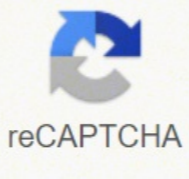




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INTERMEDIATE FIRST YEAR MATHEMATICS IMPORTANT QUESTIONS ANSWERS/EXERCISES
10F PAPER - MATHEMATICS/10

LONG ANSWER QUESTIONS (7 MARKS)

FUNCTIONS

1. If $f: A \rightarrow B$ and $g: B \rightarrow C$ are two mappings, then prove that $g \circ (f \circ h)$ is also a mapping.
2. If $f: A \rightarrow B$ and $g: B \rightarrow C$ are two mappings, then prove that $(g \circ f) \circ h = g \circ (f \circ h)$.
3. If $f: A \rightarrow B$, g and h are identity functions on A and B respectively, then prove that $f \circ g = f$ and $h \circ f = f$.
4. If $f: A \rightarrow B$ is a bijection, then prove that $f^{-1} \circ f = I_A$ and $f \circ f^{-1} = I_B$.
5. Prove the composition of mappings is associative.
6. If $f: A \rightarrow B$, $g: B \rightarrow C$, $h: C \rightarrow D$ are mappings, then prove that $h \circ (g \circ f) = (h \circ g) \circ f$.
7. Let $f: \mathbb{R} \rightarrow \mathbb{R}$, $g: \mathbb{R} \rightarrow \mathbb{R}$ and $h: \mathbb{R} \rightarrow \mathbb{R}$ be defined as $f(x) = 2x + 1$, $g(x) = x^2 + 1$ and $h(x) = x^3 + 1$. Then show that $(h \circ g) \circ f = h \circ (g \circ f)$.
8. If $f: A \rightarrow B$ is a mapping, then prove that $f \circ f^{-1} \circ f = f$.

MATHEMATICAL INDUCTION

1. Inductively prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
2. Inductively prove that $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$.
3. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
4. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
5. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
6. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
7. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
8. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
9. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
10. Prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ by induction.
11. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
12. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
13. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.
14. Use mathematical induction to prove that $1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.

MATRICES

1. Show that $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} + \begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix} = \begin{pmatrix} 5 & 5 \\ 5 & 5 \end{pmatrix}$.
2. Show that $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix} = \begin{pmatrix} 10 & 11 \\ 14 & 10 \end{pmatrix}$.
3. Show that $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix} \neq \begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
4. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
5. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
6. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
7. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
8. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
9. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.
10. Find the inverse of $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$.

Ram Prasad, Chennai Account

Dr.				Cr.			
Date	Particulars	J.F.	Rs.	Date	Particulars	J.F.	Rs.
2018				2018			
Apr 30	To Balance c/d		57,400	Apr 01	By Purchases A/c		51,250
				Apr 01	By Input IGST A/c		6,150
			57,400				57,400

Rati Ram, Ahmedabad Account

Dr.				Cr.			
Date	Particulars	J.F.	Rs.	Date	Particulars	J.F.	Rs.
2018				2018			
Apr 10	To Sales A/c		32,000	Apr 30	By Balance c/d		35,840
Apr 10	To Output IGST A/c		3,840				
			35,840				35,840

Ramaswami, Kochi Account

Dr.				Cr.			
Date	Particulars	J.F.	Rs.	Date	Particulars	J.F.	Rs.
2018				2018			
Apr 12	To Sales A/c		7,500	Apr 30	By Balance c/d		8,400
Apr 12	To Output CGST A/c		450				
Apr 12	To Output SGST A/c		450				
			8,400				8,400

Roop Narain and Sons, Kochi Account

Dr.				Cr.			
Date	Particulars	J.F.	Rs.	Date	Particulars	J.F.	Rs.
2018				2018			
Apr 18	To Sales A/c		5,850	Apr 30	By Balance c/d		6,552
Apr 18	To Output CGST A/c		351				
Apr 18	To Output SGST A/c		351				
			6,552				6,552

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