

LIVE  **SESSION**



Concept Through Questions

CTQ'S Series

RRB JE-2024 **CBT-1**

**BASIC MATHEMATICS
REASONING & APTITUDE**

Lecture - 4



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MADE EASY Faculty

The least number which when divided by 10, 15 and 18 leaving remainder 5 in each case is

(a) 85

(b) 90

(c) 95

(d) 105

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If $a : b = 4 : 5$ and $b : c = 2 : 3$, then $c : a$ is

(a) 15 : 8

(b) 8 : 15

(c) 4 : 5

(d) 3 : 4

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If 25, x , 5, 3 are in proportion, then x is equal to

(a) 5

(b) 15

(c) 75

(d) 125

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Successive discounts of 20% and 5% are equivalent to a single discount of

- (a) 25%
- (b) 22%
- (c) 21%
- (d) 24%

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The simple interest on ₹800 for 3 yr at 5% per annum in rupees is

(a) 24

(b) 40

(c) 120

(d) 140

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Compound interest on ₹8000 for 1 yr at 10% per annum compounded half yearly is

- | | |
|---------|----------|
| (a) 800 | (b) 1680 |
| (c) 840 | (d) 820 |

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If CP of 7 articles is equal to SP of 5 articles, then in the whole transaction there is a profit of

- (a) 40%
- (b) 30%
- (c) 25%
- (d) $200/7\%$

MADE
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To gain 20% after allowing a discount of 5%, the shopkeeper should mark the price of the article which cost him ₹475 as

- | | |
|-----------|----------|
| (a) ₹4500 | (b) ₹550 |
| (c) ₹600 | (d) ₹650 |

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A shopkeeper mixed 35 kg of wheat which cost him ₹15 per kg with 25 kg of wheat which costs him ₹20 per kg. He sells the mixture at ₹22 per kg. His gain is

(a) $\frac{1180}{41}\%$

(b) $\frac{1475}{66}\%$

(c) $\frac{1080}{41}\%$

(d) $\frac{1324}{41}\%$

In two Vessels A and B, the milk and water are in the ratio of 3 : 4 and 2 : 3 respectively. The ratio in which these are mixed to obtain new mixture which contains milk and water in the ratio 20 : 29 is

(a) 6 : 5

(b) 7 : 9

(c) 2 : 5

(d) 3 : 5

EASY



A train 200 m long is moving at 68 km/h. The time in seconds, it will take to pass another train 150 m long which is moving at 50 km/h in the same direction from the moment they meet is

- | | |
|--------|--------|
| (a) 40 | (b) 50 |
| (c) 60 | (d) 70 |

MADE EASY

A and B can do a piece of work in 24 days. If efficiency of A is double than B, then in how many days B alone can do the same work?

(a) 72

(b) 60

(c) 36

(d) 30



The average weight of 100 students is 46 kg. The average weight of girls is 40 kg. If the number of girls is 40, the average weight of boys in kilograms is

(a) 40

(b) 45

(c) 50

(d) 60



The common difference of an AP in which

$$a_{18} - a_{13} = 45 \text{ is}$$

- | | |
|----------|---------|
| (a) -9 | (b) 9 |
| (c) -5 | (d) 5 |

The 10th term of the GP $3, 1, 1/3, \dots$ is

- | | |
|---------------|--------------|
| (a) 3^{-10} | (b) 3^{-9} |
| (c) 3^{-8} | (d) 3^9 |

If $(x - 1)$ is a factor of $x^4 + x^3 - 2x^2 + ax + 1$, then a is equal to

(a) 1

(b) -1

(c) 2

(d) -2

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One of the factors of $(49x^2 - 1) + (1 + 7x)^2$ is

(a) $7 + x$

(b) $7 - x$

(c) $14x$

(d) $7x - 1$

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The sum and product of the roots of the equation $-5x^2 + 2x - 10 = 0$ are respectively

(a) $-\frac{2}{5}, 2$

(b) $2, -\frac{2}{5}$

(c) $\frac{2}{5}, 2$

(d) $-\frac{2}{5}, -2$



Pointing to a portrait, Suresh said, "His father is the husband of my father's only daughter." How is the person in the portrait related to Suresh?

- (a) Uncle
- (b) Nephew
- (c) Cousin
- (d) Brother



The first two numbers on the left of the sign '::' are related in a certain way. The same relationship holds for the second pair of numbers on the right side of the sign '::' of which one is missing. Find the missing one from the alternatives.

27 : 65 :: 125 : ?

(a) 217

(b) 237

(c) 253

(d) 344

In a certain language, '283' means 'trees have leaves'; '758' means 'leaves are green'; and '2495' means 'forests have green bushes', digit means 'forests' in that language?

- (a) 9
- (b) 4
- (c) either 4 or 9
- (d) either 2 or 9

EASY

The numbers in the matrix below follow a certain trend row-wise and and/or columnwise. Study the trend and choose number which will replace question mark?

3	8	11
6	4	10
45	80	?

- (a) 108
- (c) 202

- (b) 196
- (d) 221

The common difference of an AP in which

$$a_{18} - a_{13} = 45 \text{ is}$$

(a) -9

(b) 9

(c) -5

(d) 5

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From a point on the bridge across a river the angles of depression of the bank on the opposite side of the river are 60° and 45° respectively. If the bridge is at a height of 4 m from the bank, the width of the river is

(a) $\frac{4(3 + \sqrt{3})}{3}$ m

(b) $4(\sqrt{3} + 1)$ m

(c) $\frac{2(1 + \sqrt{3})}{3}$ m

(d) $2(2\sqrt{3} + 1)$ m

The sum of first 16 terms of the AP 10, 7, 4, 1 is

- | | |
|------------|------------|
| (a) -400 | (b) -300 |
| (c) -200 | (d) -800 |

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The sum of infinite GP $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$, is

(a) 5

(c) 3

(b) 4

(d) 2

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The angles of elevation of top of a tower, 30 m high, from two points on same side of the tower are 30° and 60° respectively. If the two point and base of tower are in same line, the distance between two points is

- (a) $20\sqrt{3}$ m (b) $20(\sqrt{3} + 1)$ m
- (c) $40\sqrt{3}$ m (d) $40(\sqrt{3} - 1)$ m

'Nurse' is related to 'Hospital' in the same way as
'Farmer' is related to

- | | |
|-----------------|------------|
| (a) Village | (b) Grains |
| (c) Cultivation | (d) Field |

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One term in the following number series is wrong.
Find out the wrong term.

1440, 240, 50, 12, 4, 2

(a) 4

(b) 240

(c) 12

(d) 50

EASY

If $BAD = 14$ and $FIG = 44$, then HIS will be equal to

(a) 72

(b) 68

(c) 66

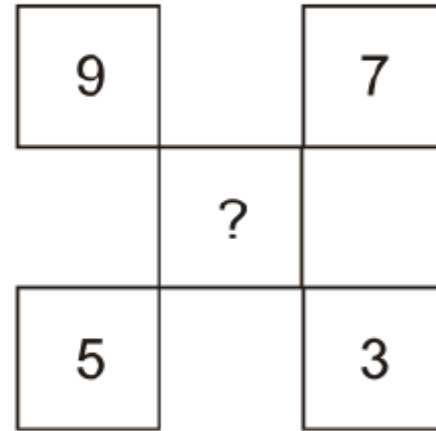
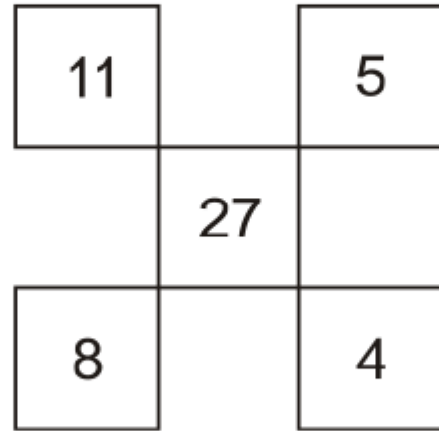
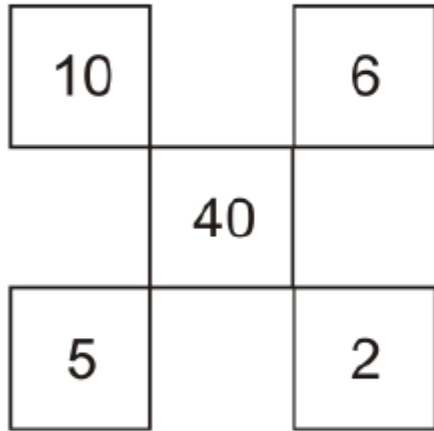
(d) 58

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The number in the following figures follow a pattern. Which number would replace the question mark?



(a) 36

(b) 40

(c) 45

(d) 55

Sufficient food supply was arranged to last for 30 days for 250 soldiers. If 50 soldiers did not attend the camp, for how many extra days will the food supply last?

- (a) 10 days
- (b) 7.5 days
- (c) 12 days
- (d) 9 days

EASY

If $\tan^2 45^\circ - \cos^2 60^\circ = x \sin 45^\circ \cos 45^\circ \cot 30^\circ$,
then find the value of 'x'.

(a) $\frac{1}{\sqrt{2}}$

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

(c) $\frac{\sqrt{3}}{2}$

(d) $\frac{2}{\sqrt{3}}$



Complete the series.

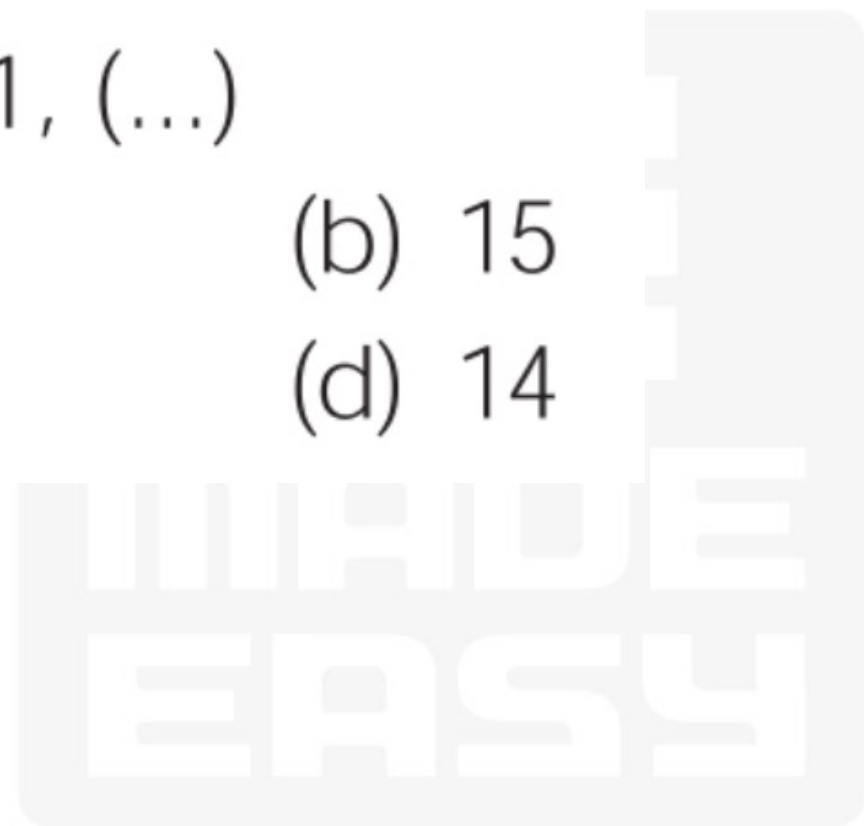
9, 12, 10, 13, 11, (...)

(a) 12

(b) 15

(c) 16

(d) 14



If $\cos^2 x + \sin x = 5/4$, then find the value of 'sin x'.

(a) $3/2$

(b) $-1/2$

(c) $3/4$

(d) $1/2$

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In a 200 m race, P beats Q by 35 m or 7 seconds.

What is P's time over the course?

- (a) 36 seconds
- (b) 47 seconds
- (c) 40 seconds
- (d) 33 seconds

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Pens are bought at the rate of 8 for Rs.40 and sold at 6 for Rs.40. Find the loss or gain per cent.

- (a) Gain of 33.33%
- (b) Gain of 20%
- (c) Gain of 40%
- (d) Loss of 30%



In a rectangle, length : breadth = 4 : 3. What is the value of length : diagonal?

(a) 4 : 5

(b) 4 : 7

(c) 1 : 5

(d) 2 : 3

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The arithmetic mean and geometric mean of two numbers are 7 and $2\sqrt{10}$ respectively, then find the numbers.

(a) 2, 20

(b) 5, 4

(c) 4, 10

(d) 8, 5

EASY

If $x^{2n} + \frac{1}{x^{2n}} = k$, then find the value of $x^n \cdot \frac{1}{x^n}$.

(a) $\sqrt{k-2}$

(b) $\sqrt{k+2}$

(c) $k-2$

(d) $k+2$

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Find the missing number in the following series:

1, 6, 30, (...), 360, 720

(A) 124

(B) 120

(c) 118

(d) 103

MADE
EASY

Find the least number which when divided by 5, 6, 7, 8, leaves a remainder 3, and is also a multiple of 9.

(a) 1683

(b) 1677

(c) 843

(d) 1983



HCF of a set of 3 coprime numbers is:

- (a) Sum of the numbers
- (b) 1
- (c) 3
- (d) Product of the numbers

EASY

If $2^x = 64$ and $4^y = 256$, then find the value of $(1/x) + (1/y)$.

(a) $\frac{7}{12}$

(b) $\frac{2}{5}$

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

(d) $\frac{5}{12}$



Evaluate: $(\sin 72^\circ + \cos 18^\circ) (\sin 72^\circ - \cos 18^\circ)$

(a) 1

(b) 0

(c) 2

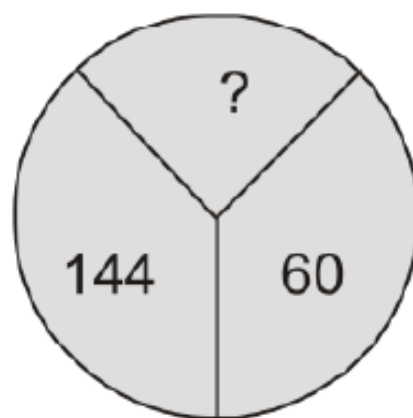
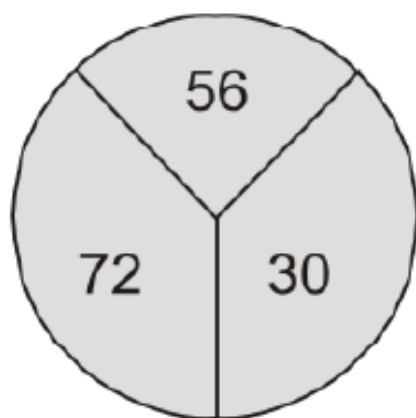
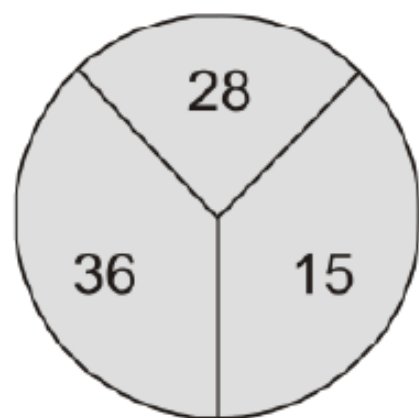
(d) -1

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Choose the alternative that best replaces the question mark(?) in the given figure.



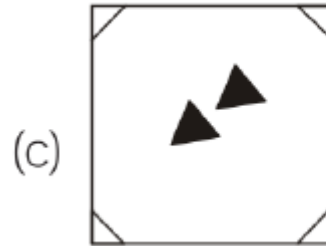
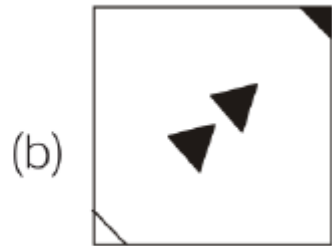
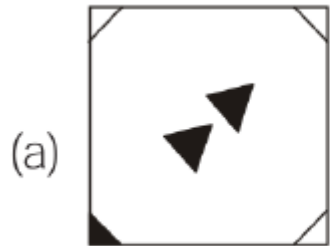
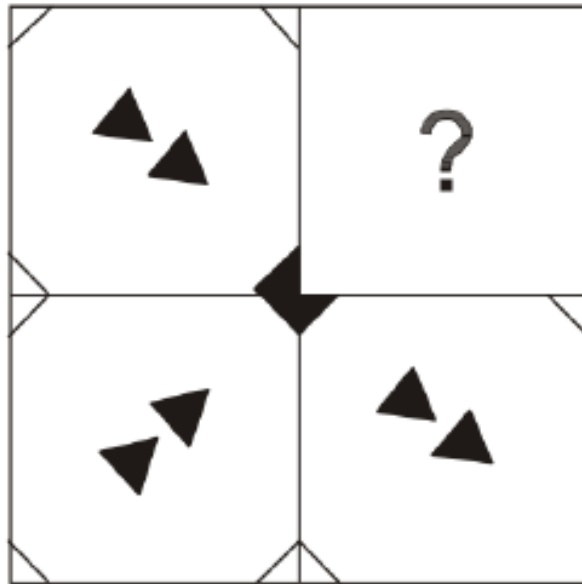
- (a) 105
- (c) 112

- (b) 92
- (d) 89

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Choose from the alternatives the figure that best completes the pattern given below.



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Find the ODD one out from the given options.

(a) A square box containing the characters '2S'.

(b) A square box containing the characters 'WM'.

(c) A square box containing the characters '9P'.

(d) A square box containing the characters '7F'.

EASY

Perfect square numbers ending with '1' will have their square roots ending in _____.

(a) 9 only

(b) 1 only

(c) 1 or 9

(d) 3

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How many odd days are there in the first 2000 years?

(a) 2

(b) 4

(c) 3

(d) 0

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EASY

What is the area of the sector covered by the hour-hand of a clock while moving from the number 12 to number 3, if the length of the hour-hand is 7 cm?

- (a) 70 cm^2
- (b) 38.5 cm^2
- (c) 17 cm^2
- (d) 35 cm^2

EASY

Ten observations written in descending order are 45, 34, 32, 30, $2x - 13$, $x + 1$, 17, 15, 14, and 8. If the median is 24, then find 'x'.

(a) 15

(b) 18

(c) 20

(d) 12



In a shooting test, the probabilities of hitting the target are $\frac{1}{2}$ for A, $\frac{2}{3}$ for B, and $\frac{3}{4}$ for C. If they fire at the same target, what is the probability that only one of them hits the target?

(a) $\frac{1}{4}$

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

(c) $\frac{1}{6}$

(d) $\frac{3}{8}$

EASY