Quiz Date: 1ˢᵗ April 2020

Q1. The surface area of a sphere is 423.5 cm² less than total surface area of a hemisphere. If ratio between radius of hemisphere and sphere is 3 : 2, then find the radius of hemisphere?
(a) 5.5 cm
(b) 5 cm
(c) 4 cm
(d) 7 cm
(e) 10.5 cm

Q2. A 240 meters long train crosses a 210 meters long train while running in opposite direction in 6 sec. Ratio between speed of longer train and smaller train is 7 : 8. If faster train crosses a platform in 9 sec, then find time taken by slower train to cross a bridge, which is 60 meters longer than platform?
(a) $\frac{142}{7} sec$
(b) $\frac{136}{7} sec$
(c) $\frac{90}{7} sec$
(d) $\frac{148}{7} sec$
(e) $\frac{123}{7} sec$

Q3. Raman invested some amount in scheme 'P' which offer 20% C.I. p.a. while some amount in scheme 'Q' which offers 8% S.I. p.a. After 2 year ratio of interest, earned from 'P' to 'Q' is 11 : 6. Amount invested by Raman in scheme 'P' is what percent of the amount invested by him in scheme 'Q'.
(a) 50%
(b) $33\frac{1}{3}\%$
(c) 25%
(d) $66\frac{2}{3}\%$
(e) 150%

Q4. A, B and C entered into a partnership business, A invested Rs. x, B invested 25% more than A and C invested 20% more than B. After 6 months, A left the business and B withdraw 50% of his investment and after 3 more months, B left the business whereas C increased his investment by $16\frac{2}{3}\%$. If at the end of year difference between profit share of C and (A + B) together is Rs. 10125, then find profit share of C ?
(a) 56250 Rs.
(b) 56500 Rs.
(c) 55680 Rs
(d) 55580 Rs.
(e) 52680 Rs.

Q5. The work done by a man, a woman and a child is in the ratio of 3 : 2 : 1. There are 20 men, 30 women and 36 children in a factory. Their weekly wages amount to Rs. 780, which is divided in the ratio of work done by the men, women and children. What will be the wages of 15 men, 21 women and 30 children for 2 weeks ?
(a) Rs. 585
(b) Rs. 1470
(c) Rs. 1170
(d) Rs. 900
(e) Rs. 1560

Q6. Instead of walking along two adjacent sides of a rectangular field, a boy took a short cut along the diagonal and saved a distance equal to half the longer side. Then the ratio of the shorter side to the longer side is
(a) 1/2
(b) 2/3
(c) ¼
(d) ¾
(e) None of these

Q7. A and B together can complete a job in 8 days. Both B and C, working alone can finish the same job in 12 days. A and B commence work on the job and work for 4 days, whereupon A leaves. B continues for 2 more days, and then he leaves too. C now starts working and finishes the job. How many days did C require?
(a) 5
(b) 8
(c) 3
(d) 4
(e) 2

Q8. Two cars are moving with speed v_1, v_2 towards a crossing along two roads. If their distances from the crossing be 40 metres and 50 metres at an instant of time, then they do not collide if their speeds are such that
(a) $v_1 : v_2 = 16 : 25$
(b) $v_1 : v_2 \neq 4 : 5$
(c) $v_1 : v_2 \neq 5 : 4$
(d) $v_2 : v_2 = 25 : 16$
(e) None of these

Q9. A swimmer swims from a point A against a current for 5 minutes and then swims backwards in favour of the current for next 5 minutes and comes to the point B. If AB = 100 metres, the speed of the current (in km per hours) is:
(a) 0.4
(b) 0.2
(c) 1
(d) 0.6
(e) 1.6

Q10. A salesman's terms were changed from a flat commission of 5% on all his sales to a fixed salary of Rs. 1000 plus 2.5% commission on all sales exceeding Rs. 4000. If his remuneration as per the new scheme was Rs. 600 more than by the first, what was his sales worth?
(a) Rs. 10,000
(b) Rs. 12,000
(c) Rs. 13,000
(d) Rs. 5000
(e) None of these

Solutions

S1. Ans.(e)
Sol.
Total surface area of sphere = $4\pi r^2$
Total surface area of hemisphere = $3\pi r^2$
Let radius of hemisphere and sphere be $3x$ cm and $2x$ cm respectively.
ATQ—
$3 \times \frac{22}{7} \times (3x)^2 - 4 \times \frac{22}{7} \times (2x)^2 = 423.5$
$x = 3.5$ cm
Radius of hemisphere = $\frac{21}{2}$ cm = 10.5cm

S2. Ans.(c)
Sol.
Let speed of longer train and smaller train be '$7x$ m/s' and '$8x$ m/s' respectively.
ATQ—
$(7x + 8x) = \frac{(240+210)}{6}$
$90x = 450$
$x = 5$
Speed of longer train = 5 × 7 = 35 m/s
Speed of smaller train = 5 × 8 = 40 m/s
Let length of platform be l meter
$40 = \frac{l+210}{9}$
$40 \times 9 = l + 210$

l=150
Then, length of bridge = 150 + 60 = 210 meters
Let time taken by slower train to cross bridge be T sec.
$T = \frac{210+240}{35}$
35T = 450
T = $\frac{90}{7}$ sec.

S3. Ans.(d)
Sol.
Let, amount invested in scheme 'P' and amount invested in scheme 'Q' be 'x' and 'y' respectively.
ATQ,
$$\frac{x \times \left[\left(\frac{120}{100}\right)^2 - 1\right]}{\frac{y \times 8 \times 2}{100}} = \frac{11}{6}$$
$$\Rightarrow \frac{x \times 0.44}{y \times 0.16} = \frac{11}{6}$$
$$\Rightarrow \frac{x}{y} = \frac{2}{3}$$
Required% = $\frac{2}{3} \times 100$
$= 66\frac{2}{3}\%$

S4. Ans. (a)
Sol.
Ratio of investment of A, B and C
= x : 1.25x : 1.5x
= 4x : 5x : 6x
ATQ—
Profit share of A : B : C = 4x × 6 : (5x × 6 + 2.5x × 3) : (6x × 9 +7x × 3)
= 24x : 37.5x : 75x
Given→ C – (A + B) = 10125
75x – (24x + 37.5x) = 10125
x = 750

Profit share of C = 750 × 75 = 56250 Rs.

S5. Ans.(c)
Sol.
Ratio of work done by 20 men, 30 women and 36 children
= 20 × 3 : 30 × 2 : 1 × 36
= 5 : 5 : 3
Wage of 20 men = $\frac{5}{13} \times 780 = 300$
Wage of 1 man = $\frac{300}{20} = 15$
Similarly, wage of 1 woman = 10
And wage of 1 child = 5
Total wages of 15 men, 21 women and 30 children for 2 weeks = 2 × (15 × 15 + 21 × 10 + 30 × 5)
= 2(225 + 210 + 150)
= 2 × 585
= 1170

S6. Ans.(d)
Sol.
Let, longer side be 'ℓ'
And shorter side be 'b',
Then,
$$\sqrt{\ell^2 + b^2} = \ell + b - \frac{\ell}{2} = \frac{\ell}{2} + b$$
or, $\ell^2 + b^2 = \frac{\ell^2}{4} + b^2 + \ell b$
or, $3\ell^2 = 4\ell b$
or, $\frac{\ell}{b} = \frac{4}{3}$

S7. Ans.(d)
Sol.   Time taken by A and B together to complete work = 8 days
Time taken by B alone to complete work = 12 days
Time taken by C alone to complete work = 12 days
Now take LCM of 8, 12 and 12
LCM (8, 12, 12) = 24
Assume total work = 24 unit
Efficiency of (A + B) together = $\frac{24}{8} = 3$ unit/day
Efficiency of B = 2 unit/day   &   Efficiency of C = 2 unit/day
4 days' works of A and B = 4 × 3 = 12 unit
2 days' works of B = 4 unit
Remaining work = 24 unit – (12+4) unit= 8 unit
Days required for C to complete the remaining work = $\frac{8 \text{ unit}}{2} = 4$ days

S8. Ans.(b)

Sol,
To avoid collision both cars must not reach at crossing in the same time (t)
$\therefore v_1 t \neq 40$ and $v_2 t \neq 50$
$v_1 : v_2 \neq 4 : 5$

S9. Ans.(d)
Sol.
Let speed of swimmer = x km/hr and speed of current = y km/hr
Downstream speed of swimmer = $(x + y)$ km/hr
Upstream speed of swimmer = $(x - y)$ km/hr
Downstream distance covered in 5 minutes by swimmer = $(x + y) \times \frac{5}{60}$ km

Upstream distance covered in 5 minutes by swimmer = $(x - y) \times \frac{5}{60}$ km
$\frac{(x+y)}{12} - \frac{(x-y)}{12} = \frac{100}{1000}$
$\frac{2y}{12} = \frac{100}{1000}$
$y = 0.6$ km/hr

S10. Ans.(b)
Sol.
Let his sales be worth Rs. x then
$1000 + 2.5\%$ of $(x - 4000) = 5\%$ of $x + 600$
$\Rightarrow x = $ Rs. $12,000$

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