Властивості відповідностей. Суперпозиція відповідностей.

Завдання 1. На множинах *A*, *B*, *C* задано відповідності *G*, *H*. Побудувати суперпозицію $T = G \circ H$ вказаних відповідностей.

№ вар.	Множини *A*, *B*, *C*	Відповідності *G*, *H*
1.	$A = \{0,2,4,6,8\}$, $B = \{1,3,5,7,9\}$, $C = \{p,q,s,t,u,v\}$	$G = \{(0,5),(0,9),(2,1),(4,7),(6,9)\}$, $H = \{(1,q),(3,t),(5,p),(5,s),(9,v)\}$
2.	$A = \{a,b,c,d,e\}$, $B = \{p,q,s,t,u\}$, $C = \{2,3,5,6,8,9\}$	$G = \{(a,s),(a,u),(c,q),(d,t),(e,q)\}$, $H = \{(p,8),(q,2),(s,5),(s,9),(u,6)\}$
3.	$A = \{1,4,5,6,7,8\}$, $B = \{a,b,c,d,f\}$, $C = \{u,v,x,y\}$	$G = \{(1,d),(4,b),(4,c),(5,a),(6,f),(8,c)\}$, $H = \{(b,v),(c,u),(d,y),(f,u)\}$
4.	$A = \{a,b,d,g,h\}$, $B = \{1,2,4,5,7\}$, $C = \{m,n,s,t,u\}$	$G = \{(a,5),(b,7),(d,1),(d,4),(h,4),(h,5)\}$, $H = \{(1,m),(2,u),(4,s),(5,t)\}$
5.	$A = \{0,2,5,6,7\}$, $B = \{u,v,x,y,z\}$, $C = \{a,b,c,f,g,h\}$	$G = \{(0,z),(2,x),(5,v),(5,y),(6,u),(7,u)\}$, $H = \{(v,c),(x,f),(x,h),(y,a),(z,g)\}$
6.	$A = \{s,t,u,v,z\}$, $B = \{a,b,d,g,h\}$, $C = \{1,2,3,4,5,6\}$	$G = \{(s,d),(s,h),(t,a),(u,g),(v,h)\}$, $H = \{(a,2),(b,4),(d,1),(d,3),(h,6)\}$
7.	$A = \{g,h,k,m,p\}$, $B = \{B,C,D,E,F\}$, $C = \{1,4,5,7,8,9\}$	$G = \{(g,F),(h,D),(k,C),(k,E),(m,B),(p,B)\}$, $H = \{(C,5),(D,7),(D,9),(E,1),(F,8)\}$
8.	$A = \{1,3,5,7,9\}$, $B = \{0,2,4,6,8\}$, $C = \{p,q,u,v,x,y\}$	$G = \{(1,4),(1,8),(5,2),(7,6),(9,2)\}$, $H = \{(0,x),(2,p),(4,u),(4,y),(8,v)\}$
9.	$A = \{1,3,6,7,8\}$, $B = \{0,2,4,5,9\}$, $C = \{p,t,u,x,y,z\}$	$G = \{(1,4),(1,9),(3,0),(6,5),(7,9)\}$, $H = \{(0,t),(2,x),(4,p),(4,u),(9,z)\}$
10.	$A = \{a,b,c,s,t\}$, $B = \{k,m,u,x,y\}$, $C = \{2,4,6,7,8,9\}$	$G = \{(a,u),(a,y),(c,m),(s,x),(t,m)\}$, $H = \{(k,8),(m,2),(u,6),(u,9),(y,7)\}$
11.	$A = \{2,3,4,6,7,9\}$, $B = \{a,d,e,g,h\}$, $C = \{k,s,t,v\}$	$G = \{(2,g),(3,d),(3,e),(4,a),(6,h),(9,e)\}$, $H = \{(d,s),(e,k),(g,v),(h,k)\}$
12.	$A = \{a,c,g,h,n\}$, $B = \{1,4,5,6,7\}$, $C = \{b,d,e,k,m\}$	$G = \{(a,6),(c,7),(g,1),(g,5),(n,5),(n,6)\}$, $H = \{(1,b),(4,m),(5,e),(6,k)\}$
13.	$A = \{1,3,4,6,7\}$, $B = \{m,n,x,y,z\}$, $C = \{a,c,e,g,h,k\}$	$G = \{(1,z),(3,x),(4,n),(4,y),(6,m),(7,m)\}$, $H = \{(n,e),(x,g),(x,k),(y,a),(z,h)\}$
14.	$A = \{p,q,t,u,z\}$, $B = \{a,k,m,s,y\}$, $C = \{2,5,6,7,8,9\}$	$G = \{(p,m),(p,y),(q,a),(t,s),(u,y)\}$, $H = \{(a,5),(k,7),(m,2),(m,6),(y,9)\}$
15.	$A = \{1,2,5,7,8\}$, $B = \{0,3,4,6,9\}$, $C = \{p,s,t,u,x,y\}$	$G = \{(1,4),(1,9),(5,3),(7,6),(8,3)\}$, $H = \{(0,x),(3,p),(4,t),(4,y),(9,u)\}$
16.	$A = \{f,g,h,k,m,n\}$, $B = \{0,4,6,8,9\}$, $C = \{1,2,3,7\}$	$G = \{(f,8),(g,4),(g,6),(h,0),(k,9),(n,6)\}$, $H = \{(4,2),(6,1),(8,7),(9,1)\}$
17.	$A = \{1,3,5,6,8\}$, $B = \{a,b,d,e,g\}$, $C = \{0,2,4,7,9\}$	$G = \{(1,e),(3,g),(5,a),(5,d),(8,d),(8,e)\}$, $H = \{(a,0),(b,9),(d,4),(e,7)\}$

18.	$A = \{u,v,w,y,z\}, \quad B = \{A,B,C,D,F\},$ $C = \{1,2,3,5,6,7\}$	$G = \{(u,F),(v,C),(w,B),(w,D),(y,A),(z,A)\},$ $H = \{(B,3),(C,5),(C,7),(D,1),(F,6)\}$
19.	$A = \{0,1,3,5,8\}, \quad B = \{a,b,c,d,f\},$ $C = \{2,4,6,7,9\}$	$G = \{(0,d),(1,f),(3,a),(3,c),(8,c),(8,d)\},$ $H = \{(a,2),(b,9),(c,6),(d,7)\}$
20.	$A = \{2,3,5,6,7\}, \quad B = \{0,1,4,8,9\},$ $C = \{a,b,c,d,e,f\}$	$G = \{(2,4),(2,9),(3,0),(5,8),(6,9)\},$ $H = \{(0,b),(1,d),(4,a),(4,c),(9,f)\}$
21.	$A = \{h,k,m,n,s\}, \quad B = \{t,u,v,x,y\},$ $C = \{1,3,5,6,7,9\}$	$G = \{(h,v),(h,y),(m,u),(n,x),(s,u)\},$ $H = \{(t,7),(u,1),(v,5),(v,9),(y,6)\}$
22.	$A = \{0,1,2,5,8,9\}, \quad B = \{m,n,p,q,t\},$ $C = \{a,b,c,d\}$	$G = \{(0,q),(1,n),(1,p),(2,m),(5,t),(9,p)\},$ $H = \{(n,b),(p,a),(q,d),(t,a)\}$
23.	$A = \{k,m,n,u,v\}, \quad B = \{2,6,7,8,9\},$ $C = \{s,t,x,y,z\}$	$G = \{(k,8),(m,9),(n,2),(n,7),(v,7),(v,8)\},$ $H = \{(2,s),(6,z),(7,x),(8,y)\}$
24.	$A = \{3,4,5,7,8\}, \quad B = \{a,d,f,g,h\},$ $C = \{p,q,u,v,w,z\}$	$G = \{(3,h),(4,f),(5,d),(5,g),(7,a),(8,a)\},$ $H = \{(d,u),(f,v),(f,z),(g,p),(h,w)\}$
25.	$A = \{k,m,n,p,q\}, \quad B = \{s,t,u,v,x\},$ $C = \{3,4,6,7,8,9\}$	$G = \{(k,u),(k,x),(m,s),(n,v),(p,x)\},$ $H = \{(s,4),(t,7),(u,3),(u,6),(x,9)\}$
26.	$A = \{2,3,4,7,9\}, \quad B = \{0,1,5,6,8\},$ $C = \{a,b,c,f,g,h\}$	$G = \{(2,5),(2,8),(4,1),(7,6),(9,1)\},$ $H = \{(0,g),(1,a),(5,c),(5,h),(8,f)\}$
27.	$A = \{a,b,d,g,h,k\}, \quad B = \{1,2,5,6,9\},$ $C = \{3,4,7,8\}$	$G = \{(a,6),(b,2),(b,5),(d,1),(g,9),(k,5)\},$ $H = \{(2,4),(5,3),(6,8),(9,3)\}$
28.	$A = \{1,4,6,8,9\}, \quad B = \{p,q,x,y,z\},$ $C = \{0,2,3,5,7\}$	$G = \{(1,y),(4,z),(6,p),(6,x),(9,x),(9,y)\},$ $H = \{(p,0),(q,7),(x,3),(y,5)\}$
29.	$A = \{k,m,n,p,s\}, \quad B = \{3,5,7,8,9\},$ $C = \{A,B,C,D,E,F\}$	$G = \{(k,9),(m,7),(n,5),(n,8),(p,3),(s,3)\},$ $H = \{(5,C),(7,D),(7,F),(8,A),(9,E)\}$
30.	$A = \{a,b,c,d,g,h\}, \quad B = \{0,2,4,6,8\},$ $C = \{1,3,5,9\}$	$G = \{(a,6),(b,2),(b,4),(c,0),(d,8),(h,4)\},$ $H = \{(2,3),(4,1),(6,9),(8,1)\}$

Завдання 2.

Вказати область визначення ($Пр_1$) і область значень ($Пр_2$) для кожної з відповідностей: **G, H, T**.

Встановити, чи є кожна з відповідностей **G, H, T**:

- повністю або частково визначеними,
- сюр'єктивними,
- функціональними,
- ін'єктивними.