

SSC Overview

Sunday, March 12, 2023 4:00 PM

(T2 2021)

Q.1 The cost price of an article is ₹ 2800. Profit as a percentage of selling price is 20 percent. What is the actual profit (in ₹)?

Let SP = 100 . Profit \rightarrow 20% on SP = 20 , then CP = SP - profit
 actual profit % \rightarrow $\frac{20}{80} \times 100\% = 25\%$ (on CP) = 100 - 20 = 80
 Actual profit = 25% of 2800 = 700

(CGL T1 2021)

Q.1 A sold a mobile phone to B at a gain of 25% and B sold it to C at a loss of 10%. If C paid ₹5,625 for it, how much did A pay (in ₹) for the phone?

CP of A = 100 SP of A = 125 = CP of B SP of B = $\frac{9}{10} \times 125 =$ CP of C
 $\frac{9}{10} \times 125 \rightarrow 100$ $(1 - \frac{1}{10}) \times 125$
 1 $\rightarrow \frac{100 \times 10}{9 \times 125}$
 5625 $\rightarrow \frac{100 \times 10}{9 \times 125} \times 5625 = 5000$

(CGL T2 2022)

Q.2 The sum of the curved surface area and total surface area of a solid cylinder is 2068 cm^2 . If radius of its base is 7 cm, then what is the volume of this cylinder? (use $\pi = \frac{22}{7}$)

Curved surface area = $2\pi rh$
 Total surface area = $2\pi rh + \pi r^2 \cdot 2 = 2\pi r(r+h)$
 $2\pi rh + 2\pi r(r+h) = 2068$
 $\Rightarrow 2\pi rh + 2\pi r^2 + 2\pi rh = 2068$
 $\Rightarrow 2\pi r(h+r+h) = 2068$
 $\Rightarrow 2 \cdot \frac{22}{7} \times 7(r+2h) = 2068$
 $\Rightarrow (7+2h) = \frac{2068}{44}$
 $7+2h = 47 \Rightarrow h = 20 \text{ cm}$
 Ans:
 2-0+6-0 \times 1. 2060 cm^3
 2-4+8-0 \times 2. 2480 cm^3
 3-0+8-0 \checkmark 3. 3080 cm^3
 2-7+6-0 \times 4. 2760 cm^3

Q.3 If $\sin\theta = (9/41)$, $0^\circ < \theta < 90^\circ$ then what is the value of $\cot\theta$?

S Some curly through
 P People black proper
 h have hair boushing

41 \triangle 9
 $\frac{9}{41}$
 $\sqrt{41^2 - 9^2} = \sqrt{1681 - 81} = \sqrt{1600} = 40$
 $\cot\theta = \frac{40}{9}$

(C+S1 22)

Q.5 A can finish a piece of the work in 16 days and B can finish it in 12 days. They worked together for 4 days and then A left. B finished the remaining work. For how many total number of days did B work to finish the work completely?

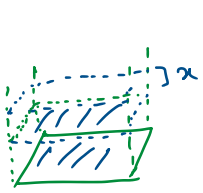
Efficient
 $TW = \text{LCM}(16, 12, 4) = 48 \text{ units}$
 $eA = 48/16 = 3$
 $eB = 48/12 = 4$
 $e(A+B) = 4(3+4) = 28 \text{ units}$
 remaining = $(48 - 28)u = 20u$
 B will do remaining work in $\frac{20}{4} = 5 \text{ days}$
 Total days = $(4+5)d = 9 \text{ days}$
 $TW = 48$
 $eA = 3$
 $eB = 4$
 $42(A+B) = 28$
 $\frac{48-28}{4} = 5$

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subidial

Q.6 A solid cube of side 8 cm is dropped into a rectangular container of length 16 cm, breadth 8 cm and height 15 cm which is partly filled with water. If the cube is completely submerged, then the rise of water level (in cm) is:



height = x , $l = 16$, $b = 8$
 Volume of water displaced = $x \times 16 \times 8 \text{ cm}^3 = 8^3 \text{ cm}^3$
 $\Rightarrow x \times 2 \times 8 \times 8 = 8^3$
 $\Rightarrow x = 4 \text{ cm}$

Q.7 If $(x + 6y) = 8$, and $xy = 2$, where $x > 0$, what is the value of $(x^3 + 216y^3)$?

$\begin{cases} x=1, y=2 \\ x=2, y=1 \end{cases}$
 $2 + 6 \times 1 = 8$ $2 \times 2 = 4$
 $8 + 216 = 224$

Q.10 If $4\sin^2\theta = 3(1 + \cos\theta)$, $0^\circ < \theta < 90^\circ$, then what is the value of $(2\tan\theta + 4\sin\theta - \sec\theta)$?

$4s^2 = 3(1+c)$
 $4(1-c^2) = 3(1+c)$
 $4(1-c) = 3$
 $1-c = \frac{3}{4}$
 $c = \frac{1}{4}$ ✓

$(1+c) \neq 0$
 why?

$\sqrt{4^2 - 1^2} = \sqrt{15}$

$2 \cdot \frac{\sqrt{15}}{1} + \frac{\sqrt{15}}{1} - 4$
 $\Rightarrow 2\sqrt{15} + \sqrt{15} - 4$

$3\sqrt{15} - 4$

Q.11 The lengths of the three sides of a right-angled triangle are $(x - 1)$ cm, $(x + 1)$ cm and $(x + 3)$ cm, respectively. The hypotenuse of the right-angled triangle (in cm) is:

3, 4, 5 5, 12, 13 6, 8, 10 $\rightarrow x=7$ 10cm

Q.16 Find the greatest number $23a68b$, which is divisible by 3 but NOT divisible by 9.

$2+3+6+8+(a+b) \rightarrow 19+a+b$. Put $a=9 \rightarrow 28+b$ $3n$ & not $9n$
 239685 $b = \cancel{2}, \cancel{5}, \cancel{8} \rightarrow \underline{36}$