

Paper Reference 9FM0/3D
Pearson Edexcel
Level 3 GCE
Further Mathematics
Advanced
PAPER 3D: Decision Mathematics 1
Friday 23 June 2023 – Afternoon

Diagram Booklet

**In the boxes below, write your name,
centre number and candidate number.**

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

There are two copies of each diagram in case you need them.

**THIS DIAGRAM BOOKLET MUST BE
RETURNED WITH THE ANSWER
BOOKLET AT THE END OF THE
EXAMINATION.**

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Diagram 1

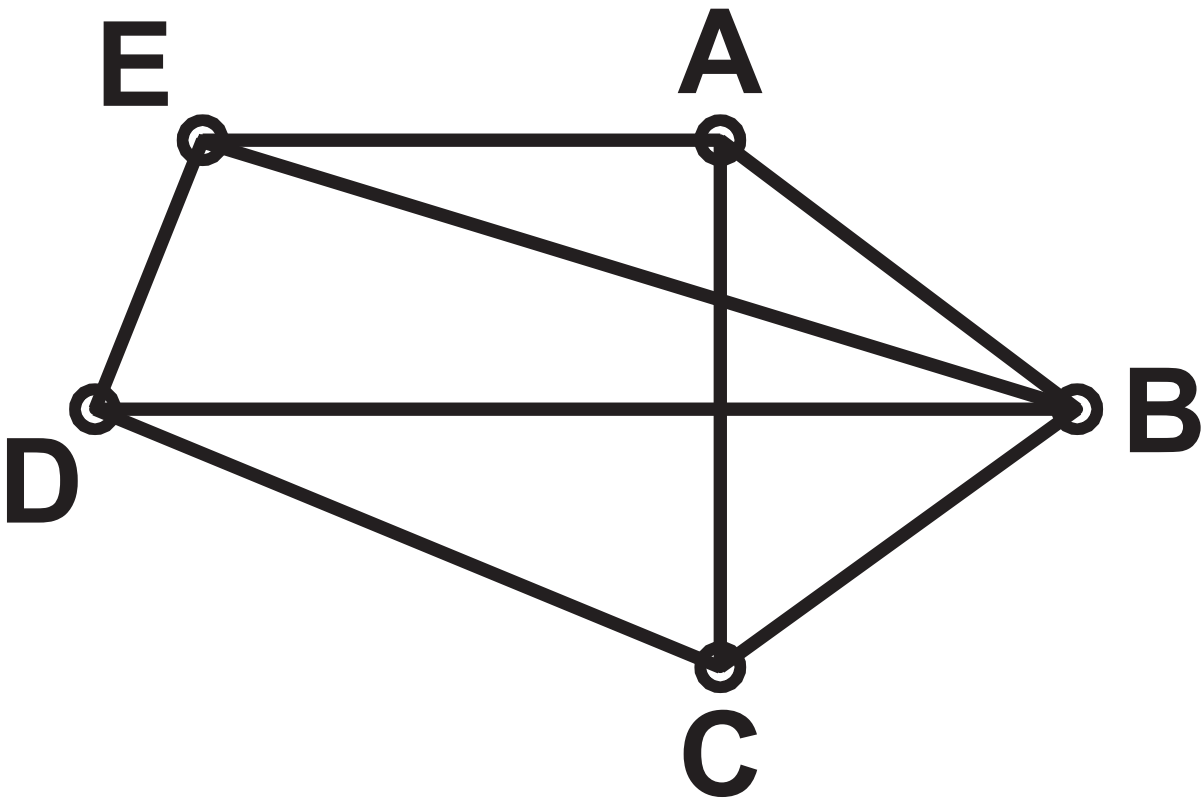


Diagram 2

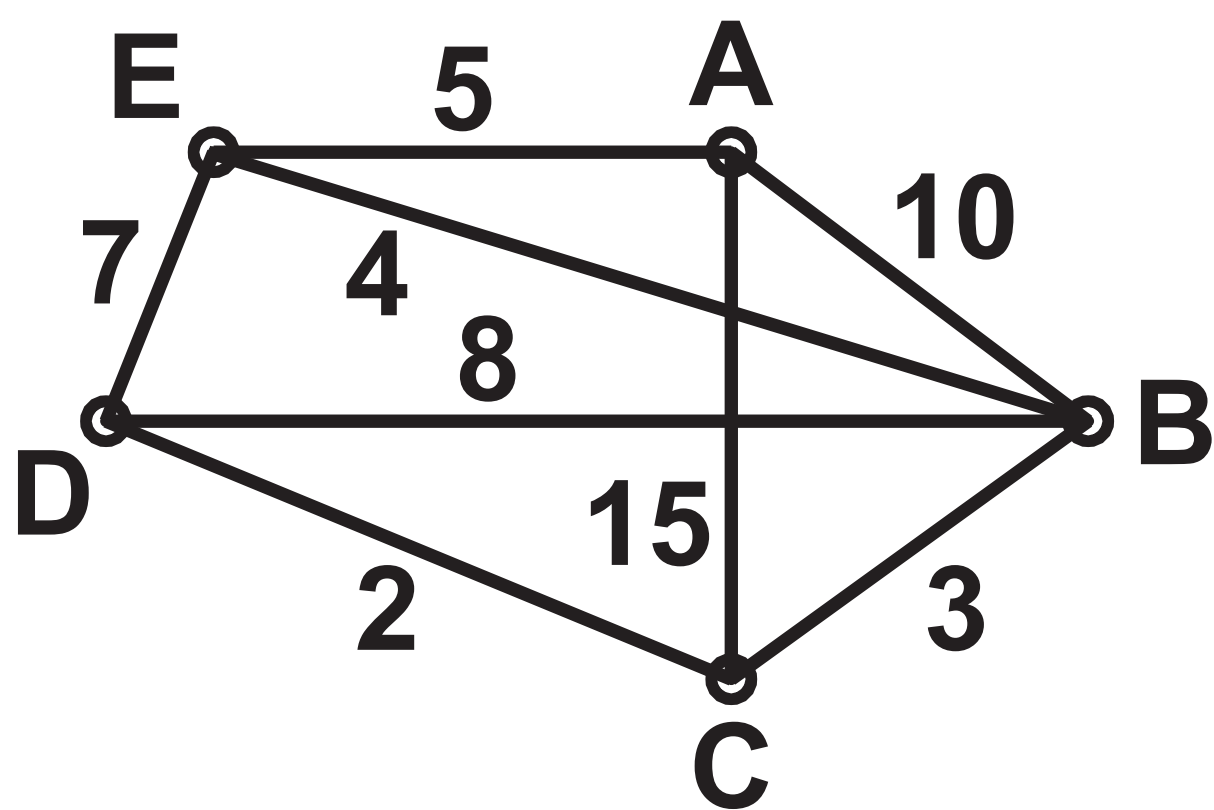
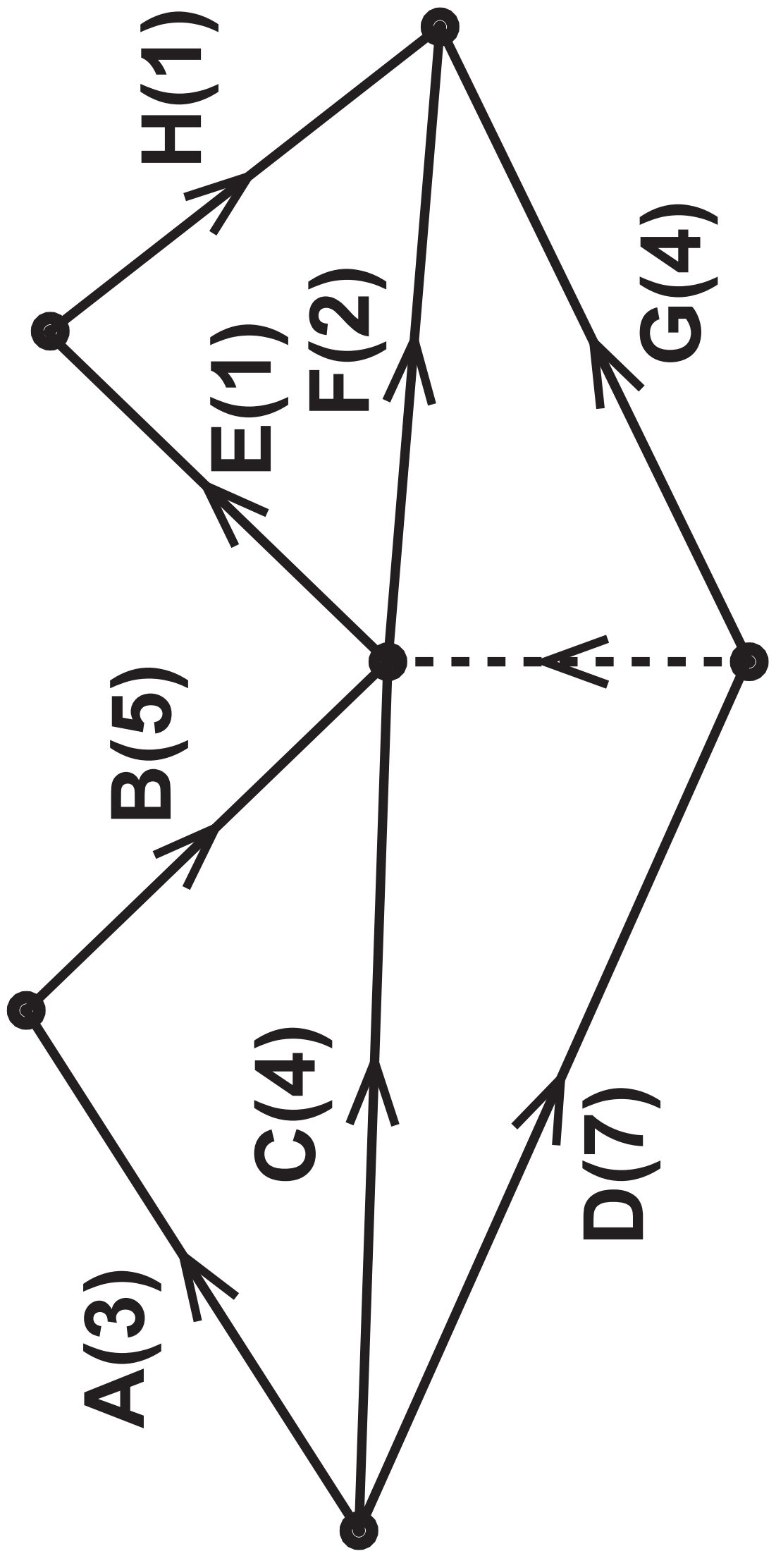


Diagram 3

	A	B	C	D	E
A	–	10	13	15	5
B	10	–	3	5	4
C	13	3	–	2	7
D	15	5	2	–	7
E	5	4	7	7	–

Diagram 4



KEY:

Early event time	Late event time
------------------------	-----------------------

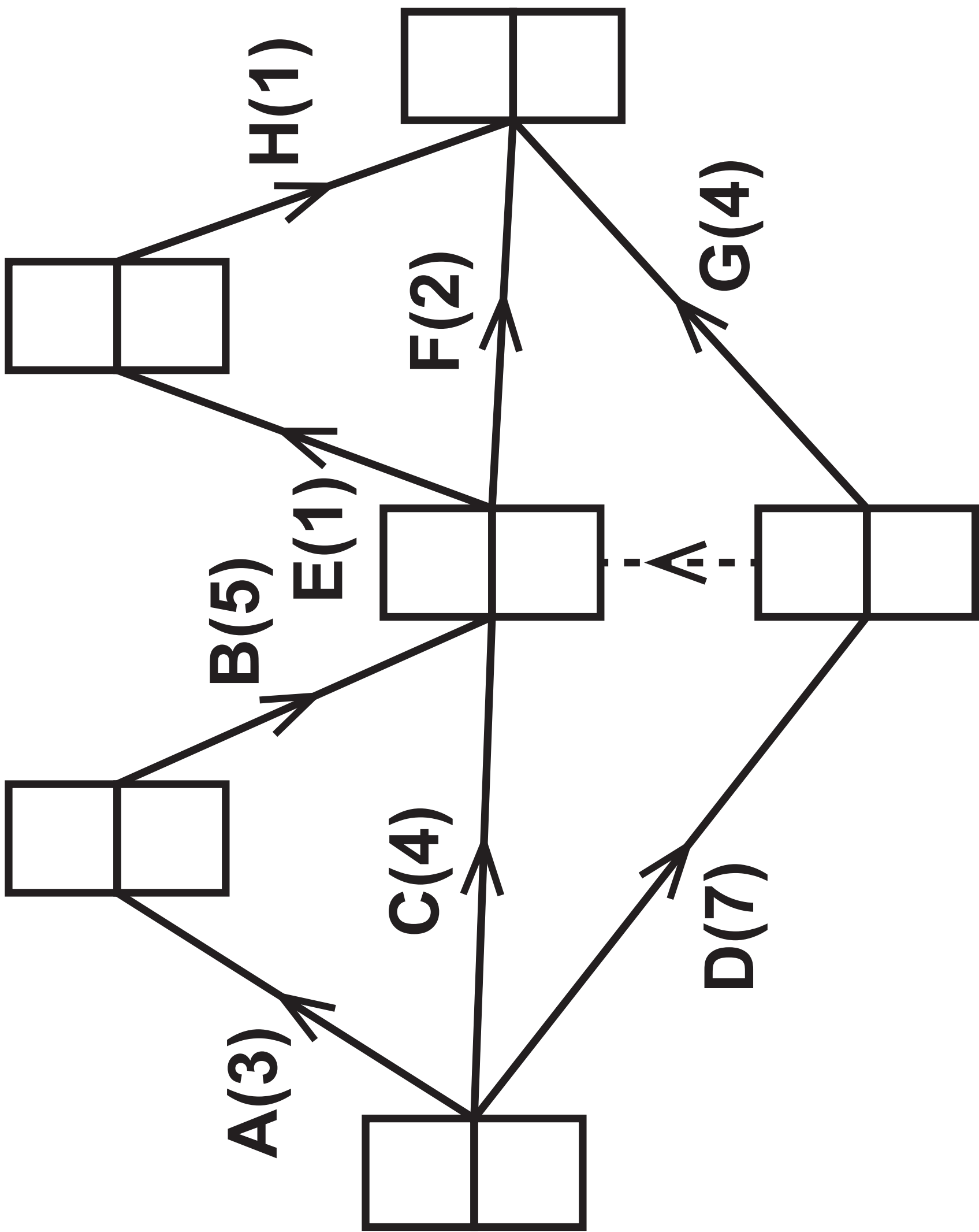


Diagram 6

Activity	Number of workers
A	2
B	1
C	2
D	2
E	3
F	2
G	1
H	3

Diagram 7

Number of workers

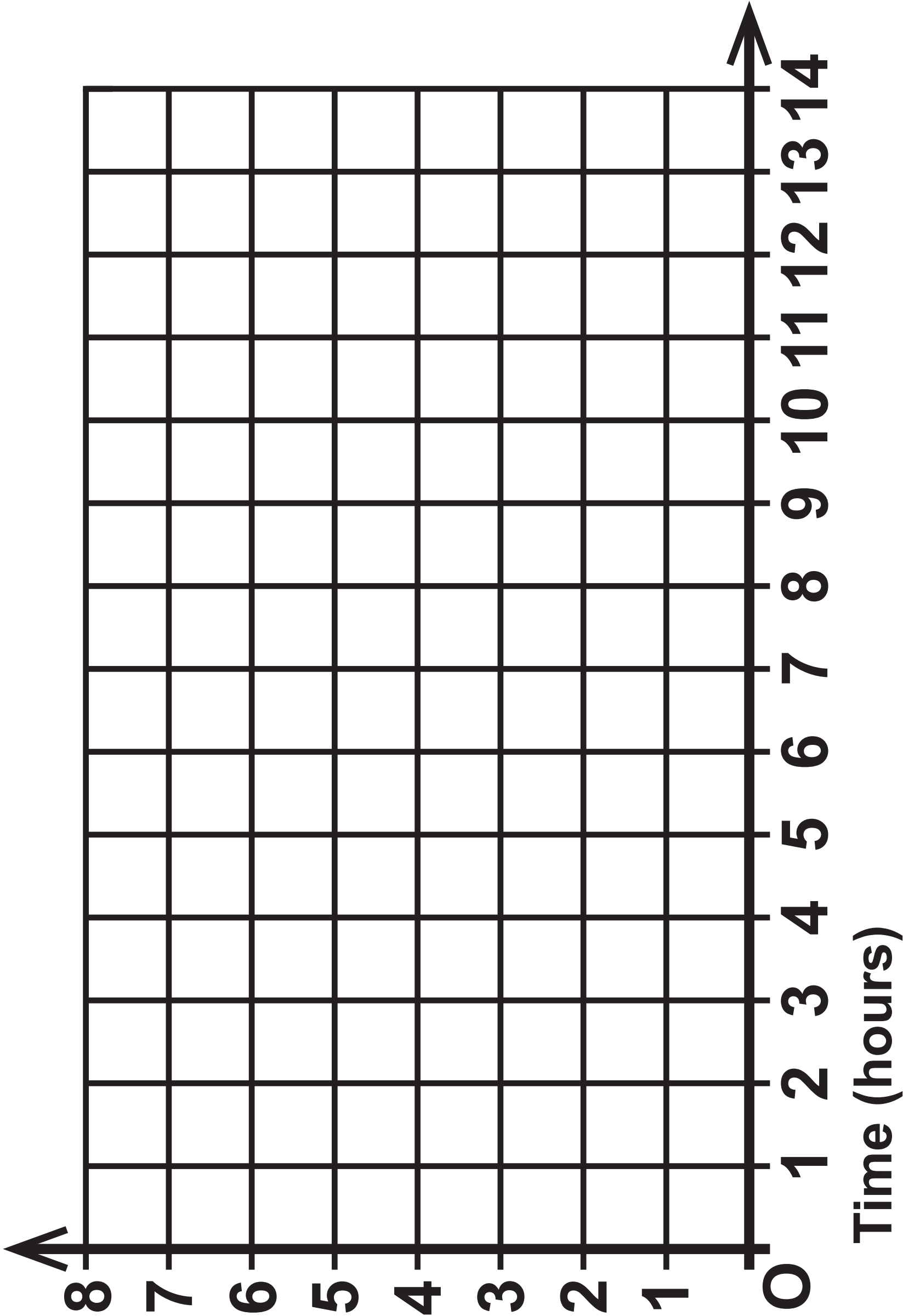
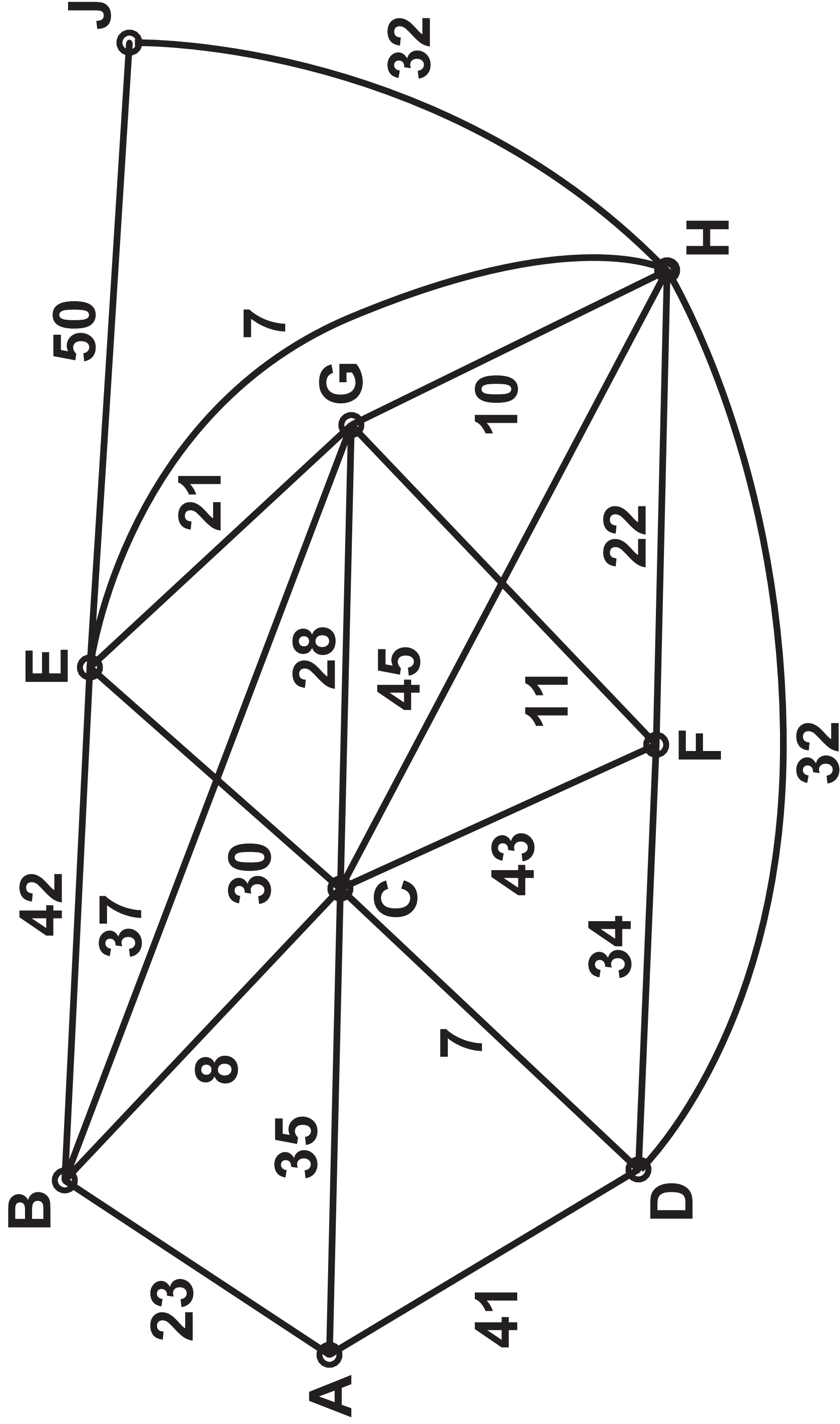
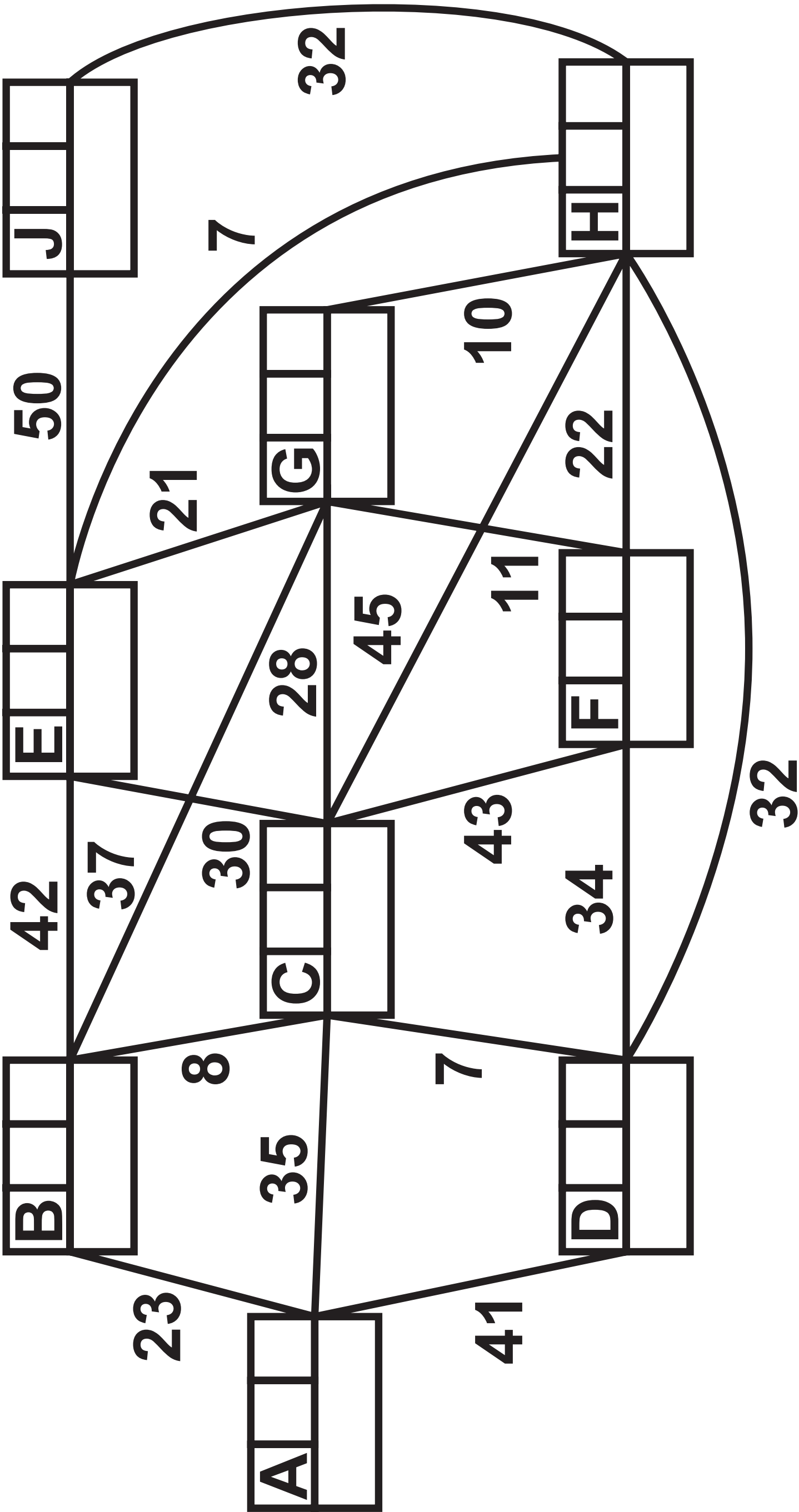


Diagram 8



KEY:

Vertex	Order of labelling	Final value
Working values		



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Turn over

Diagram 9 continued.

Shortest path from A to J:



Length of shortest path from A to J:



[The total weight of the network is 423]

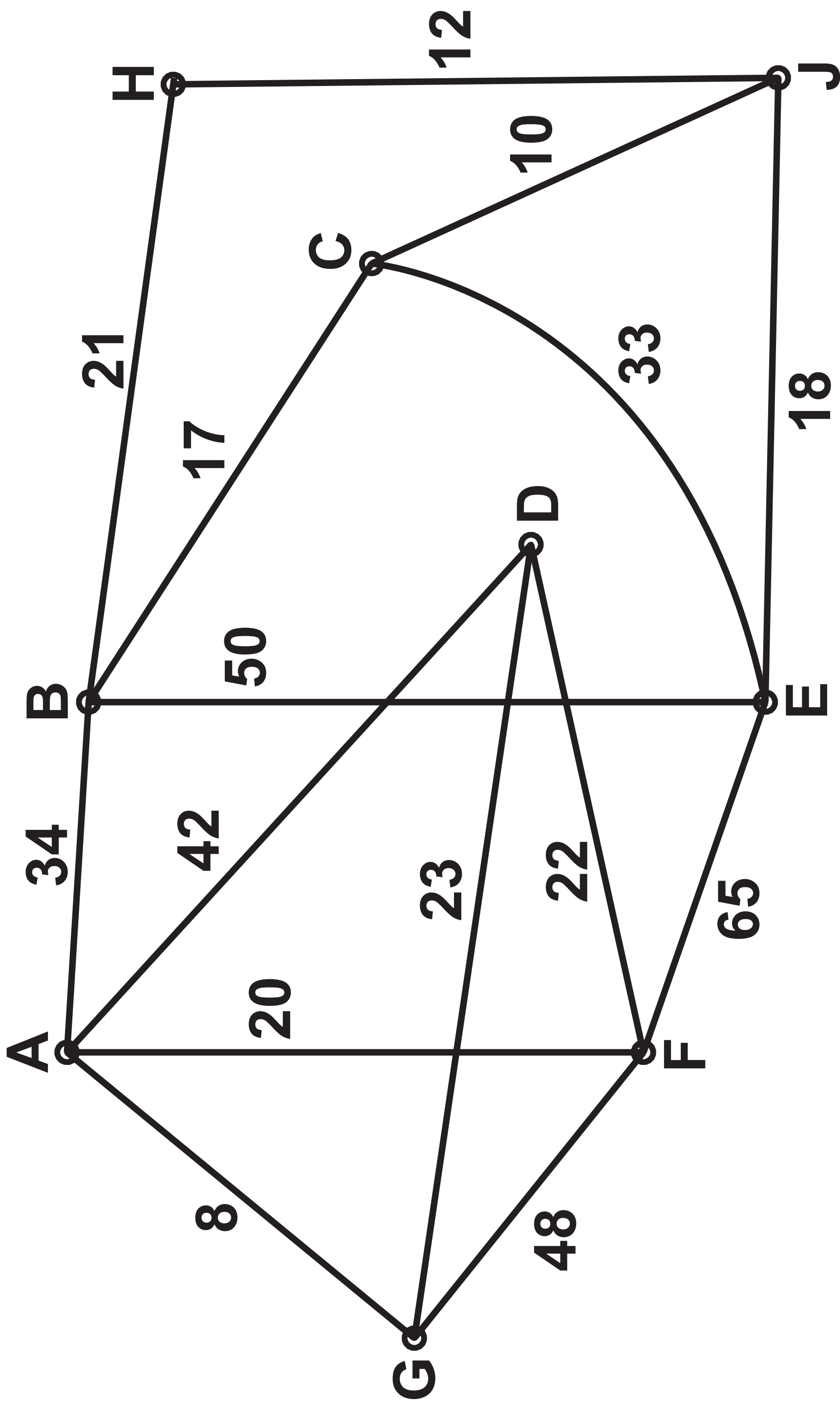


Diagram 11

	A	B	C	D	E	F	G	H	J
A	–	34	51	31	79	20	8	55	61
B	34	–	17	65	45	54	42	21	27
C	51	17	–	82	28	71	59	22	10
D	31	65	82	–	87	22	23	86	92
E	79	45	28	87	–	65	87	30	18
F	20	54	71	22	65	–	28	75	81
G	8	42	59	23	87	28	–	63	69
H	55	21	22	86	30	75	63	–	12
J	61	27	10	92	18	81	69	12	–

Diagram 12

Activity	Immediately preceding activities
A	–
B	–
C	–
D	A
E	A, B
F	D, E
G	A, B, C
H	F, G
I	D, E
J	D, E
K	F, G, I, J
L	I

Diagram 13

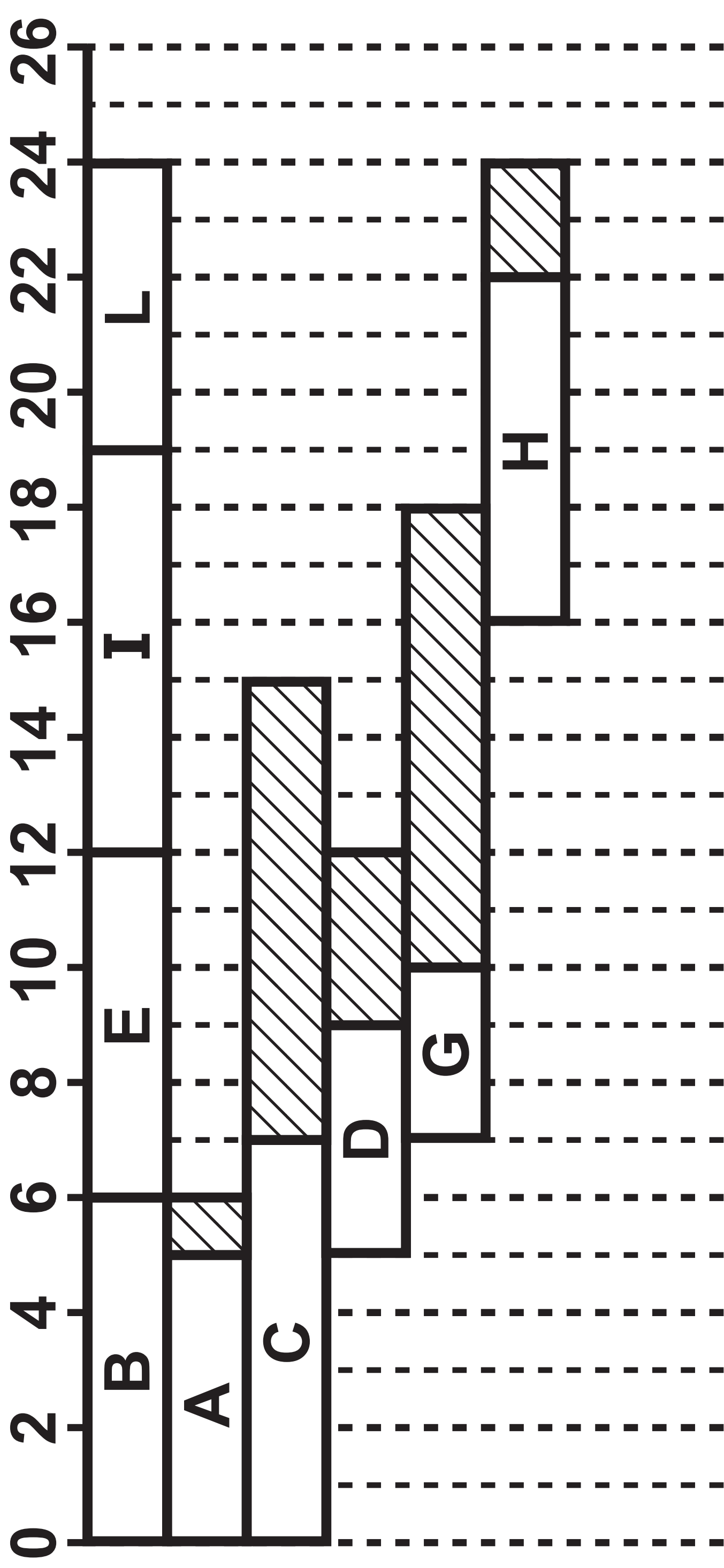


Diagram 15

b.v.	x	y	z	s ₁	s ₂	s ₃	s ₄	Value
s ₂	0	0	0	1	1	3	0	600
z	0	0	1	$\frac{1}{10}$	0	$\frac{1}{2}$	$-\frac{1}{10}$	100
x	1	0	0	$-\frac{3}{40}$	0	$-\frac{9}{8}$	$-\frac{7}{40}$	1125
y	0	1	0	$-\frac{1}{40}$	0	$-\frac{3}{8}$	$\frac{11}{40}$	375
P	0	0	0	$\frac{29}{10}$	0	$\frac{7}{2}$	$\frac{1}{10}$	20500

Diagram 1

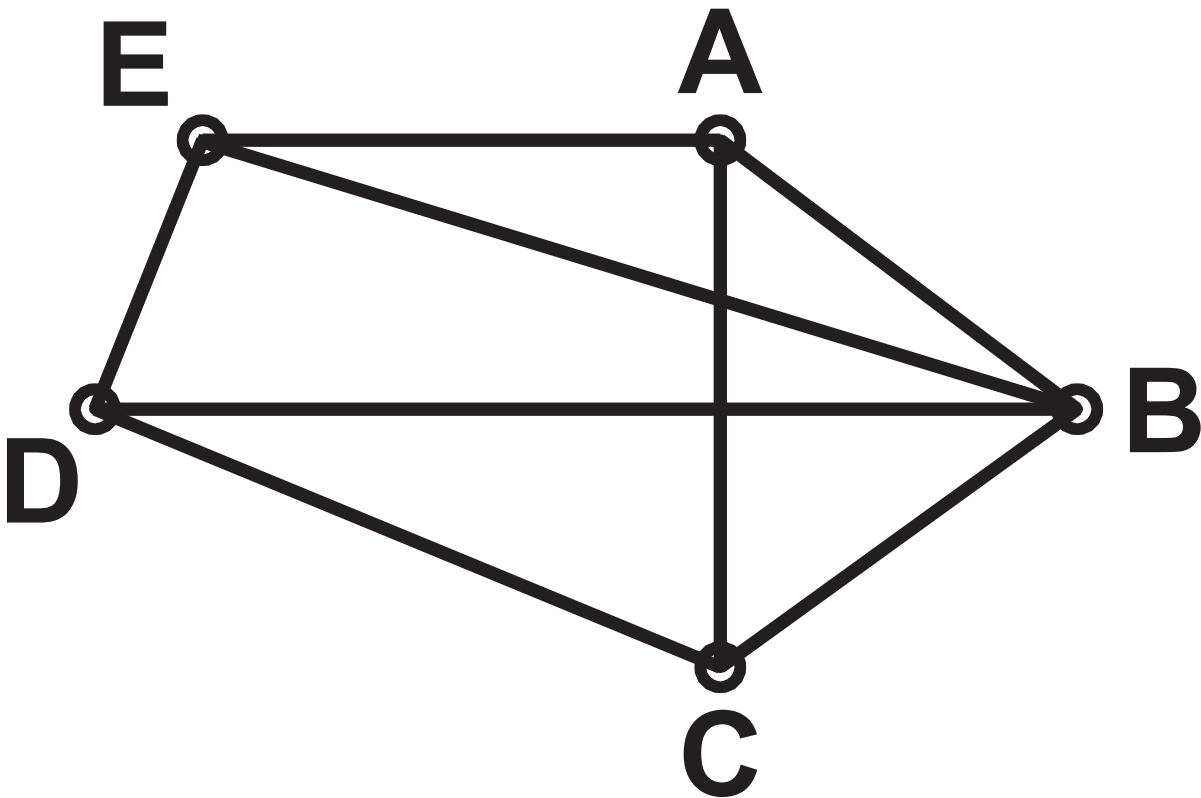


Diagram 2

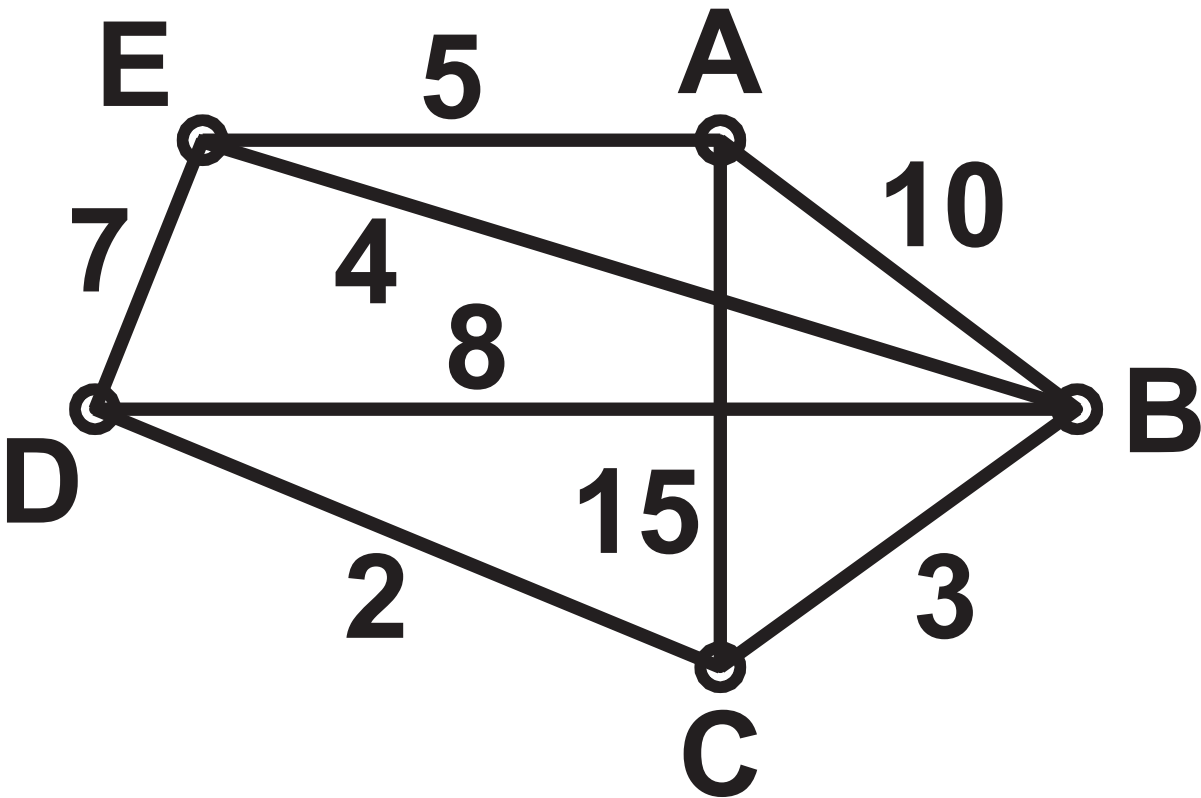


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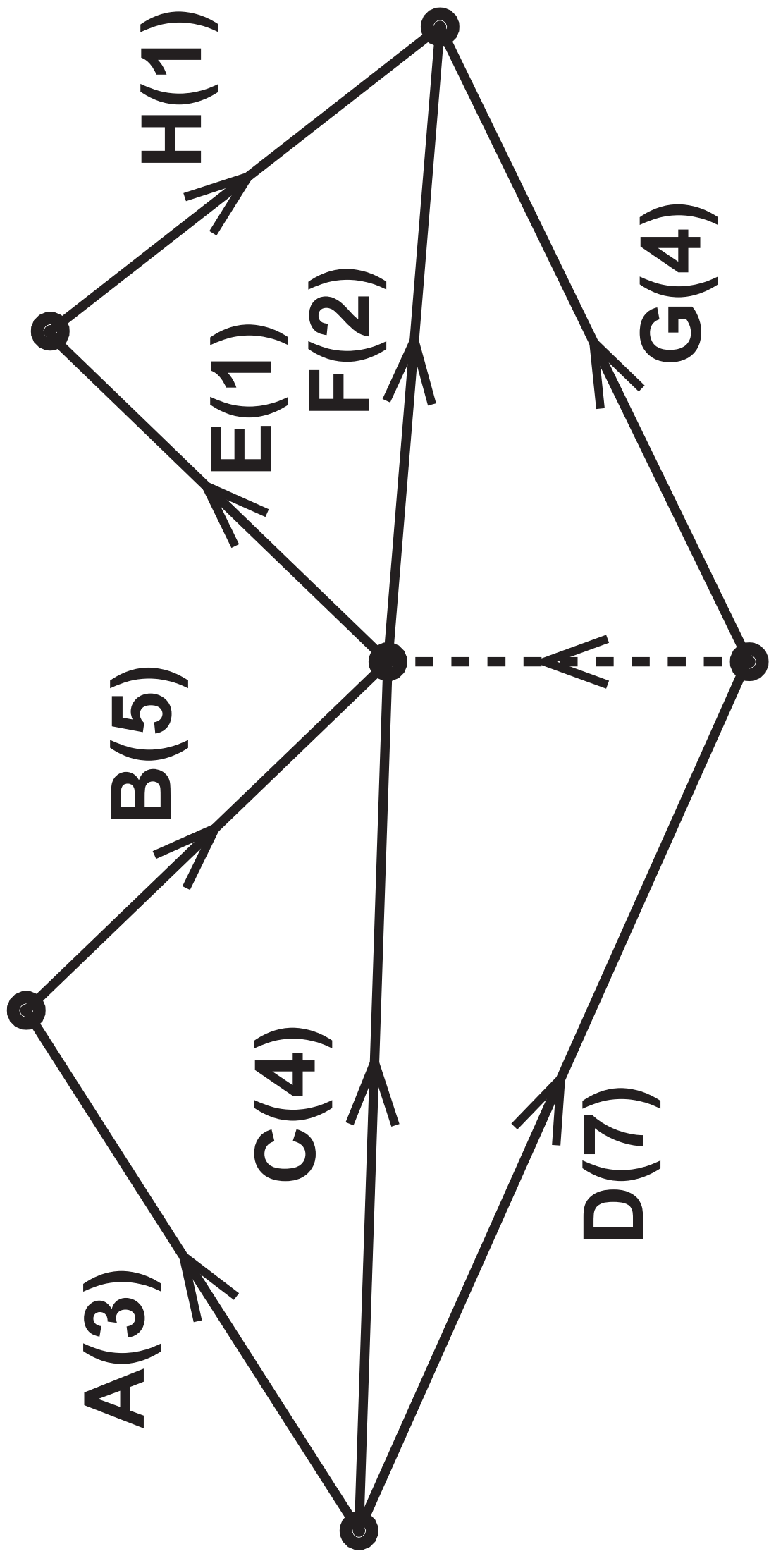


Diagram 5

KEY:

Early event time	Late event time
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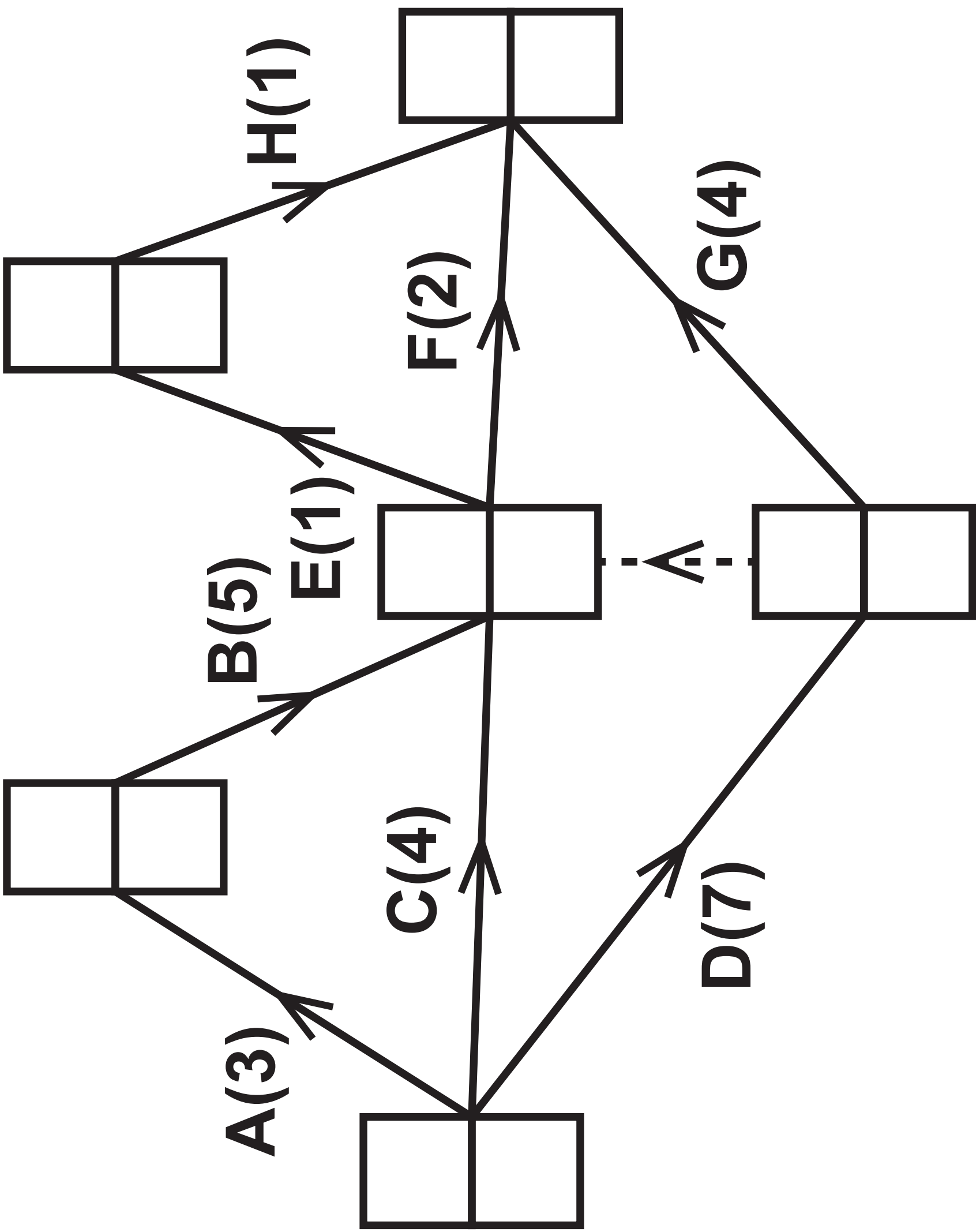


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Diagram 7

Number of workers

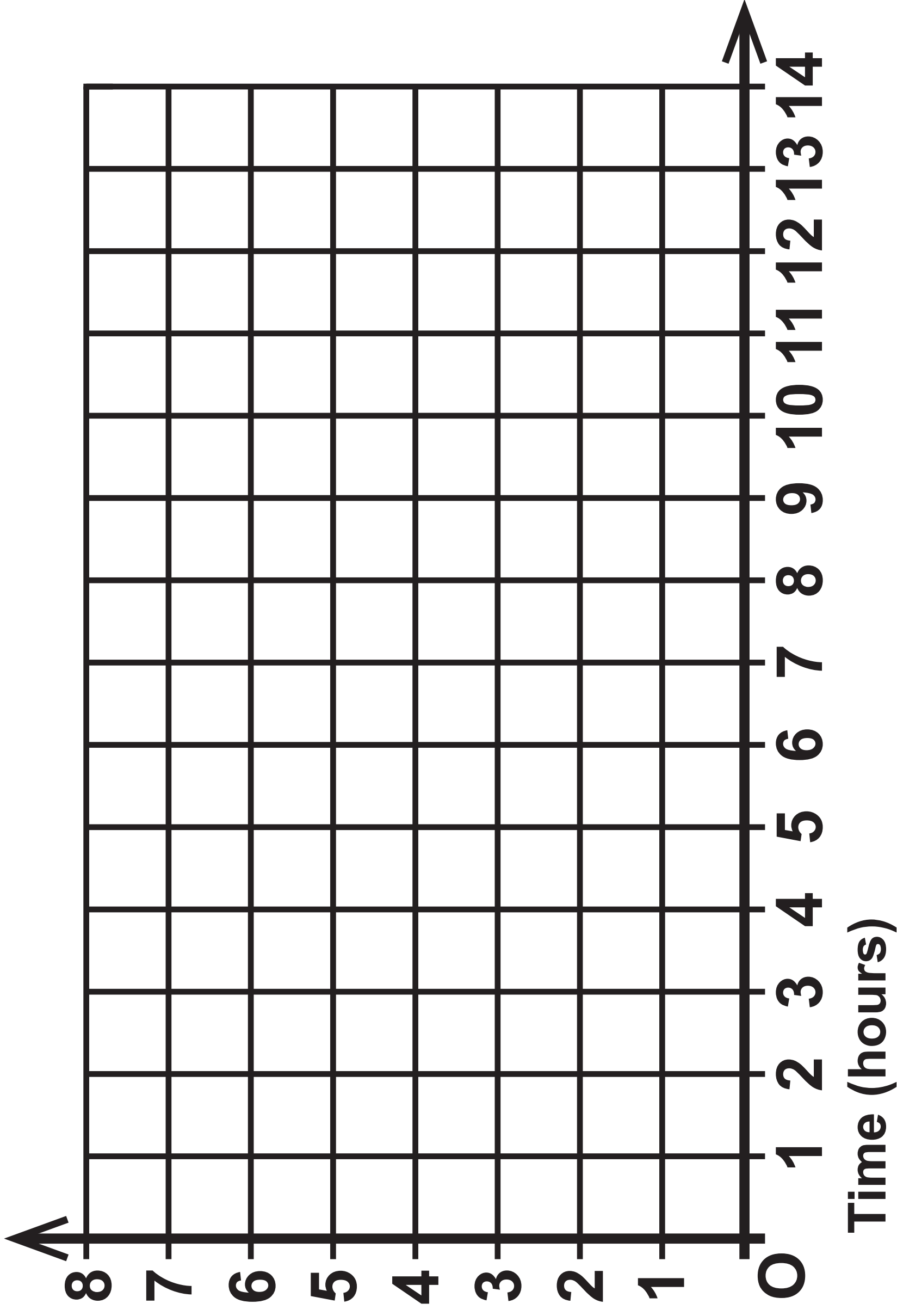
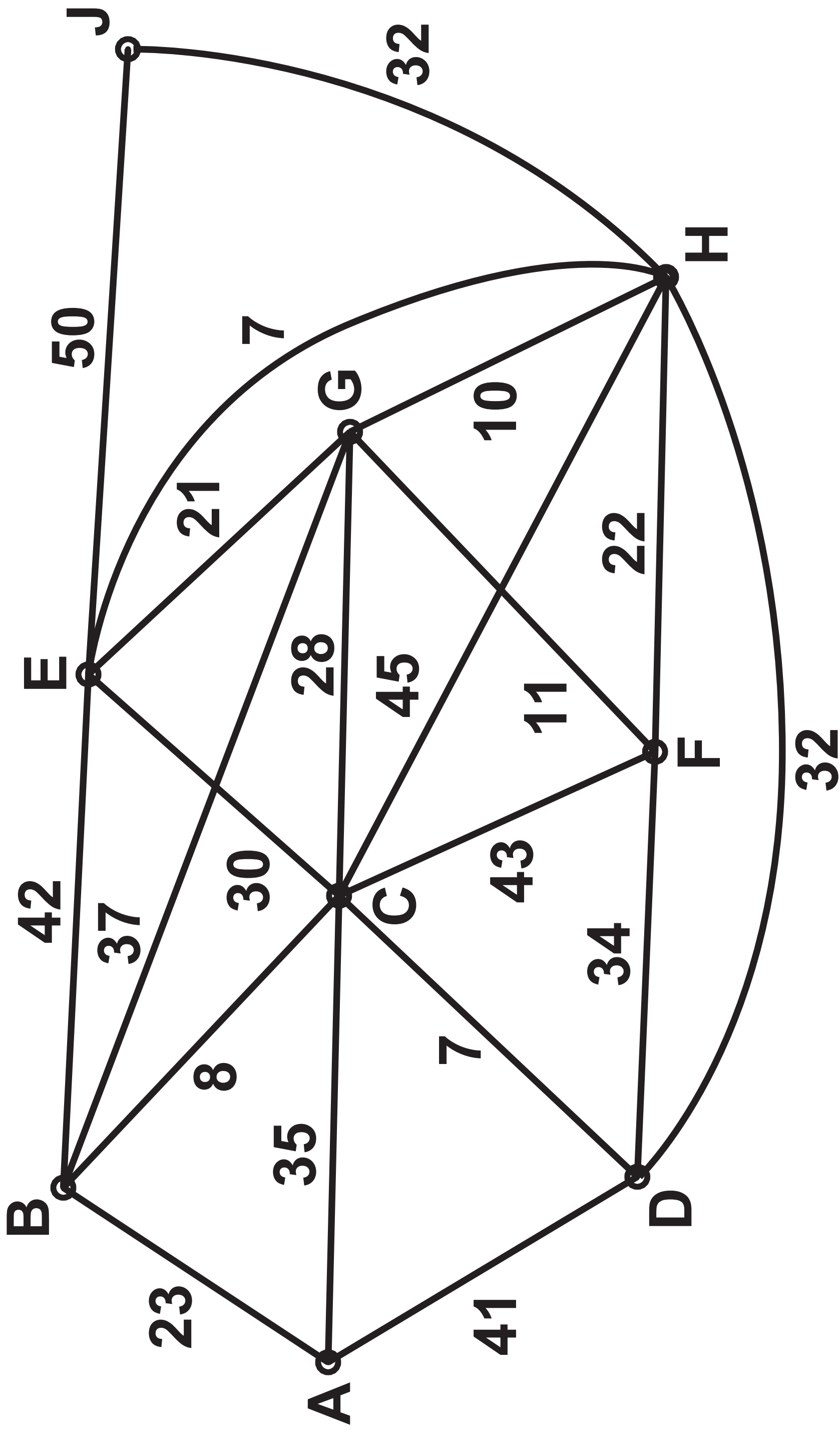
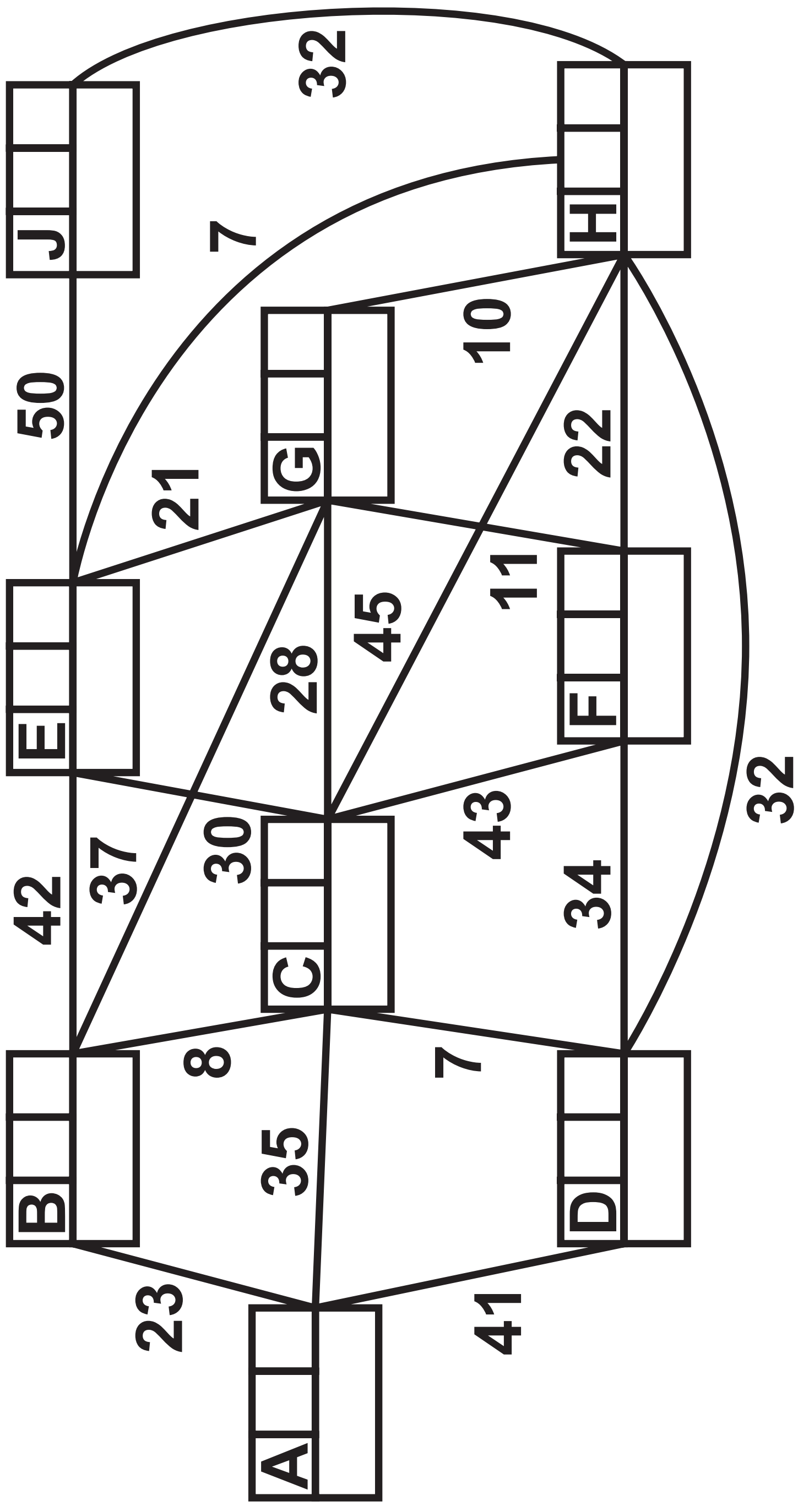


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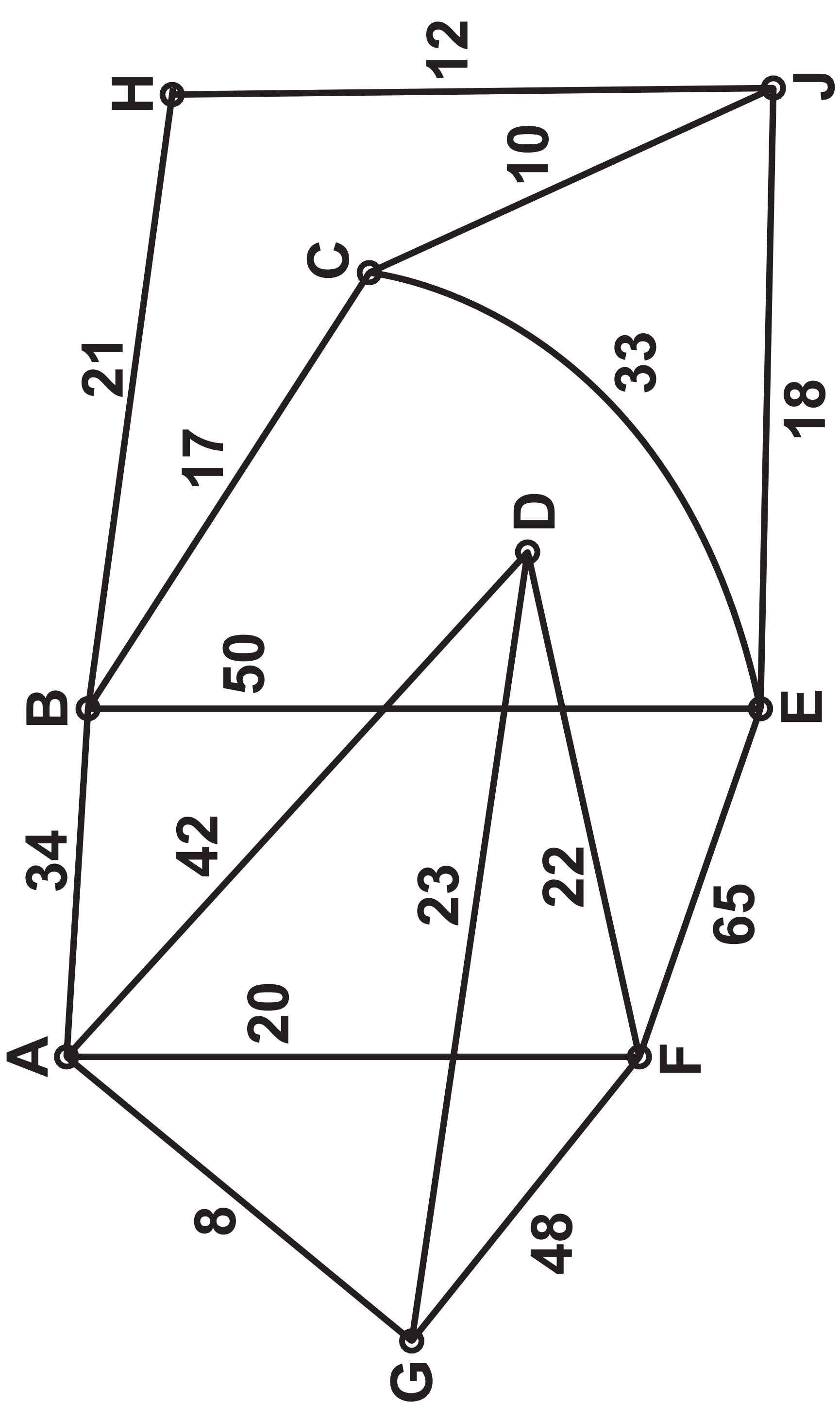


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J	D, E
K	F, G, I, J
L	I

Diagram 13

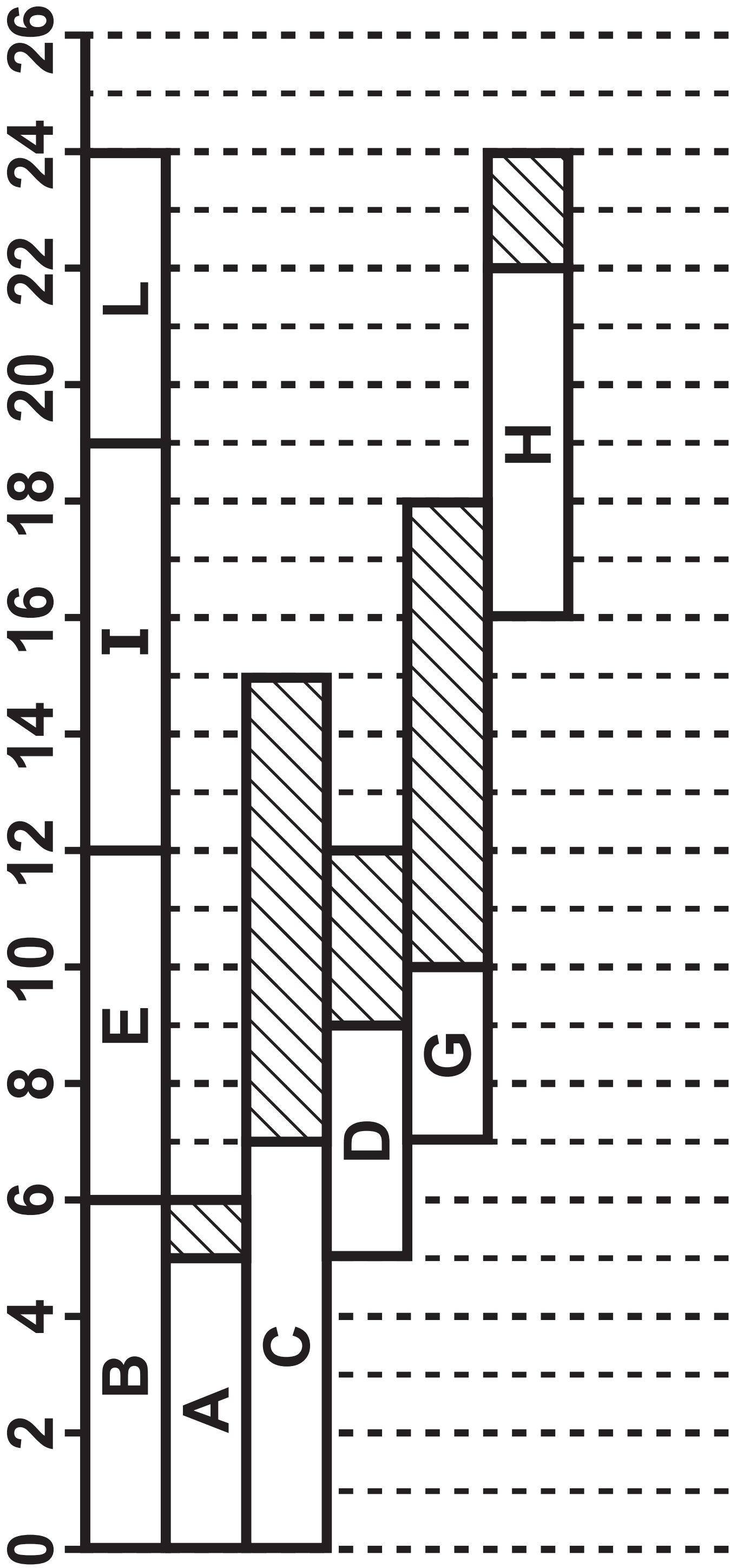


Diagram 14

[illegible]

Diagram 15

b.v.	x	y	z	s ₁	s ₂	s ₃	s ₄	Value
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y	0	1	0	$-\frac{1}{40}$	0	$-\frac{3}{8}$	$\frac{11}{40}$	375
P	0	0	0	$\frac{29}{10}$	0	$\frac{7}{2}$	$\frac{1}{10}$	20500