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OPSC ASO Math Previous Year Question

FREE DEMO

10 Selected Questions (2014 – 2025) with Full Solutions



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OPSC ASO MATH – 10 SELECTED PYQ

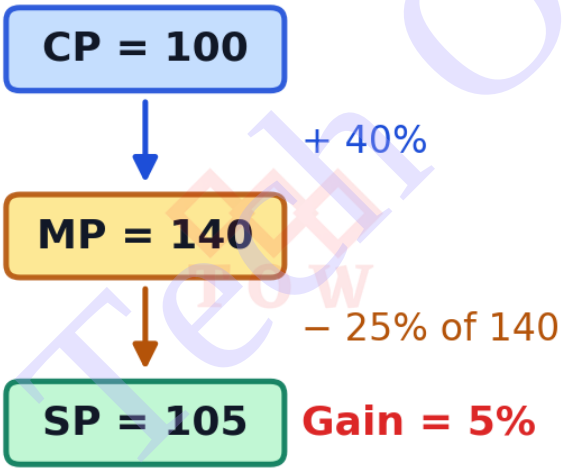
Hand-picked from OPSC ASO Math papers of 2014, 2015, 2019, 2022 and AG ASO 2025 – Easy, Moderate and Hard questions, with the same step-by-step solutions you get in the full pack.

EASY QUESTIONS

Q-1 A trader marks his goods at 40% above the cost price and allows a discount of 25%. What is his gain percent ?
[OPSC ASO 2014]
(A) 5
(B) 15
(C) 2
(D) 65

ANS- (A) 5

Given:
➔ Take CP = 100
➔ MP = 100 + 40% of 100 = 140
➔ Discount = 25% of MP



Concept:
➔ SP = MP − Discount
➔ $\text{Gain\%} = \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100$

Solution:
→ $\text{SP} = 140 \times \frac{75}{100} = 105$

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$\rightarrow$ Gain% $= \frac{105 - 100}{100} \times 100 = 5$

$\therefore$ Ans: (A) 5

Hint:

$\rightarrow$ Alternative: net change $= 40 - 25 - \frac{40 \times 25}{100}$

$\Rightarrow$ Net change $= 15 - 10 = 5\%$

Q-2 A steel wire is in the form of a circle of radius 28 cm. It is bent in the form of a square. The length of the side of the square is:
$\left(\text{take } \pi = \frac{22}{7}\right)$

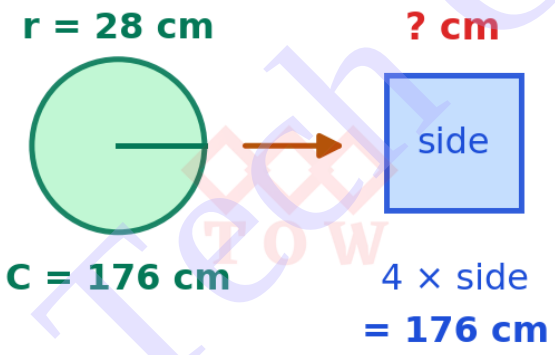
[OPSC ASO 2015]

(A) 44 cm
(B) 11 cm
(C) 28 cm
(D) None of the above

Ans- (A) 44 cm

Given:

$\rightarrow$ Circle: $r = 28$ cm, $\pi = \frac{22}{7}$



Concept:

$\rightarrow$ Wire = circumference $= 2\pi r$

$\rightarrow$ Square of side s: perimeter $= 4s$

Solution:

$\rightarrow$ Wire $= 2 \times \frac{22}{7} \times 28 = 176$ cm

$\rightarrow 4s = 176$

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$\Rightarrow s = 44$ cm
∴ Ans: (A) 44 cm

Hint:

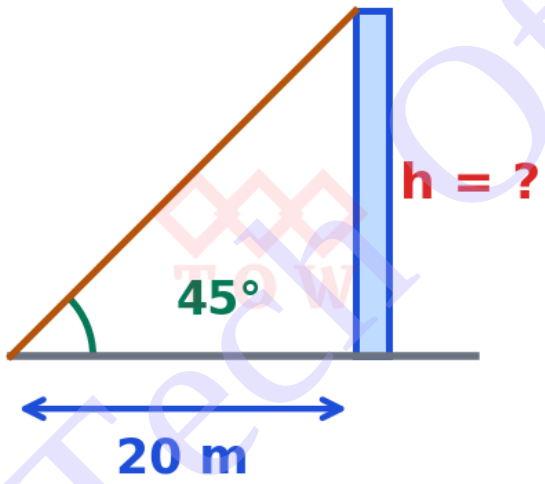
➔ Alternative: $s = \frac{2\pi r}{4} = \frac{\pi r}{2} = \frac{22}{7} \times \frac{28}{2} = 44$ cm

Q-3 If the angle of elevation of the top of tower from a point 20m away from the foot is 45°, then find height of the tower:
[OPSC ASO 2022]
(A) 40m
(B) 20m
(C) 30m
(D) 25m

Ans- (B) 20m

Given:

➔ Distance from the foot = 20 m and angle of elevation $\theta = 45°$



Concept:

➔ $\tan\theta = \frac{\text{height}}{\text{distance}} = \frac{h}{d}$

Solution:

$\rightarrow \tan 45° = \frac{h}{20}$
$\Rightarrow 1 = \frac{h}{20}$
$\Rightarrow h = 20$ m

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∴ Ans: (B) 20m

MODERATE QUESTIONS

Q-4 How many spherical lead shots each having diameter 3 cm can be made from a cuboidal solid of dimensions $9\text{ cm} \times 11\text{ cm} \times 12\text{ cm}$**?** $\left(\text{take } \pi = \frac{22}{7}\right)$

[OPSC ASO 2015]

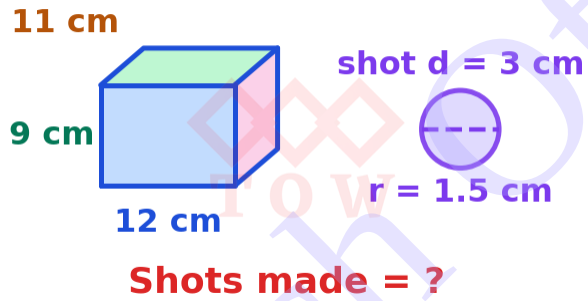
(A) 81
(B) 82
(C) 83
(D) 84

Ans- (D) 84

Given:

➔ Cuboid $= 9 \times 11 \times 12$ cm

➔ Shot: diameter 3 cm, radius $r = \frac{3}{2} = 1.5$ cm, $\pi = \frac{22}{7}$



Concept:

➔ Melting and recasting keeps the volume the same, so number of shots = volume of cuboid ÷ volume of one shot.

➔ $V_{\text{cuboid}} = l \times b \times h$

➔ $V_{\text{sphere}} = \frac{4}{3}\pi r^3$

Solution:

→ $V_{\text{cuboid}} = 9 \times 11 \times 12 = 1188\text{ cm}^3$

→ $V_{\text{sphere}} = \frac{4}{3} \times \frac{22}{7} \times \left(\frac{3}{2}\right)^3 = \frac{99}{7}\text{ cm}^3$

→ $n = \frac{1188}{\frac{99}{7}} = \frac{1188 \times 7}{99} = 84$

∴ Ans: (D) 84

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Hint:
➔ Trap: use the radius 1.5 cm in the sphere formula, not the diameter 3 cm.

Q-5 In a class of 100 students there are 70 boys whose average marks in a single subject are 75. If the average mark of the complete class is 72, then the average mark of the girls is:
[OPSC ASO 2019]
(A) 73
(B) 65
(C) 68
(D) 74
Ans- (B) 65

Given:
➔ Class = 100 students, boys = 70 (average 75), class average = 72
➔ $\text{Girls} = 100 - 70 = 30$

Concept:
➔ Total marks = average × number of students

Solution:
→ $\text{Girls' total} = 72 \times 100 - 75 \times 70 = 7200 - 5250 = 1950$
→ $\text{Girls' average} = \frac{1950}{30} = 65$
∴ Ans: (B) 65

Hint:
➔ Alternative: boys are $75 - 72 = 3$ above, total $3 \times 70 = 210$
⇒ Girls are $\frac{210}{30} = 7$ below 72, so $72 - 7 = 65$

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Q-6 The difference between the simple and compound interest on Rs. 4,000 for 2 years at 10% per annum is:
[OPSC ASO 2019]
(A) Rs. 20
(B) Rs. 30
(C) Rs. 40
(D) Rs. 60
Ans- (C) Rs. 40

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Given:

➔ $P = \text{Rs. } 4000,\ R = 10\%,\ T = 2 \text{ years}$

	P	Year 1	Year 2
Simple interest	4000	+400	+400
Compound interest	4000	+400	+400 +40

Extra = 40

Concept:

➔ $\text{CI} - \text{SI (2 years)} = P\left(\frac{R}{100}\right)^2$

Solution:

→ $\text{CI} - \text{SI} = 4000 \times \left(\frac{10}{100}\right)^2 = 4000 \times \frac{1}{100} = \text{Rs. } 40$

∴ Ans: (C) Rs. 40

Hint:

➔ Alternative: $\text{SI} = \frac{4000 \times 10 \times 2}{100} = 800$ and $\text{CI} = 4000 \times (1.1)^2 - 4000 = 840$, so the difference is $840 - 800 = 40$

Q-7 If x is any number chosen from 1, 2, 3 and y is selected from the numbers 1, 4, 9, then $P(xy < 9)$ =?

[OPSC ASO 2022]

(A) $\frac{2}{3}$

(B) $\frac{5}{9}$

(C) $\frac{7}{9}$

(D) $\frac{1}{3}$

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Ans- (B) $\frac{5}{9}$

Given:

➔ $x \in \{1,2,3\}$ and $y \in \{1,4,9\}$

➔ $n(S) = 3 \times 3 = 9$

	y = 1	y = 4	y = 9
x = 1	1	4	9
x = 2	2	8	18
x = 3	3	12	27

xy < 9 : 5 cells out of 9

xy = 9 is not less than 9

Concept:

➔ $P = \frac{\text{favourable pairs}}{\text{total pairs}}$

Solution:

→ Pairs with $xy < 9$ are $(1,1), (1,4), (2,1), (2,4), (3,1)$, giving $xy = 1,4,2,8,3$

⇒ Favourable $= 5$

→ $P = \frac{5}{9}$

∴ Ans: (B) $\frac{5}{9}$

Hint:

➔ Trap: $(1,9)$ gives $xy = 9$, which is not less than 9, so it is not counted

Q-8 Four milkmen rented a pasture. A grazed 24 cows for 3 months; B 10 cows for 5 months; C 35 cows for 4 months and D 21 cows for 3 months. If A's share of rent is Rs. 720, find the total rent of the field.

[OPSC AG ASO 2025]

(A) 3245
(B) 3260
(C) 3360
(D) 3250

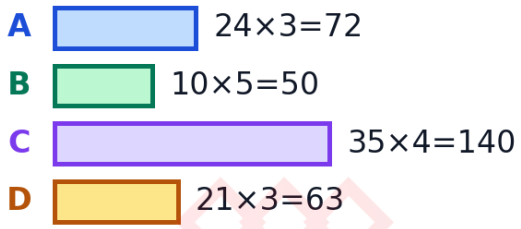
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ANS- (D) 3250

Given:

➔ $A = 24 \times 3,\ B = 10 \times 5,\ C = 35 \times 4,\ D = 21 \times 3$

➔ A's share $= 720$



Ratio 72 : 50 : 140 : 63

Total = 325 parts

72 parts = 720, 1 part = 10

Concept:

➔ Rent is shared in the ratio of cows × months.

Solution:

→ $A:B:C:D = 72:50:140:63$

⇒ $\text{Total} = 72 + 50 + 140 + 63 = 325 \text{ parts}$

→ $72 \text{ parts} = 720$

⇒ $1 \text{ part} = \frac{720}{72} = 10$

→ $\text{Total rent} = 325 \times 10 = 3250$

∴ Ans: (D) 3250

HARD QUESTIONS

Q-9 A motor boat whose speed is 18 km/h in still water take 1 hour more to go 24 km upstream than to return downstream to the same spot. Then the speed of the stream is :

[OPSC ASO 2014]

(A) 8 km/h

(B) 24 km/h

(C) 23 km/h

(D) 6 km/h

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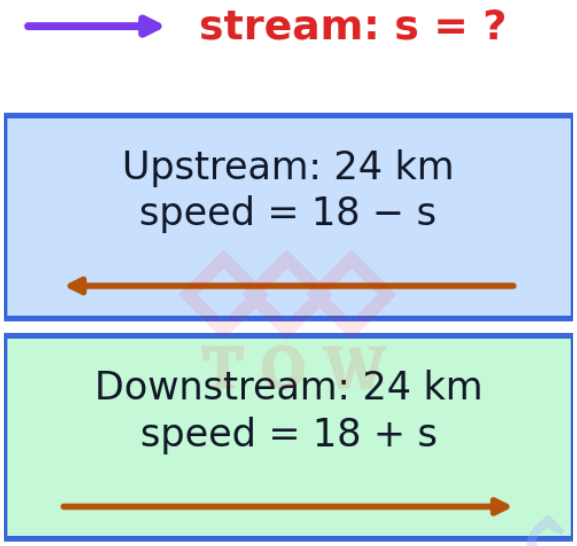
ANS- (D) 6 km/h

Given:

➔ Boat in still water $b = 18$ km/h, distance $= 24$ km

➔ Time upstream is 1 hour more than time downstream

➔ Stream speed s =?



Concept:

➔ Downstream speed $= b + s$, Upstream speed $= b - s$

➔ Time $= \dfrac{\text{Distance}}{\text{Speed}}$

Solution:

$\rightarrow \dfrac{24}{18-s} - \dfrac{24}{18+s} = 1$

$\Rightarrow 24(18+s) - 24(18-s) = (18-s)(18+s)$

$\Rightarrow 48s = 324 - s^2$

$\Rightarrow s^2 + 48s - 324 = 0$

$\Rightarrow (s+54)(s-6) = 0$

$\rightarrow$ Speed cannot be negative, so $s = 6$

$\therefore$ Ans: (D) 6 km/h

Hint:

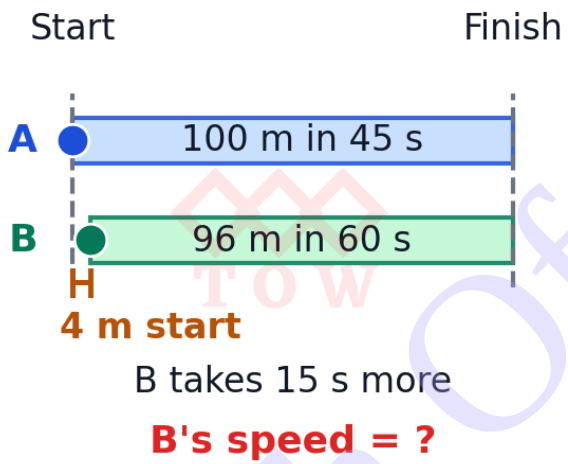
➔ Check with $s = 6$: $\dfrac{24}{12} - \dfrac{24}{24} = 2 - 1 = 1$

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Q-10 In a 100 m race, A runs at 8 km per hour. If A gives B a start of 4 m and still beats him by 15 seconds, what is the speed of B?
[OPSC AG ASO 2025]
(A) 5.76 km/hr
(B) 6.25 km/hr
(C) 4.25 km/hr
(D) 7.28 km/hr

ANS- (A) 5.76 km/hr

Given:
➔ Race $= 100$ m, A's speed $= 8$ km/hr
➔ B gets a start of 4 m, so B runs $100 - 4 = 96$ m
➔ A wins by 15 seconds



Concept:
➔ $1\ \text{km/hr} = \frac{5}{18}\ \text{m/s}$
➔ A wins by 15 s, so B takes 15 s more than A

Solution:
→ A's speed $= 8 \times \frac{5}{18} = \frac{20}{9}$ m/s
→ A's time $= \frac{\text{Distance}}{\text{Speed}} = 100 \times \frac{9}{20} = 45$ s
→ B's time $= 45 + 15 = 60$ s
→ B's speed $= \frac{96}{60}$ m/s $= \frac{96}{60} \times \frac{18}{5} = 5.76$ km/hr
∴ Ans: (A) 5.76 km/hr

Hint:
➔ Trap: B runs 96 m, not 100 m, because of the 4 m start.

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