



Relations and Functions Formulas

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List of 15 Relations and Functions Formulas

Relations and Functions &

Functions

1) Number of Bijective Functions from Set A to Set B



Open Calculator

$$| | 6 = 3! |$$

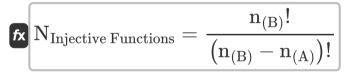
2) Number of Functions from Set A to Set B

$$N_{
m Functions} = \left(n_{
m (B)}
ight)^{n_{
m (A)}}$$

Open Calculator 🗗

$$\mathbf{ex} \ 64 = (4)^3$$

3) Number of Injective (One to One) Functions from Set A to Set B



Open Calculator

$$24 = \frac{4!}{(4-3)!}$$



4) Number of Relations from Set A to Set B which are not Functions

 $ext{N}_{ ext{Relations not Functions}} = 2^{ ext{n}_{ ext{(A)}} \cdot ext{n}_{ ext{(B)}}} - \left(ext{n}_{ ext{(B)}}
ight)^{ ext{n}_{ ext{(A)}}}$

Open Calculator 2

 $|4032 = 2^{3\cdot 4} - (4)^3|$

Relations

5) Number of Antisymmetric Relations on Set A

 $N_{
m Antisymmetric\ Relations} = 2^{n_{(A)}} \cdot 3^{rac{n_{(A)} \cdot \left(n_{(A)}-1
ight)}{2}}$

Open Calculator

ex $216 = 2^3 \cdot 3^{rac{3\cdot (3-1)}{2}}$

6) Number of Asymmetric Relations on Set A 🖸

N Asymmetric Relations $=3^{rac{n_{(A)}\cdot\left(n_{(A)}-1
ight)}{2}}$

Open Calculator

ex $27=3^{rac{3\cdot(3-1)}{2}}$

7) Number of Irreflexive Relations on Set A

 $m N_{Irreflexive~Relations} = 2^{n_{(A)} \cdot \left(n_{(A)} - 1
ight)}$

Open Calculator 2



8) Number of Non Empty Relations from Set A to Set B $m N_{Non\,Empty\,Relations} = 2^{n_{(A)}\cdot n_{(B)}} - 1$

Open Calculator 2

9) Number of Reflexive Relations on Set A

Open Calculator

 $m N_{Reflexive\ Relations} = 2^{n_{(A)} \cdot \left(n_{(A)} - 1
ight)}$ ex $64 = 2^{3 \cdot (3-1)}$

10) Number of Relations from Set A to Set B

 $N_{
m Relations(A-B)} = 2^{n_{
m (A)} \cdot n_{
m (B)}}$

11) Number of Relations on Set A

 $N_{
m Relations(A)} = 2^{n_{
m (A)}^2}$

Open Calculator 2

Open Calculator

Open Calculator

12) Number of Relations on Set A which are both Reflexive and Antisymmetric

N Reflexive & Antisymmetric $=3^{rac{n_{(A)}\cdot\left(n_{(A)}-1
ight)}{2}}$

$$\frac{1}{2}$$

$$27=3^{\frac{3\cdot(3-1)}{2}}$$

13) Number of Relations on Set A which are both Reflexive and Symmetric

 $N_{
m Reflexive~\&~Symmetric} = 2^{rac{{
m n}_{
m (A)} \cdot \left({
m n}_{
m (A)} - 1
ight)}{2}}$

Open Calculator

ullet $8=2^{rac{3\cdot(3-1)}{2}}$

14) Number of Relations on Set A which are both Symmetric and Antisymmetric

fx $N_{Symmetric}$ & Antisymmetric $=2^{n_{(A)}}$

Open Calculator

 $8 = 2^3$

15) Number of Symmetric Relations on Set A

 $extbf{N}_{ ext{Symmetric Relations}} = 2^{rac{ ext{n}_{ ext{(A)}} \cdot \left(ext{n}_{ ext{(A)}+1}
ight)}{2}}$

Open Calculator

 $oxed{ex}64=2^{rac{3\cdot(3+1)}{2}}$



Variables Used

- n_(A) Number of Elements in Set A
- n_(B) Number of Elements in Set B
- Nantisymmetric Relations No. of Antisymmetric Relations on A
- Nasymmetric Relations
 Number of Asymmetric Relations
- National Number of Bijective Functions from A to B
- N_{Functions} Number of Functions from A to B
- N_{Injective Functions} Number of Injective Functions from A to B
- N_{Irreflexive} Relations Number of Irreflexive Relations
- Non Empty Relations Number of Non Empty Relations from A to B
- N_{Reflexive} & Antisymmetric No. of Reflexive and Antisymmetric Relations on A
- N_{Reflexive} & Symmetric No. of Reflexive and Symmetric Relations on A
- N_{Reflexive} Relations Number of Reflexive Relations on Set A
- Name and Functions No. of Relations A to B which are not Functions
- N_{Relations(A)} Number of Relations on A
- N_{Relations(A-B)} Number of Relations from A to B
- Nsymmetric & Antisymmetric No. of Symmetric and Antisymmetric Relations on A
- Nsymmetric Relations Number of Symmetric Relations on Set A





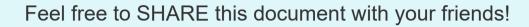
Constants, Functions, Measurements used





Check other formula lists

- Relations and Functions Formulas
- Sets Formulas



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