

2 (l +24) = 120

l = 36 cm

So, **Quantity I = Quantity II**

S10. 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,

$4\pi r^2 - 3\pi r^2 = 1424.5\ cm^2$

$4 \times \frac{22}{7} \times (4r)^2 - 3 \times \frac{22}{7} \times (3r)^2 = 1424.5$

$r^2 = 12.25$

$r = 3.5\ cm$

Radius of bigger ball = 4 × 3.5 = 14 cm

Quantity II —
Height of cylindrical vessel = side of square
Side of square = 16 cm
Given,
$\pi r^2 h = 22176$
$\frac{22}{7} \times r^2 \times 16 = 22176 \text{ cm}^3$
$r^2 = \frac{22176 \times 7}{22 \times 16}$
$r^2 = 441$
r = 21 cm
So, Quantity I < Quantity II

S11. Ans.(b)
Sol. Probability that both balls are either Red or White $= \frac{^4C_2 + {}^6C_2}{^{20}C_2} = \frac{6 + 15}{190} = \frac{21}{190}$
Probability that all three bolls are of different colours (RWO, RWB, WOB and ROB) = $\frac{(4 \times 6 \times 2) + (4 \times 6 \times 8) + (6 \times 2 \times 8) + (4 \times 2 \times 8)}{^{20}C_3} = \frac{20}{57}$

Quantity I < Quantity II

S12. Ans.(a)
Sol.
Let efficiency of A :B :C = x: 3: 1
And time taken by A and B together to complete the work = t days.
Total work = $4 \times \frac{45}{2} = 90 \; unit$
ATQ,
$$x \times 1.5t = (x + 3) \times t$$
$$x = 6$$

(Quantity I) = Required time = $\frac{90}{6} = 15 \; days.$
(Quantity II) = Required time = $\frac{90}{7} \; days.$

S13. Ans.(b)
Sol. Quantity I→ $\frac{117 \times 3 + 2}{300} \times 600$
= 706 Rs
Quantity II→
Let cost price be Rs. x
$x + \frac{25x}{100} = 1000$
$x = \frac{100}{125} \times 1000$
= 800 Rs
∴ Quantity I < Quantity II

S14. Ans.(b)

Sol. Quantity I : Volume of cube left = $7^3 - \pi \left(\frac{7}{2}\right)^2 \times 7$

$= 343 - \frac{22}{7} \times \frac{49 \times 7}{4}$

$= 343 - 269.5$

$= 73.5$ cm^3

Quantity II : Surface area of cube left = $6 \times 7^2 - 2.\pi \left(\frac{7}{2}\right)^2 + 2\pi \left(\frac{7}{2}\right) 7$

$= 294 - 77 + 154$

$= 371$ cm^2

Quantity II > Quantity I

S15. Ans.(a)

Sol.

Let, first part beRs. x

Second part beRs. y

Then third part = $1440 - x - y$

ATQ,

$\frac{x \times 2 \times 3}{100} = \frac{y \times 3 \times 4}{100} = \frac{4 \times 5 \times (1440 - x - y)}{100}$

Solving, we get

$y = 400$

$x = 800$

1440 – 800 – 400 = 240

Req. Difference = 800 – 240 = 560

Quantity II < Quantity I

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