CDS 2 2024

LIVE

MATHS

REVISION

CLASS 8

NAVJYOTI SIR

SSBCrack EXAMS

14 August 2024 Live Classes Schedule

8:00AM	14 AUGUST 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	14 AUGUST 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM	OVERVIEW OF GPE & PRACTICE	ANURADHA MA'AM

NDA 2 2024 LIVE CLASSES

11:00AM	GK - GEOGRAPHY REVISION - CLASS 2	RUBY MA'AM
1:00PM	MATHS REVISION - CLASS 8	NAVJYOTI SIR
2:00PM	CHEMISTRY REVISION - CLASS 1	SHIVANGI MA'AM
5:30PM	ENGLISH - REVISION - CLASS 4	ANURADHA MA'AM

CDS 2 2024 LIVE CLASSES

11:00AM	GK - GEOGRAPHY REVISION - CLASS 2	RUBY MA'AM
2:00PM	CHEMISTRY REVISION - CLASS 1	SHIVANGI MA'AM
3:00PM	MATHS REVISION - CLASS 8	NAVJYOTI SIR
5:30PM	ENGLISH - REVISION - CLASS 4	ANURADHA MA'AM

REVISION TOPICS :

- **Mensuration – Volume**

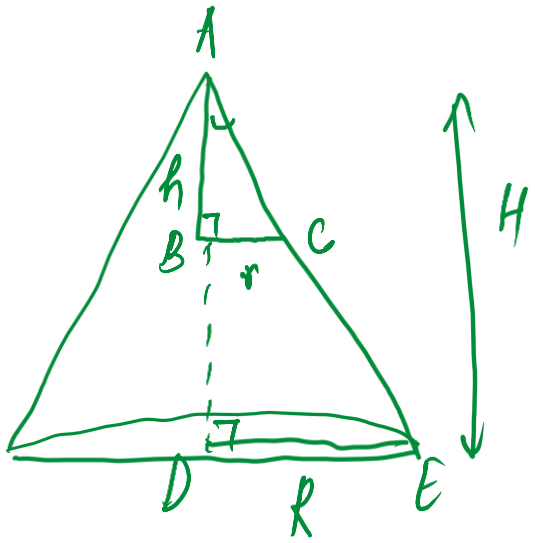
Q) The height of a cone is 60 cm. A small cone is cut off at the top by a plane parallel to the base and its volume is $\frac{1}{64}$ the volume of original cone. What is the height from the base at which the section is made ?

(a) 15 cm (b) 20 cm
(c) 30 cm (d) 45 cm

H - h

$$\frac{\frac{1}{3}\pi r^2 h}{\frac{1}{3}\pi R^2 H} = \frac{1}{64}$$ ✓ ✓

$$\frac{r^2 h}{R^2 H} = \frac{1}{64}$$



$\triangle ABC \sim \triangle ADE$

$$\frac{h}{H} = \frac{r}{R}$$

$$\frac{h}{60} = \frac{1}{8}\sqrt{\frac{60}{h}}$$

$$\left(\frac{r}{R}\right)^2 = \frac{1}{64} \times \frac{H}{h}$$

$$\frac{r}{R} = \frac{1}{8}\sqrt{\frac{60}{h}}$$

0:20

$$\frac{h}{60} = \frac{1}{8}\sqrt{\frac{60}{h}}$$

$$\left(\frac{h}{60}\right)^{3/2} = \frac{1}{8}$$

$$\left(\frac{h}{60}\right)^{3} = \frac{1}{64}$$

$$h^3 = \frac{60 \times 60 \times 60}{4^3} \Rightarrow h^3 = \left(\frac{60}{4}\right)^3 \Rightarrow \underline{h = 15}$$

$$H - h = 60 - 15$$

$$= \underline{45\ cm}$$

Q) The height of a cone is 60 cm. A small cone is cut off at the top by a plane parallel to the base and its volume is $\frac{1}{64}$ the volume of original cone. What is the height from the base at which the section is made ?

(a) 15 cm
(b) 20 cm
(c) 30 cm
(d) 45 cm

Ans: (d)

Q) Rain water from a roof 22m × 20m drains into a cylindrical vessel having diameter of base 2 m and height 3.5 m. If the vessel is just full, what is the rainfall?

(a) 3.5 cm ✓ (b) 3 cm

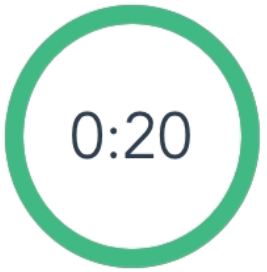
(c) 2.5 cm ✓ (d) 2 cm

(volume equal)

$22m \times 20m \times h = \pi (1)^2 \left(\frac{7}{2}\right)$

$h = \frac{22}{7} \times \frac{7}{2} \times \frac{1}{22} \times \frac{1}{20}$

$h = \frac{1}{40} m = \frac{1}{40} \times 100 \text{ cm} = \frac{5}{2} = 2.5 \text{ cm}$



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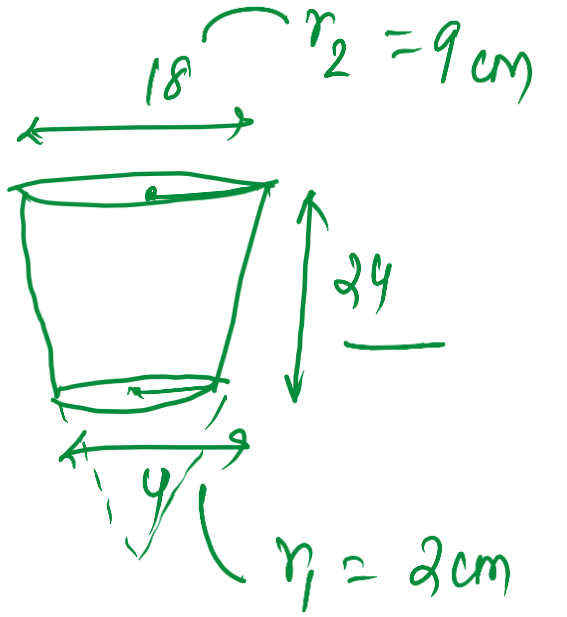
(a) 3.5 cm
(b) 3 cm
(c) 2.5 cm
(d) 2 cm

Ans: (c)

Q) A drinking glass of height 24 cm is in the shape of frustum of a cone and ' diameters of its bottom and top circular ends are 4 cm and 18 cm respectively. If we take capacity of the glass as πx cm^3, then what is the value of x ?

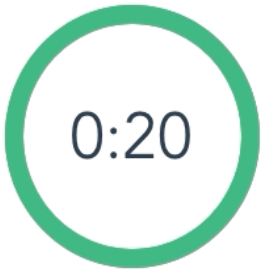
(a) 824 (b) 1236
(c) 1628 (d) 2472



Volume of frustum $= \frac{\pi h}{3}\left(r_1^2 + r_2^2 + r_1 r_2\right)$

$\pi x = \pi\left(\frac{24}{3}\right)(81 + 4 + 18)$

$x = 8(103) =$ **824 cm^2**



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(a) 824 (b) 1236

(c) 1628 (d) 2472

Ans: (a)

Q) The cost of painting a spherical vessel of diameter 14 cm is ₹8008. What is the cost of painting per square centimetre ?

(a) ₹8
(b) ₹9
(c) ₹13
(d) ₹14

Surface area $= 4\pi r^2$

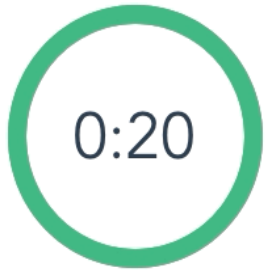
$= 4 \times \frac{22}{7} \times 7 \times 7$

$= 4 \times 154$

$= 616 \text{ cm}^2$

$\frac{\text{Cost}}{\text{area}} = \frac{₹8008}{616 \text{ cm}^2}$

$= ₹13/\text{cm}^2$



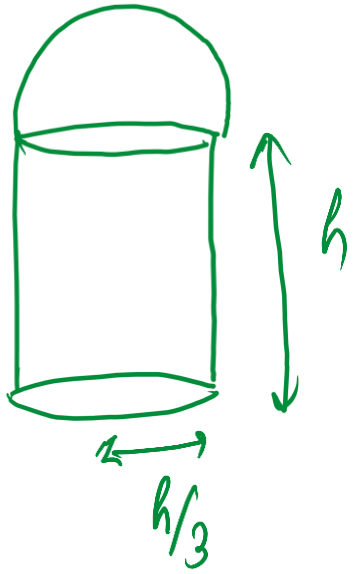
Q) The cost of painting a spherical vessel of diameter 14 cm is ₹8008. What is the cost of painting per square centimetre ?

(a) ₹8
(b) ₹9
(c) ₹13
(d) ₹14

Ans: (c)

Q) A building is in the form of a cylinder surmounted by a hemispherical dome on the diameter of the cylinder. The height of the building is three times the radius of the base of the cylinder. The building contains $67\frac{1}{21}\text{m}^3$ of air. What is the height of the building ?

(a) 6m (b) 4m
(c) 3m (d) 2m



vol. of cylinder + vol. of hemisphere $= 67\frac{1}{21}$

$$\pi\left(\frac{h}{3}\right)^2 h + \frac{2}{3}\pi\left(\frac{h}{3}\right)^3 = 67\frac{1}{21}$$

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(a) 6m (b) 4m

(c) 3m (d) 2m

Ans: (a)

Q) A cubic metre of copper weighing 9000 kg is rolled into a square bar 9 m long. An exact cube is cut off from the bar; How much does the cube weigh ?

(a) 1000 kg

(b) $\frac{1000}{3}$ kg

(c) 300 kg

(d) $\frac{500}{3}$ kg

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(c) 300 kg

(d) $\frac{500}{3}$ kg

Ans: (b)

SSBCrack EXAMS

Q) If the radius of a right circular cone is increased by p% without increasing its height, then what is the percentage increase in the volume of the cone ?

(a) p2

(b) $2P^2$

(c) $\frac{p^2}{100}$

(d) $p\left(2+\frac{p}{100}\right)$

$\frac{1}{3}\pi r^2 h$

$\frac{1}{3}\pi\left(r^2\right)\left(1+\frac{p}{100}\right)^2 h$

$\frac{1}{3}\pi r^2 h\left(1+\frac{p}{100}\right)^2$

$\left(\left(1+\frac{p}{100}\right)^2-1\right)\times 100$

$\left(1+\frac{2p}{100}+\frac{p^2}{10000}-1\right)\times 100$

0:20

$2p+\frac{p^2}{100}$

$p\left(2+\frac{p}{100}\right)\%$

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(a) $p2$

(b) $2P^2$

(c) $\frac{p^2}{100}$

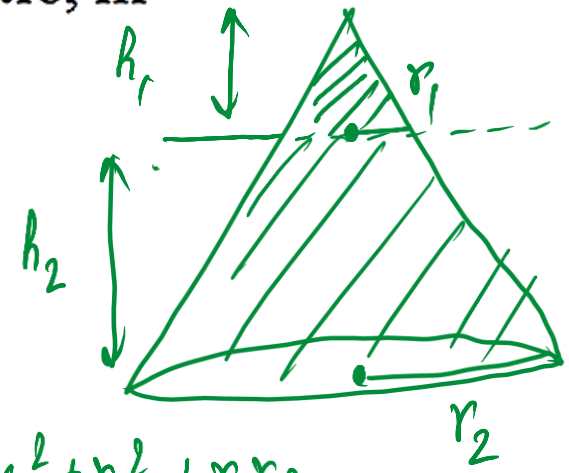
(d) $p\left(2+\frac{p}{100}\right)$

Ans: (d)

Q) A plane divides a right circular cone into two parts of equal volume. If the plane is parallel to the base, then the ratio, in which the height of the cone is divided, is

(a) $1:\sqrt[3]{2}$ (b) $1:\sqrt{2}$

(c) $1:\sqrt[3]{2}-1$ (d) $1:\sqrt[3]{2}+1$



$$\frac{1}{1} = \frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi h_2 (r_1^2 + r_2^2 + r_1 r_2)}$$

$$h_2 (r_1^2 + r_2^2 + r_1 r_2) = r_1^2 h_1$$

$$\frac{h_1}{h_2} = \frac{1}{\left(\frac{r_2}{r_1} - 1\right)} = \frac{r_1^2 + r_2^2 + r_1 r_2}{r_1^2}$$

$$\frac{r_1}{r_2 - r_1} =$$

0:20

$$\frac{r_1}{r_2} = \frac{h_1}{h_1 + h_2}$$

$$\frac{r_2}{r_1} = 1 + \frac{h_2}{h_1}$$

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(a) $1:\sqrt[3]{2}$

(b) $1:\sqrt{2}$

(c) $1:\sqrt[3]{2}-1$

(d) $1:\sqrt[3]{2}+1$

Ans: (c)

Q) A water tank, open at the top, is hemispherical at the bottom and cylindrical above it. The radius is 12m and the capacity is $3312\pi\ m^3$. The ratio of the surface areas of the spherical and cylindrical portions is

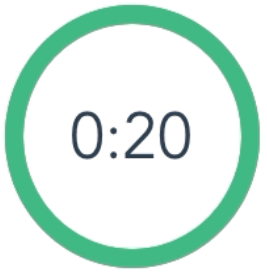
(a) 3 : 5 (b) 4 : 5

(c) 1 : 1 (d) 6 : 5

$$\frac{2\pi r^2}{2\pi r h} = \left(\frac{r}{h}\right) = \frac{12}{h} =$$

$$\pi r^2 h + \frac{2}{3}\pi r^3 = 3312\pi$$

$$(144)h + \frac{2}{3}(1728) = 3312$$



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(a) 3 : 5 (b) 4 : 5

(c) 1 : 1 (d) 6 : 5

Ans: (b)

Q) The areas of three mutually perpendicular faces of a cuboid are x, y, z. If V is the volume, then xyz is equal to

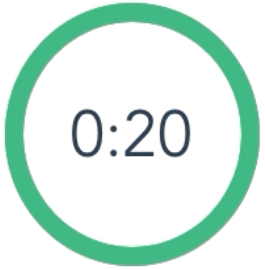
(a) V
(b) V^2
(c) 2V
(d) $2V^2$

$lb = x$

$bh = y$

$hl = z$

$xyz = l^2b^2h^2 = V^2$



Q) The areas of three mutually perpendicular faces of a cuboid are x, y, z. If V is the volume, then xyz is equal to

(a) V (b) V^2

(c) $2V$ (d) $2V^2$

Ans: (b)

Q) If the height of a right circular cone is increased by 200% and the radius of the base is reduced by 50%, then the volume of the cone

(a) remains unaltered
(b) decreases by 25%
(c) increases by 25%
(d) increases by 50%

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(c) increases by 25%
(d) increases by 50%

Ans: (b)

Q) A pipe with square cross–section is supplying water to a cistern which was initially empty. The area of cross–section is 4 cm^2 and the nozzle velocity of water is 40 m/s. The dimensions of the cistern are 10 m × 8 m × 6 m. Then the cistern will be full in

(a) 9.5 hours
(b) 9 hours
(c) 8 hours 20 minutes
(d) 8 hours

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(a) 9.5 hours
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(c) 8 hours 20 minutes
(d) 8 hours

Ans: (c)

Q) If a hemisphere is melted and four spheres of equal volume are made, the radius of each sphere will be equal to

(a) radius of the hemisphere

(b) $\frac{1}{6}$ th of the radius of the hemisphere

(c) $\frac{1}{2}$ of the radius of the hemisphere

(d) $\frac{1}{4}$ th of the radius of the hemisphere

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(d) $\frac{1}{4}$ th of the radius of the hemisphere

Ans: (c)

Q) A large water tank has the shape of a cube. If 128 m^3 of water is pumped out, the water level goes down by 2 m. Then the maximum capacity of the tank is

(a) 512 m^3 (b) 480 m^3

(c) 324 m^3 (d) 256 m^3

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(a) 512 m^3 (b) 480 m^3

(c) 324 m^3 (d) 256 m^3

Ans: (a)

Q) If the radius of a sphere is increased by 10%, then the volume will be increased by

(a) 33.1%
(b) 30%
(c) 50%
(d) 10%

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(a) 33.1%
(b) 30%
(c) 50%
(d) 10%

Ans: (a)

Q) The trunk of a tree is a right cylinder 1.5 m in radius and 10 m high. The volume of the timber which remains when the trunk is trimmed just enough to reduce it to a rectangular parallelopiped on a square base is

(a) $44\,m^3$ (b) $46\,m^3$

(c) $45\,m^3$ (d) $47\,m^3$

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(a) $44\,m^3$ (b) $46\,m^3$

(c) $45\,m^3$ (d) $47\,m^3$

Ans: (c)

Q) A hemispherical bowl is filled to the brim with a beverage. The contents of the bowl are transfered into a cylindrical vessel whose radius is 50% more than its height. If the diameter is same for both the bowl and the cylinder, the volume of the beverage in the cylindrical vessel is:

(a) $66\frac{2}{3}\%$

(b) $78\frac{1}{2}\%$

(c) 100%

(d) More than 100%

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(a) $66\frac{2}{3}\%$

(b) $78\frac{1}{2}\%$

(c) 100%

(d) More than 100%

Ans: (c)

Q) In a swimming pool measuring 90 m by 40 m, 150 men take a dip. If the average displacement of water by a man is 8 cubic metres, what will be the rise in water level?

(a) 33.33 cm
(b) 30 cm
(c) 20 cm
(d) 25 cm

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(a) 33.33 cm
(b) 30 cm
(c) 20 cm
(d) 25 cm

Ans: (a)

Q) There are two cones. The curved surface are aof one is twice that of the other. The slant height of the latter is twice that of the former. The ratio of their radii is

(a) 4 : 1 (b) 4 : 3

(c) 3 : 4 (d) 1 : 4

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(a) 4 : 1 (b) 4 : 3

(c) 3 : 4 (d) 1 : 4

Ans: (a)

Q) A rectangular piece of paper of dimensions 22 cm by 12 cm is rolled along its length to form a cylinder. The volume (in cm^3) of the cylinder so formed is $(\text{use } \pi = \frac{22}{7})$

(a) 562
(b) 412
(c) 462
(d) 362

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(a) 562
(b) 412
(c) 462
(d) 362

Ans: (c)

CDS 2 2024

LIVE

MATHS

REVISION

CLASS 9

NAVJYOTI SIR

SSBCrack EXAMS

REVISION TOPICS :

(16/08/24)

- **Number System**