tcs NQT NATIONAL QUALIFIER TEST 2026

APTITUDE 03

PERCENTAGE

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Note → (i) Fraction $\xrightarrow[\times 100]{}$ Percentage

(ii) Percentage $\xrightarrow[\times \frac{1}{100}]{}$ Fraction

Ex) $\frac{4}{5} \rightarrow \square\,\%$

$\frac{4}{\cancel{5}} \times \frac{20}{\cancel{100}} = 80\%$

$45\% \Rightarrow \frac{\cancel{45}^{9}}{} \times \frac{1}{\cancel{100}_{20}} \Rightarrow \frac{9}{20}$ ✓

Note :→

$\frac{1}{1} = 100\%$.

$\frac{1}{2} = 50\%$.

$\frac{1}{3} = 33\frac{1}{3}\%$ or 33.33%.

$\frac{1}{4} = 25\%$.

$\frac{1}{5} = 20\%$.

$\frac{1}{6} = 16\frac{2}{3}\%$ or 16.66%.

$\frac{1}{7} = 14\frac{2}{7}\%$ or 14.28%.

$\frac{1}{8} = 12\frac{1}{2}\%$ or 12.5%.

$\frac{1}{9} = 11\frac{1}{9}\%$ or 11.11%.

$\frac{1}{10} = 10\%$.

$\frac{1}{11} = 9\frac{1}{11}\%$ or 9.09%.

$\frac{1}{12} = 8\frac{1}{3}\%$ or 8.33%.

$\frac{1}{13} = 7\frac{9}{13}\%$ or 7.69%.

$\frac{1}{14} = 7\frac{1}{7}\%$ or 7.14%.

$\frac{1}{15} = 6\frac{2}{3}\%$ or 6.66%.

$\frac{1}{16} = 6\frac{1}{4}\%$ or 6.25%.

$\frac{1}{20} = 5\%$.

$\frac{1}{25} = 4\%$.

**

15% → $\frac{3}{20}$

×3 ↩ 5% = $\frac{1}{20}$ ↪ ×3

12% → $\frac{3}{25}$

×3 ↩ 4% = $\frac{1}{25}$ ↪ ×3

75% → $\frac{3}{4}$

×3 ↩ 25% = $\frac{1}{4}$ ↪ ×3

60% → $\frac{3}{5}$

×3 ↩ 20% = $\frac{1}{5}$ ↪ ×3

$22\frac{2}{9}\% \Rightarrow \frac{2}{9}$

×2 ↩ $11\frac{1}{9}\% = \frac{1}{9} \times 2$

$37\frac{1}{2}\% \Rightarrow \frac{3}{8}$

×3 ↩ $12\frac{1}{2}\% = \frac{1}{8}$ ↪ ×3

$57\frac{1}{7}\% \Rightarrow \frac{4}{7}$

×4 ↩ $14\frac{2}{7}\% = \frac{1}{7}$ ↪ ×4

$44\frac{4}{9}\% \Rightarrow \frac{4}{9}$

×4 ↩ $11\frac{1}{9}\% = \frac{1}{9}$ ↪ ×4

$83\frac{1}{3}\% \Rightarrow \frac{5}{6}$

×5 ↩ $16\frac{2}{3}\% \Rightarrow \frac{1}{6}$ ↪ ×5

$157\frac{1}{7}\% \rightarrow 100\% + 57\frac{1}{7}\%$

$1 + \frac{4}{7} \Rightarrow \frac{11}{7}$

$216\frac{2}{3}\% \rightarrow 200\% + 16\frac{2}{3}\%$

$2 + \frac{1}{6} = \frac{13}{6}$ ✓

Note →

**

$$\% \text{ change} = \frac{\text{final} - \text{Initial}}{\text{Initial}} \times 100$$

A person's salary increased from Rs. 8100 to Rs. 9000. What is the percentage increase in his salary?

(a) $11\frac{1}{9}\%$

(b) $13\frac{7}{9}\%$

(c) $9\frac{1}{9}\%$

(d) $6\frac{1}{9}\%$

$I = 8100$
$F = 9000$ $\}$ $+900$

$$\% \text{ change} = \frac{9000 - 8100}{8100} \times 100$$

$$\Rightarrow \frac{\overset{100}{\cancel{900}}}{\cancel{81}\,9} \Rightarrow 11\frac{1}{9}\%$$

A number increased by $12\frac{1}{2}\%$ given 99 as result.

The number is?

(a) 88
(b) 70
(c) 90
(d) 100

Let no → x

$x + x \times 12\frac{1}{2}\% = 99$

$x + x \times \frac{25}{2 \times 100} = 99$

$x + x \times \frac{1}{8} = 99$

Basic Method

$x\left[1 + \frac{1}{8}\right] = 99$

$x \times \frac{9}{8} = 99$

$x = \frac{99 \times 8}{9} = 88$

$12\frac{1}{2}\% \xrightarrow{+1} 9$ (new no.)

(original: 8)

$9 \rightarrow 99$

$1 \rightarrow \frac{99}{9} = 11$

original → 8 → $8 \times 11 = 88$ ✓

If 37.5% of a number is added with itself then result becomes 1320. Find the original number.

(a) 940
(b) 980
(c) 960
(d) 950

37.5% ⇒ $\frac{+3}{8}$ > 11 ← new

8 → origin

11 → 1320

1 → 120

8 → 8 × 120 = 960

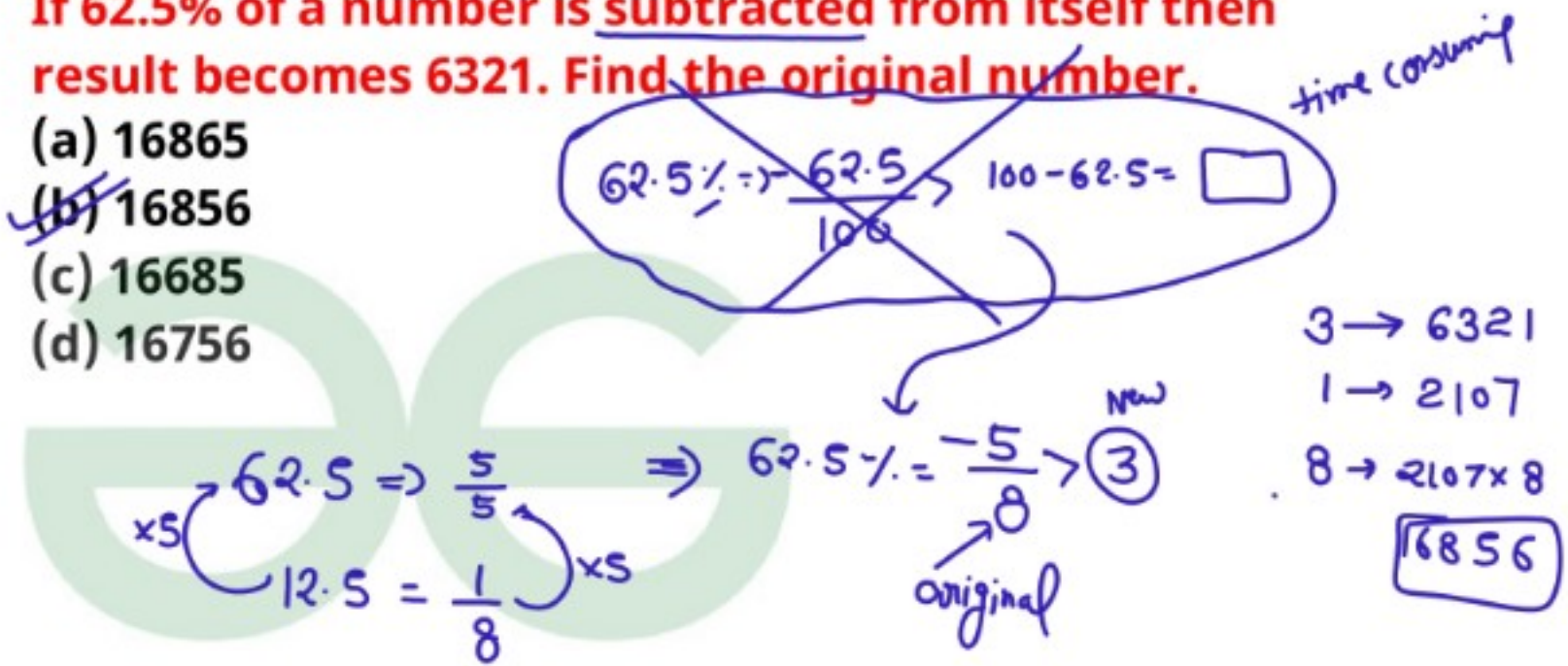
If 62.5% of a number is subtracted from itself then result becomes 6321. Find the original number.

(a) 16865

(b) 16856

(c) 16685

(d) 16756



Note) Successive change :→

$x \xrightarrow{A\%\uparrow \quad B\%\uparrow}$

Find total % change

$$\%\text{ change} = \left[A + B + \frac{AB}{100}\right]\%$$

Ex) If income of Ram is increased by 20% and then increased by 10%. Find total % change.

Sol^{n}) $\%\text{ change} = \left[20 + 10 + \frac{20 \times 10}{100}\right]$

$\Rightarrow$ 32 %

→ order of % will not affect the total % change.

→ Total % change not depends on actual value.

→ In case of decrease → Use % with (−) sign

eg) If income of Ram first increased by 20% and then decrease by 10%. Find total % change.

Soln

$$\% \text{ change} = A + B + \frac{AB}{100}$$

$$\Rightarrow 20 + (-10) + \frac{20 \times (-10)}{100}$$

$$\Rightarrow 10 - 2$$

$$\Rightarrow +8\%$$

8% ↑ only

eg) If price of sugar first decrease by 10% and the decrease by 20%. Find total % change in price.

Soln

$$-10 - 20 + \frac{(-10) \times (-20)}{100}$$

$$-30 + \frac{16 \times 20}{100}$$

$$-30 + 2$$

$$-28\%$$

28% decrease

Note → $Z = x \times y$

$x \rightarrow A\% \uparrow$

$y \rightarrow B\% \uparrow$

Total % change in $Z \Rightarrow \left[A + B + \frac{AB}{100}\right]\%$.

eg) If length of rectangle is increase by 10% and width is decrease by 10%. Find total % change in area.

Sol) Area = length × width

10% ↑ 10% ↓

% change in area $\Rightarrow 10 - 10 + \frac{10 \times (-10)}{100}$

$\Rightarrow -1\%$.

$\Rightarrow$ 1% decrease

6) If Income of Ram first increase by $14\frac{2}{7}\%$ and then incouse by $12\frac{1}{2}\%$. Find total change %.

Sol^n) $A + B + \frac{AB}{100}$

$$\left[14\tfrac{2}{7} + 12\tfrac{1}{2} + \frac{14\tfrac{2}{7} \times 12\tfrac{1}{2}}{100}\right]\%$$

↓

Time consuming

n-II)

I	F
7	~~8~~ 1
~~8~~	9

7 → 9 : +2

✓ $14\frac{2}{7}\% \Rightarrow +1 \rightarrow 8$

✓ $12\frac{1}{2}\% = +1 \rightarrow 9$

$\%\ change = \frac{2}{7} \times 100 \Rightarrow 28\frac{4}{7}\%$

If P is 50% more than Q, Q is how much percent less than P?

(a) 50%
(b) 100%
(c) 66.66%
(d) 33.33%

↑ 50% = +1/2 > 3 ← P
Q

∴ len = 1/3 × 100 = 33 1/3 %

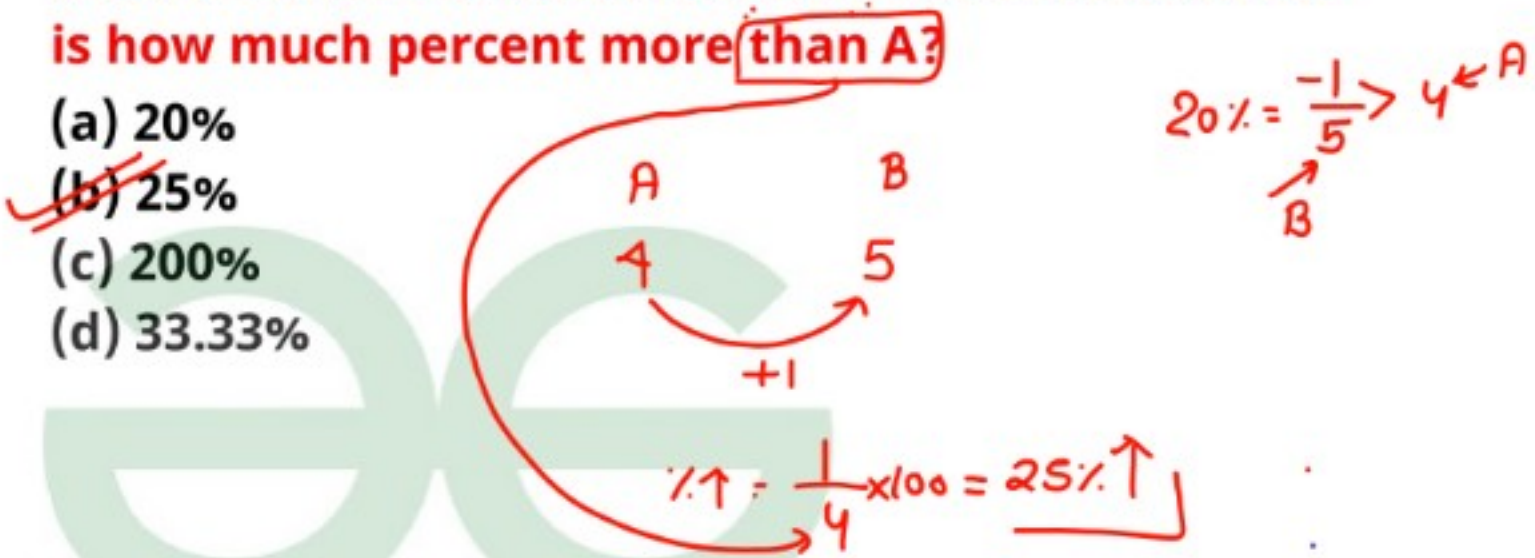
If income of A is 20% less than B then income of B is how much percent more than A?

(a) 20%

(b) 25%

(c) 200%

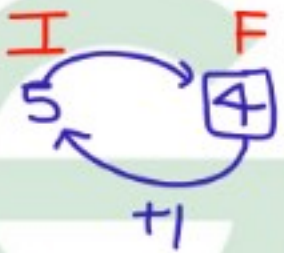
(d) 33.33%



Due to irregular working habits of Asaram, his salary was reduced by 20% but after some months his salary was increased to the original salary. What is the percentage increase in his salary?

20% = $\frac{-1}{5}$ > 4

(a) 25%
(b) 20%
(c) 33%
(d) 30%



% ↑ = $\frac{1}{4} \times 100$

= 25% ↑

The price of sugar is decreased by 10%. By what percent can a person increase the consumption so that there is no change in the expenditure?

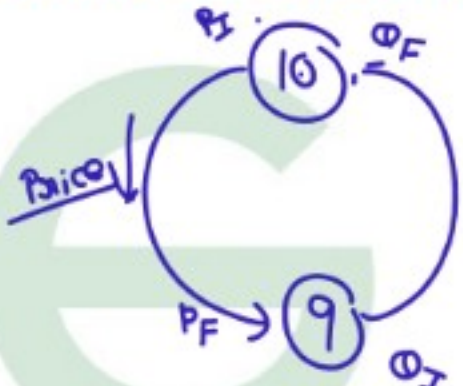
[TCS NQT PYQ]

(a) $\frac{100}{11}\%$

(b) $\frac{109}{11}\%$

(c) $\frac{100}{9}\%$

(d) 10%



$10\% = \frac{1}{10} \rightarrow 10$

Ex = price × quantity

$\% \uparrow = \frac{1}{9} \times 100$

$= \frac{100}{9}\% \uparrow$

The price of savlon increased by 20% and again increased by 10%. Find the combined increament in total price?

(a) 19%
(b) 21%
(c) 32%
(d) CBD

$20 + 10 + \frac{20 \times 10}{100} = 32\%$

The price of bear shampoo increased by 20% and then decreased by 10%. Find the percentage increase/decrease in total price?

(a) 8% increase
(b) 8% decrease
(c) 32% increase
(d) 32% decrease

$$20 - 10 + \frac{20 \times (-10)}{100}$$

$$10 - 2 = +8\%$$

Price of ticket in a circus increases by 50%, number of visitors reduced by 20%. Find effect increase of decrease on income?

(a) 20% increase
(b) 20% decrease
(c) 40% increase
(d) 40% decrease

Income = Price of ticket × No. of tickets

Price ↓ 50% ↑

No. of tickets ↓ 20% ↓

% change in income $\Rightarrow 50 - 20 + \frac{50 \times (-20)}{100}$

$30 - 10 = 20\%$ ✓

Income of salman khan first increased by 8% and then it is decreased by 8%. What is change in his income?

(a) 0.64% increase

(b) 0.64% decrease

(c) 16% increase

(d) No Change

$8 - 8 + \frac{8 \times (-8)}{100}$

$\Rightarrow (-)0.64\%$

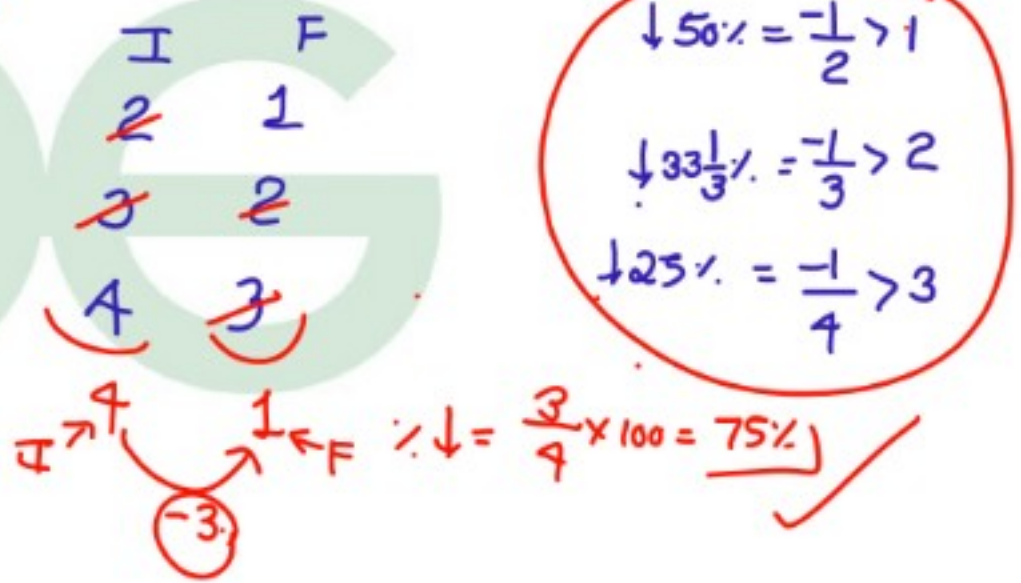
The price of a machine got depreciated by 50% in the 1st year, $33\frac{1}{3}\%$ in the 2nd year and 25% in the 3rd year. Overall, by how much has the machine depreciated?

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

(b) 80%

(c) 75%

(d) 50%



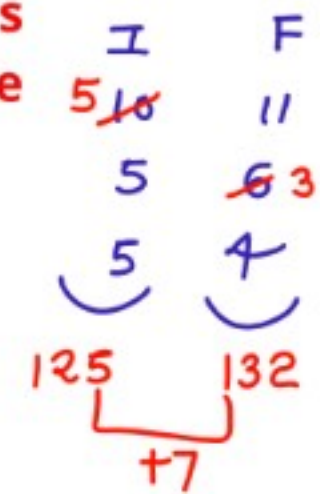
The length and breadth of a cuboid are increased by 10% and 20%, respectively, and its height is decreased by 20%. The percentage increase in the volume of the cuboid is

(a) $5\frac{4}{5}\%$

(b) $5\frac{1}{5}\%$

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

(d) $5\frac{3}{5}\%$

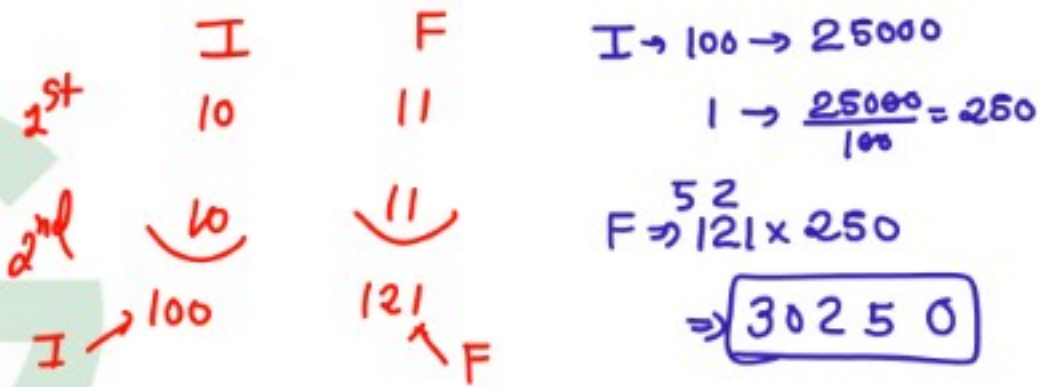


$$\% \uparrow = \frac{7}{\frac{125}{5}} \times \frac{4}{100}$$

$$\Rightarrow \frac{28}{5} = 5\frac{3}{5}\% \uparrow$$

The population of a city is 25000. If it is increasing at the rate of 10% every year. Then population of city after two year is?

(a) 30250
(b) 30000
(c) 31250
(d) None of these



The population of a town is 126800. It increases by 15% in the first year and decrease by 20% in the second year. What is the population of the town at the end of 2nd year?

↑ 15% = $\frac{3}{20}$

↓ 20% = $\frac{-1}{5}$ → 4

I	F
5 ~~20~~	23
5	4 1
25	23

(a) ~~174984~~

(b) ~~135996~~

(c) 116656

(d) ~~145820~~

I → 25 → 126800

1 → $\frac{1268 \times 100}{25}$ (4)

F → 23 → $1268 \times 4 \times 23$

⇒

The population of a city increased 30% in the first year and decreased by 15% in the next year. If the present population is 11050 then the population 2 years ago was:

(a) 10000
(b) 10050
(c) 99000
(d) 99500

Try Yourself

In a library 20% of the books are in hindi, 50% of the remaining in English and 30% of the remaining are in French and rest 6300 books are in regional language. Then find the no. of books in library.

(a) 16000
(b) 22500
(c) 10200
(d) 14400

let Total books x

$20\% = \frac{1}{5} \rightarrow 4$

$50\% = \frac{1}{2} \rightarrow 1$

$30\% = \frac{3}{10} \rightarrow 7$

$$\left(x \times \frac{4}{5}\right) \times \frac{1}{2} \times \frac{7}{10} = 6300$$

$$x = \frac{6300 \times 25}{7}$$

$$x = 22500$$

Seema spends 5% of her total income in travelling and 20% of the rest spend in food and then she donate Rs. 120 and still she is left with Rs. 1400. Find her income.

(a) 1500
(b) 2000
(c) 2500
(d) 3000

PERCENTAGE

Q. At an academic institution the break-up of holidays in 2016 was as under.

- 52 weekends
- 30 days of summer vacation which includes 4 weekends
- Autumn and Winter Breaks of (10+10) days each inclusive of one weekend
- 14 holidays on special occasion out of which one was a Saturday and one Sunday

What was the percentage (correct up to two decimal places) of the number of holidays?

[TCS NQT PYQ]

A. 45.90%
B. 42.08%
C. 42.19%
D. 43.73%

2016 → 144

leap year → 366 days

52 weekends

$52 \times 2 + (30 - 4 \times 2) + (10-2) + (10-2) + (14-2)$

$104 + 22 + 8 + 8 + 12 \Rightarrow 154$

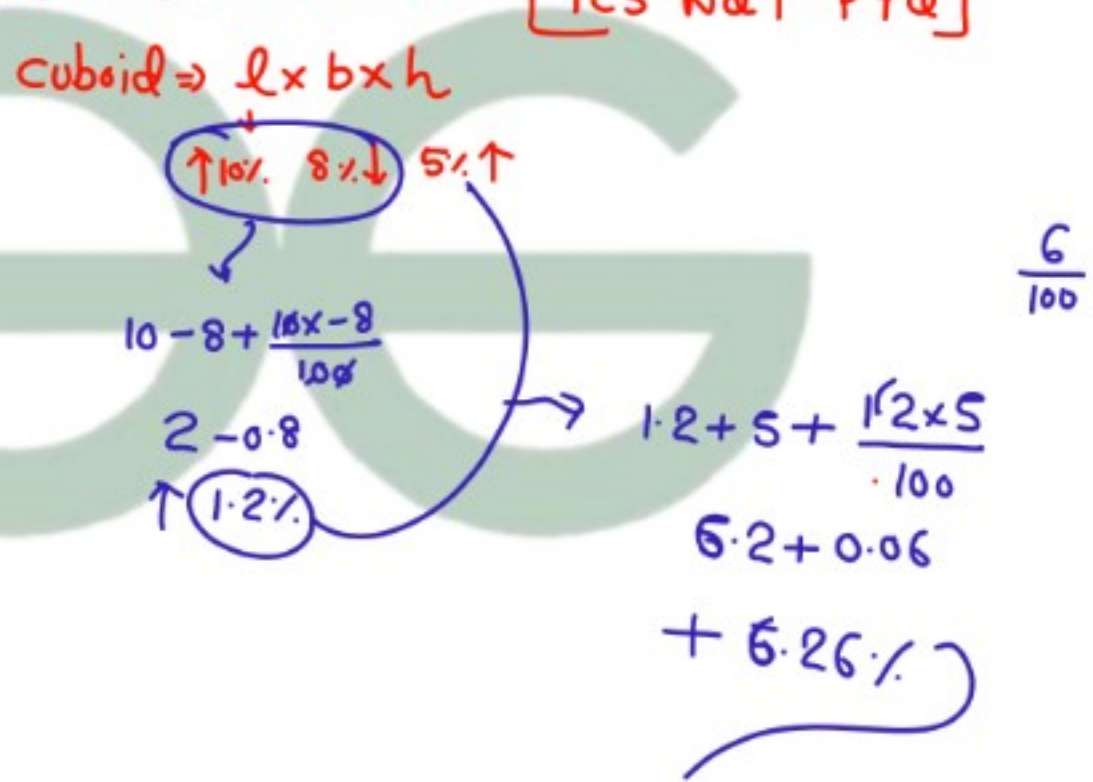
% holiday

$\Rightarrow \frac{154}{366} \times 100$

$\Rightarrow$

Q. A metallic cuboid is processed by way of which its length, breadth and height increased by 10% and decreased by 8% and increased by 5% respectively. What is the percentage (Correct upto 2 decimal values) change in its volume? [TCS NQT PYQ]

A. Increases by 6.26%
B. Increases by 1.20%
C. Decreases by 1.20%
D. Decreases by 6.26%

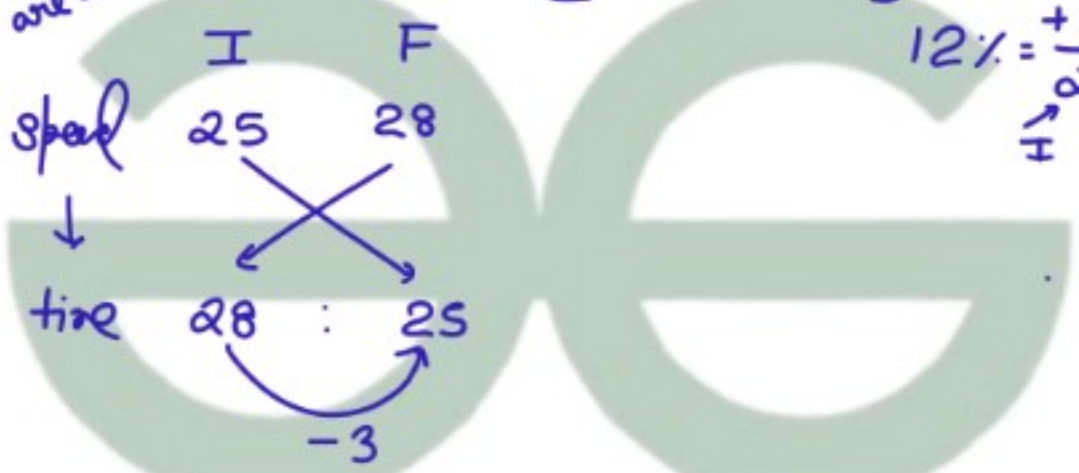


Q. Aslam drives to his office, if he increases his average speed by 12% then by what percentage (correct to two decimal places) will his time of travel decrease?

A. 10.34
B. 11.02
C. 10.71
D. 12.00

Distance are same

TCS NQT PYQ



$12\% = \frac{+3}{25} \rightarrow 28 \leftarrow F$ (I)

$\text{time}\%\downarrow = \frac{3}{28} \times 100 \Rightarrow \frac{75}{7} \Rightarrow 10.71\%$

Q. In a class, the average weight of urban students is 68 kg. Whereas the same for rural students is 54 kgs. The average weight of the entire class is 62.4 kg.
What is the percentage of rural students in the class?

A. 40%
B. 36%
C. 35%
D. 32%

Q. **The ratio of the number of girls to that of boys in the class is 9:11. If 11(1/9)% of the girls and 9 (1/11)% of the boys do not like mathematics, then find the percentage of students who like mathematics.**

Enter the answer in the space given below provided on the screen. The answer should be in whale numbers and does not include symbols.

[TCS NQT PYQ]

Answer: 90%

Given.

$11\frac{1}{9}\% = \frac{1}{9}$

Boy $9\frac{1}{11} = \frac{1}{11}$

	G	:	B	
	9	:	11	→ Total → 9+11 = 20
MX	1		1	
MV	8		10	→ MV → 8+16 = 18

$\frac{18}{20} \times 100 \rightarrow 90\%$

$33\frac{1}{3}\%$ ✓

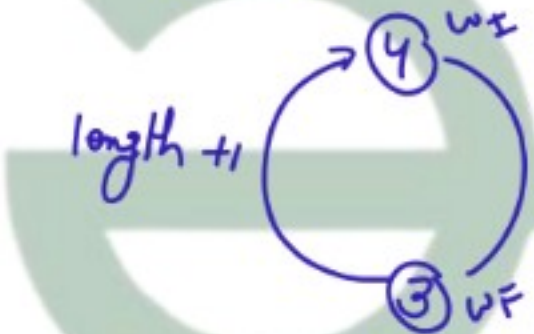
Q. **The length of a rectangle is increased by $33_{1/3}\%$. By what percent must the breadth be decreased so as to maintain its area the same?**

[TCS NOT PYQ]

A. 20%
B. 30%
C. 25%
D. 24%

$33\frac{1}{3}\% = \frac{1}{3}$

$A = l \times b$



width % change $= \frac{1}{4} \times 100 = 25\% \downarrow$

Q. The average value of eleven numbers is what percentage of half the sum of the said numbers?

A. 55%
B. 18.18%
C. 182.82%
D. 550%

Q. If a is the rate per cent corresponding to the fraction 24/25, and if 30 km is b% of 40 km, then what percentage (correct upto two decimal places) is b of a2?

A. 0.81
B. 78.13
C. 7.81
D. 8.13

THANK YOU