

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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Spare Copies

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Diagram 1

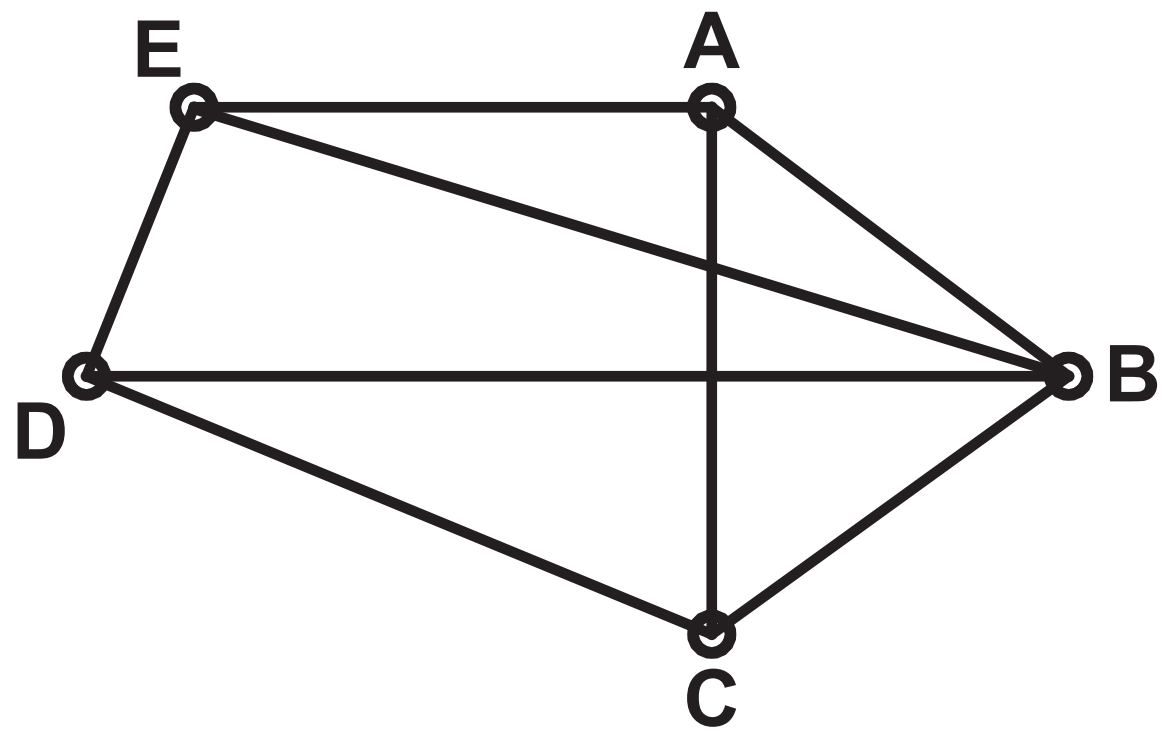


Diagram 2

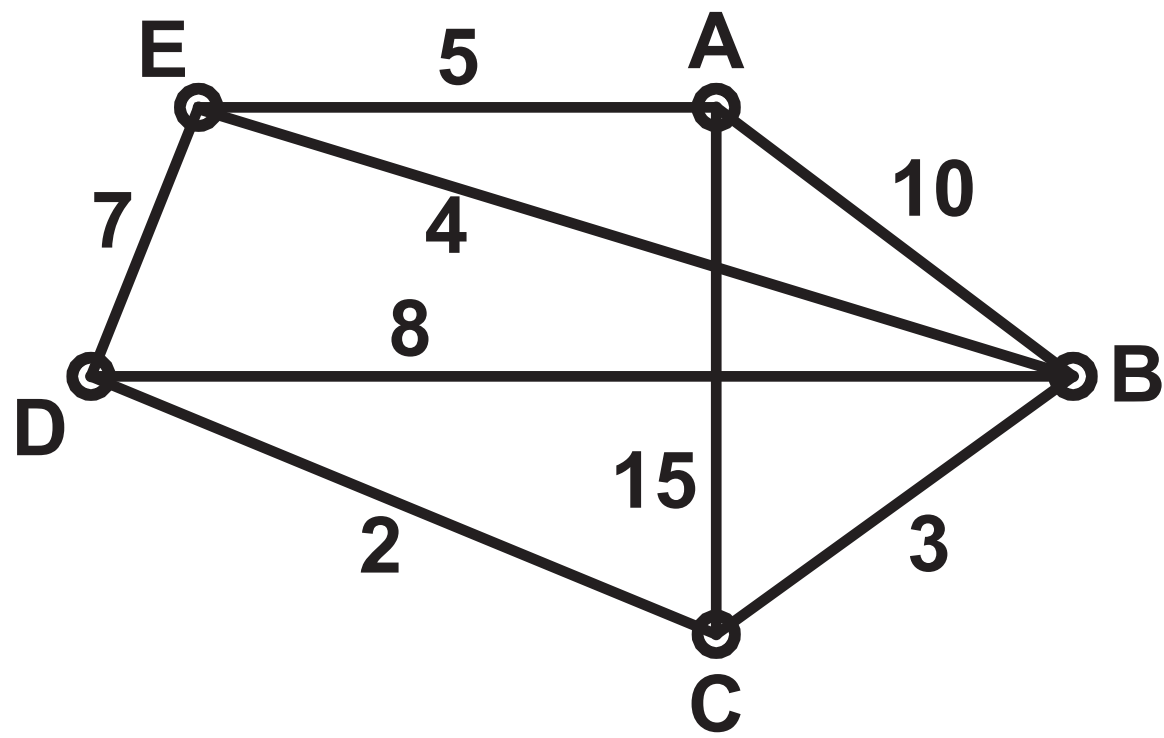
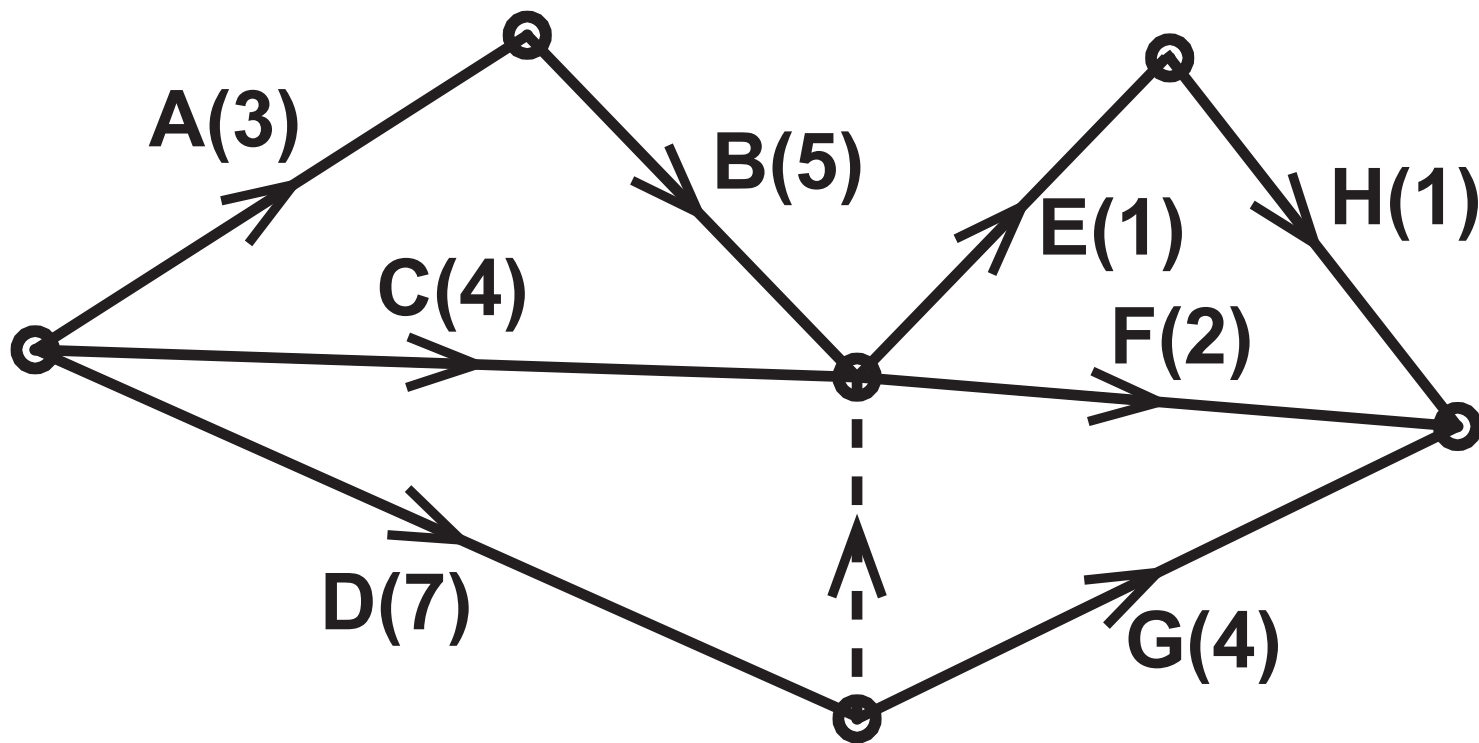


Diagram 3

	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
------------------------	-----------------------

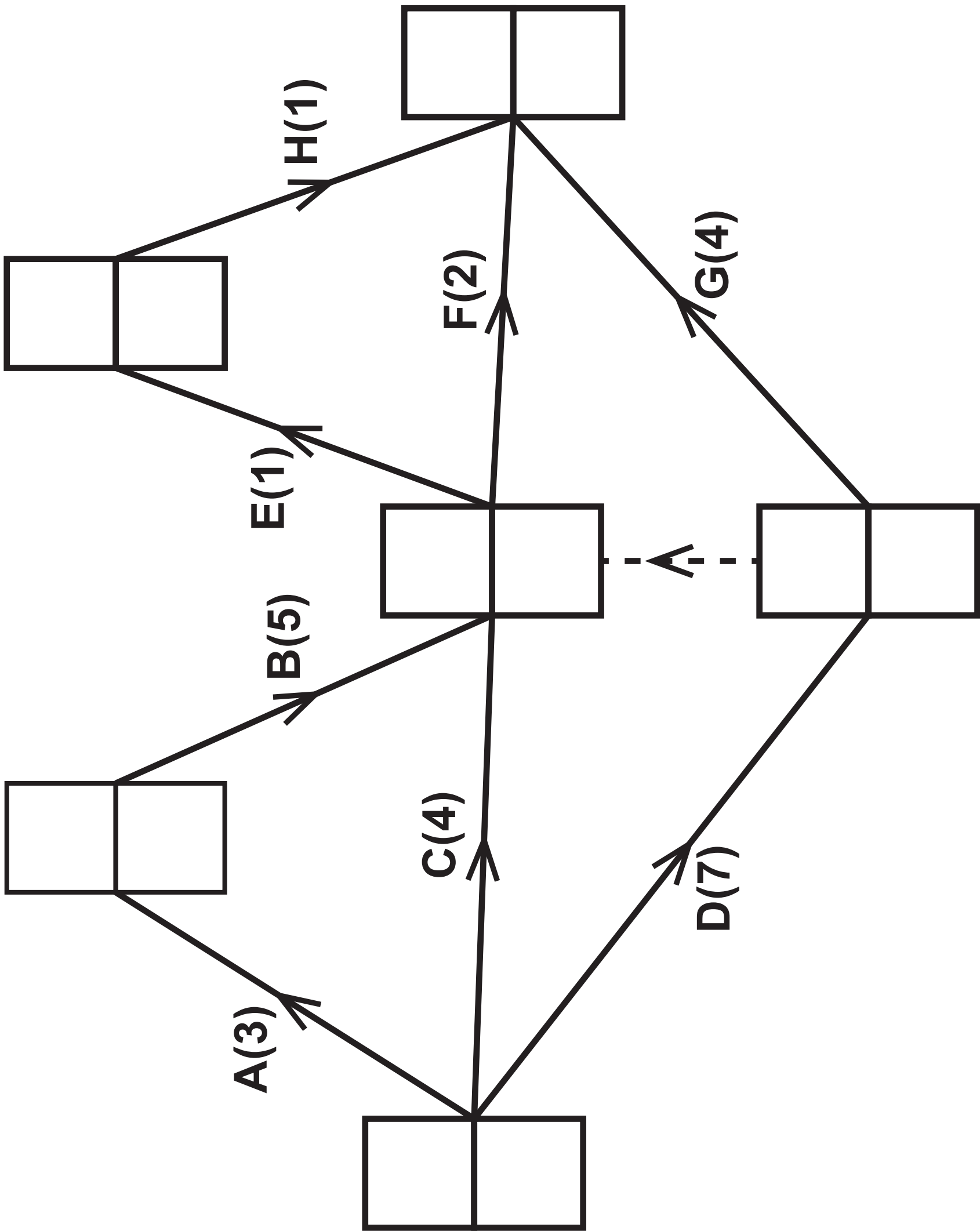
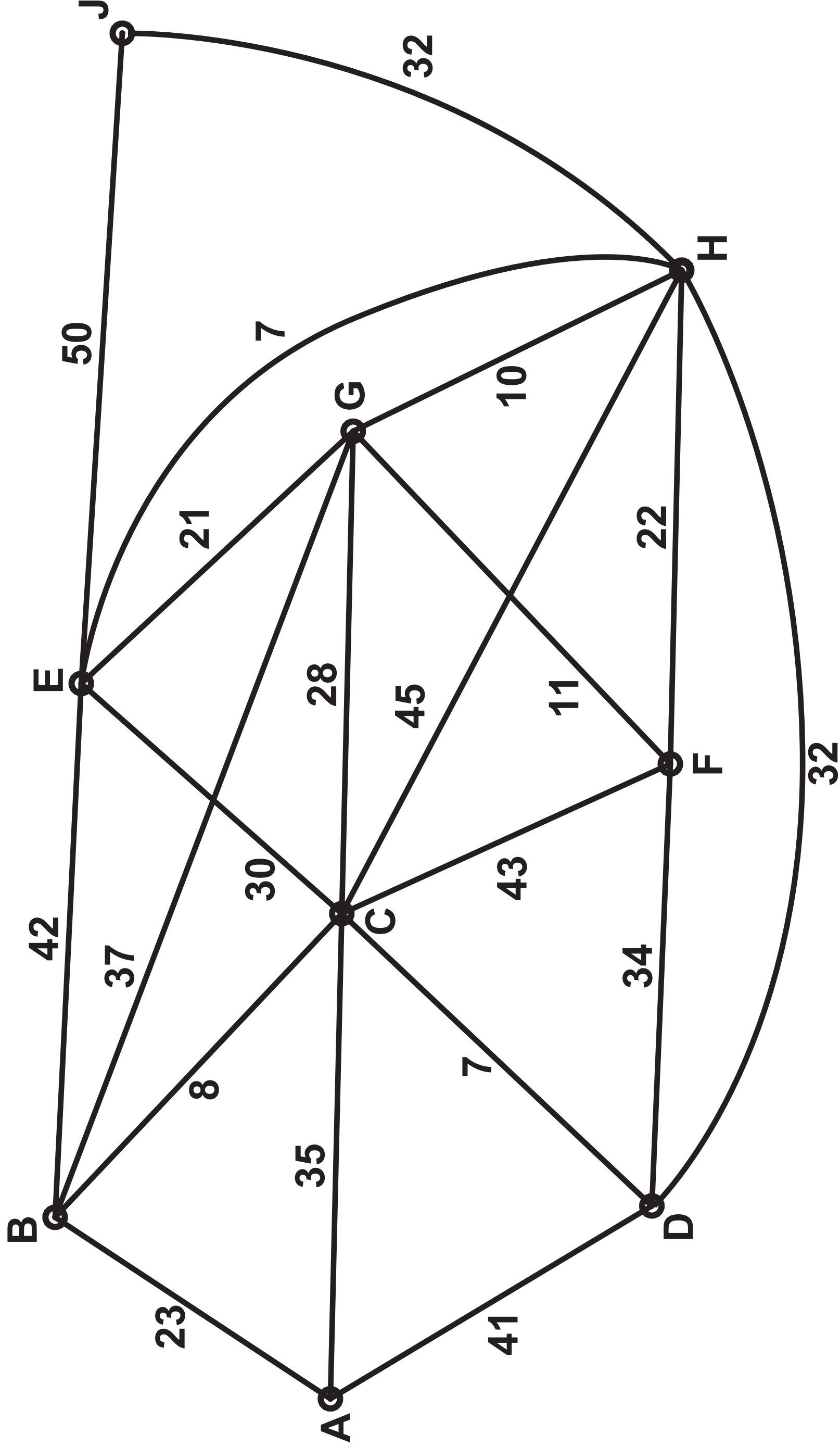


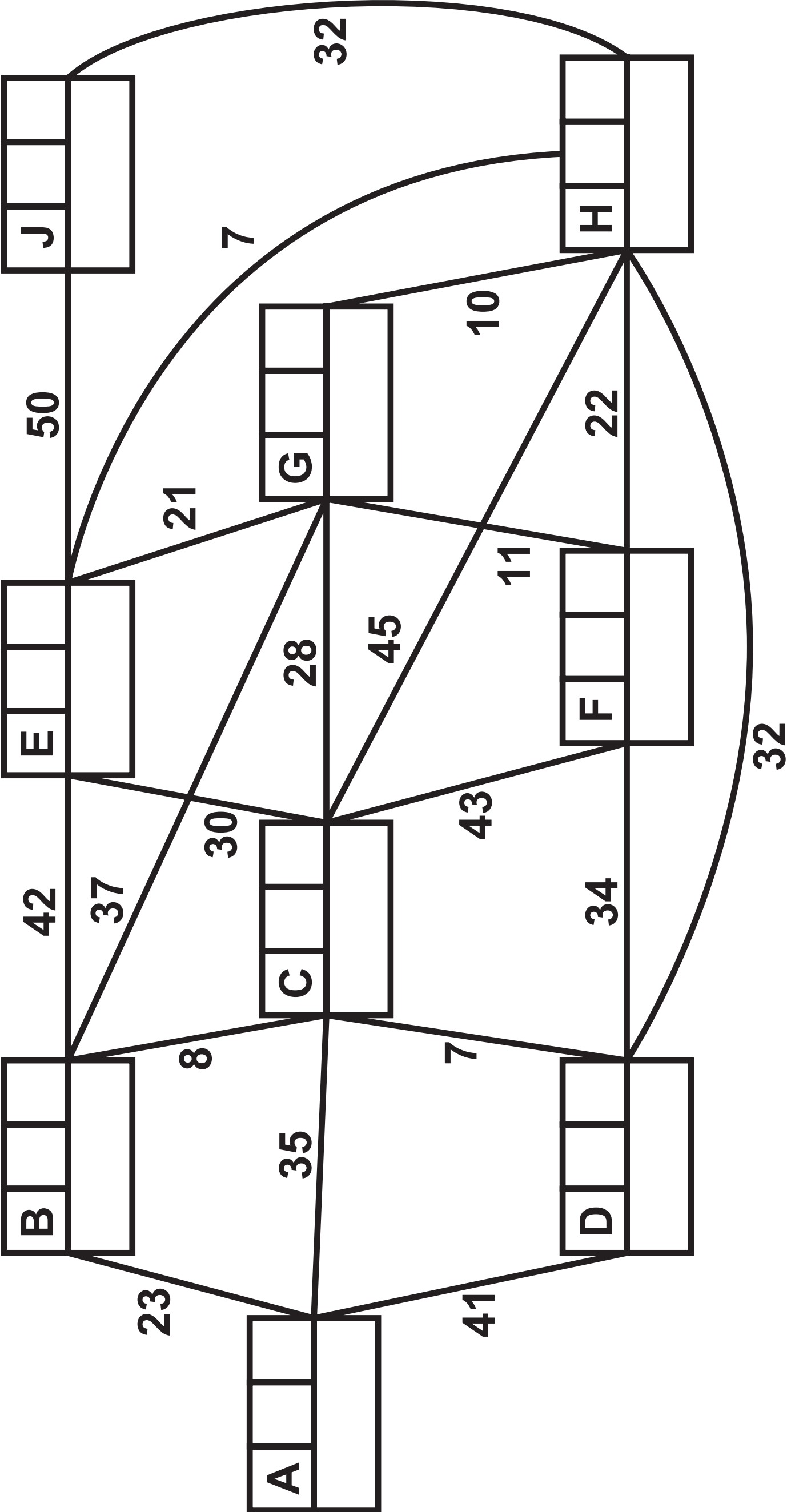
Diagram 6

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



KEY:

Vertex	Order of labelling	Final value
Working values		



Shortest path from A to J: _____

Length of shortest path from A to J: _____

[The total weight of the network is 423]

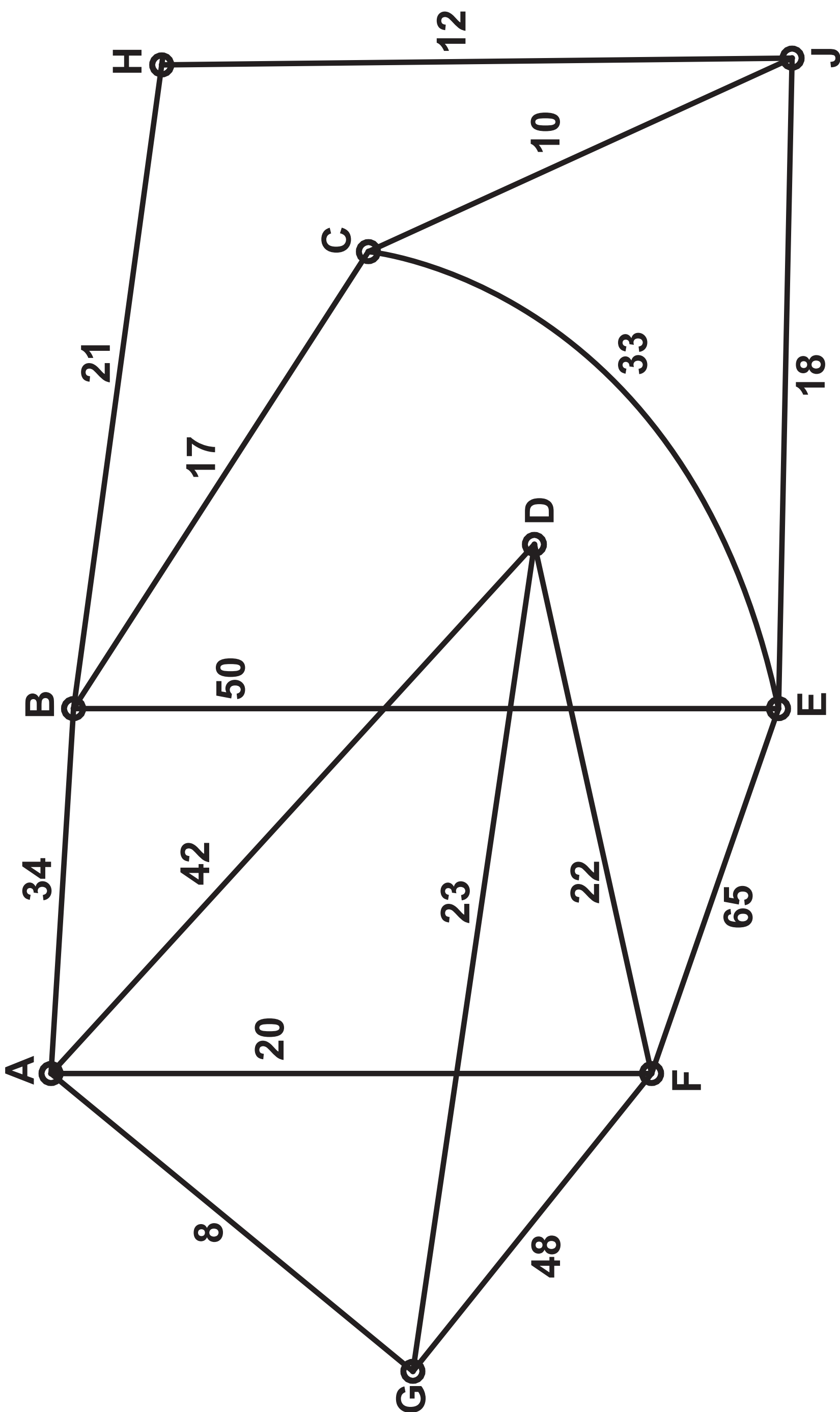


Diagram 11

	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

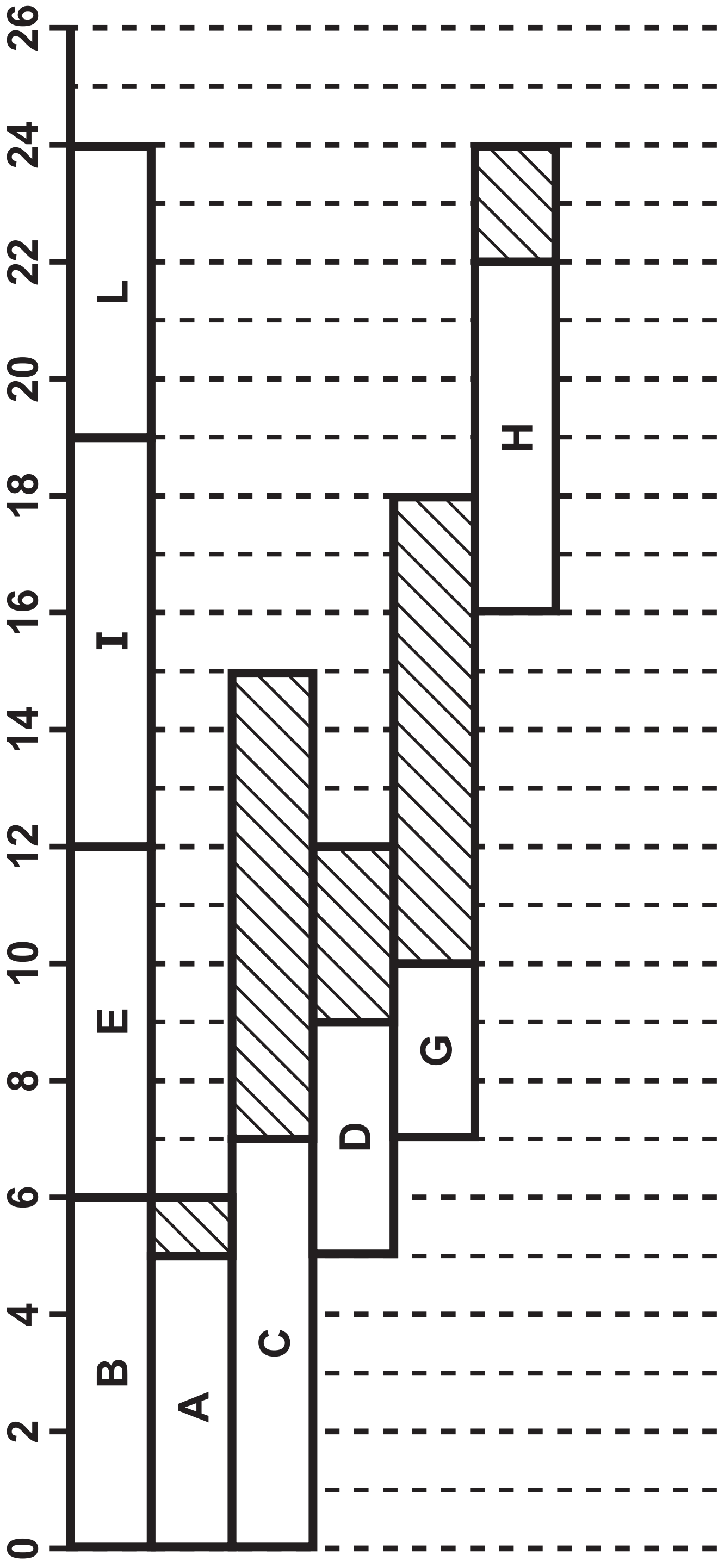


Diagram 15

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

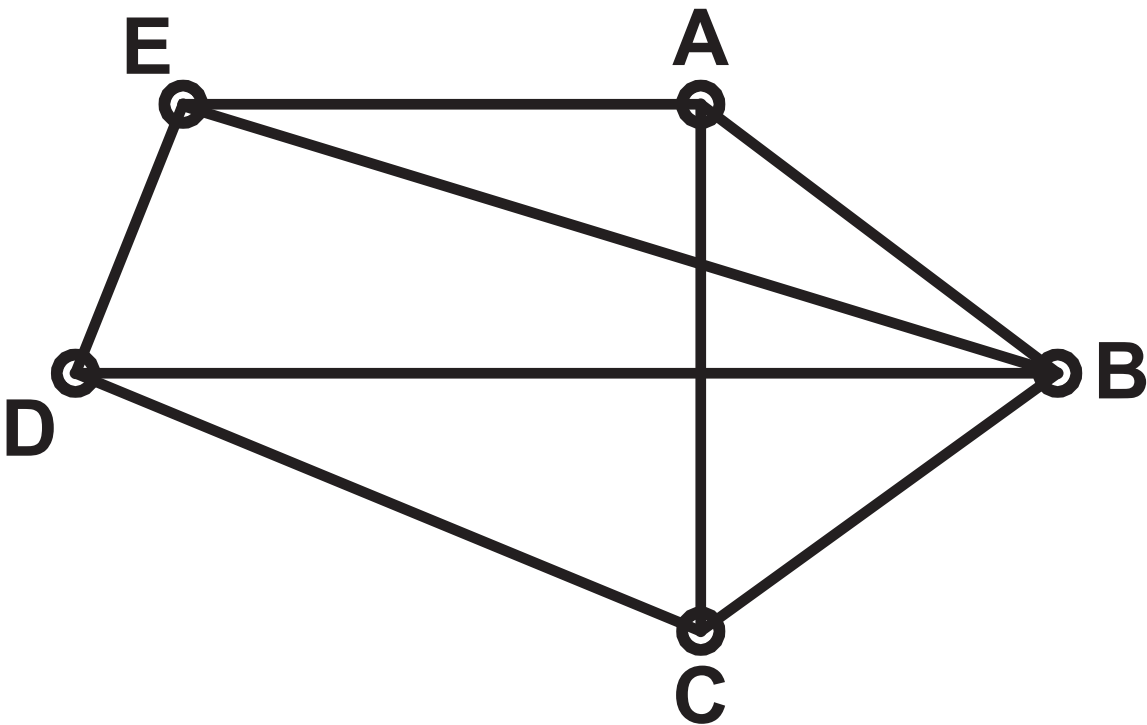


Diagram 2

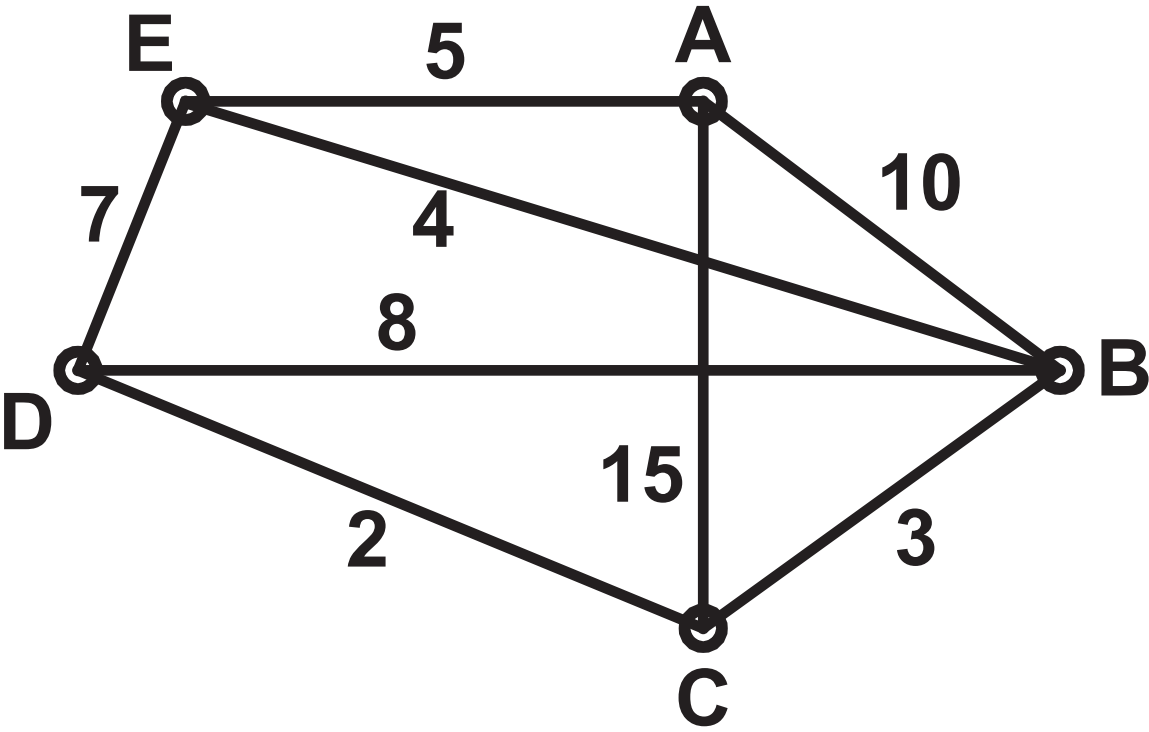
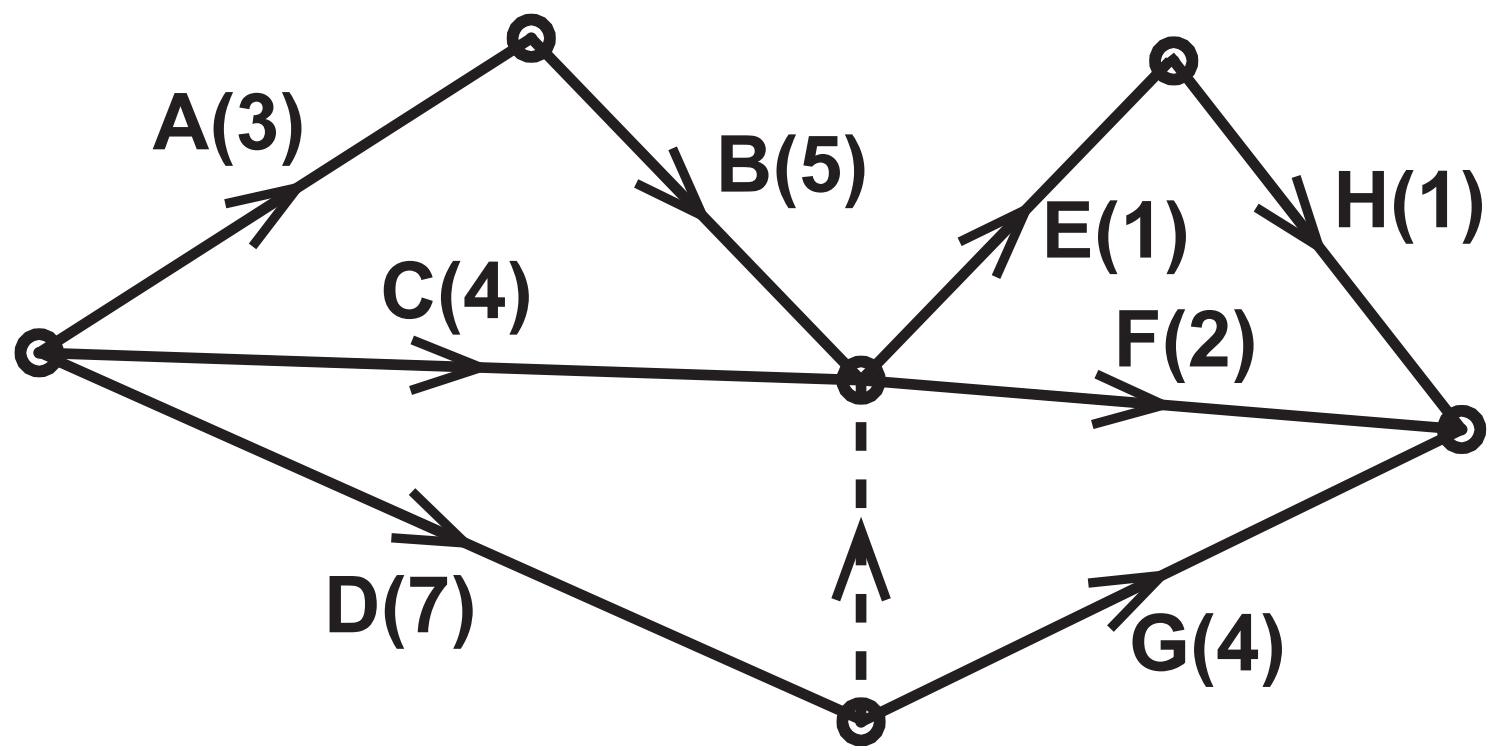


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E	5	4	7	7	–

Diagram 4



KEY:

Early event time	Late event time
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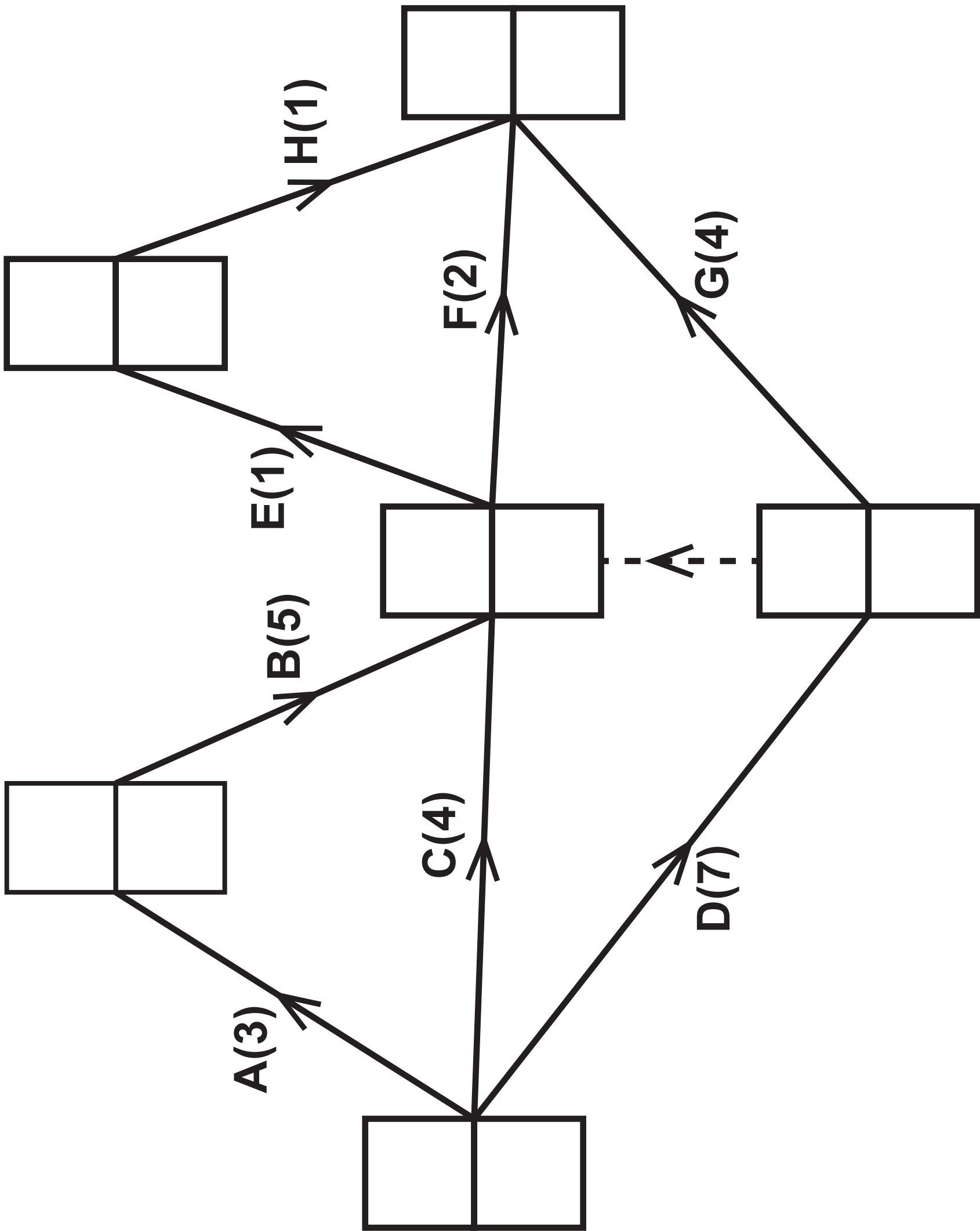
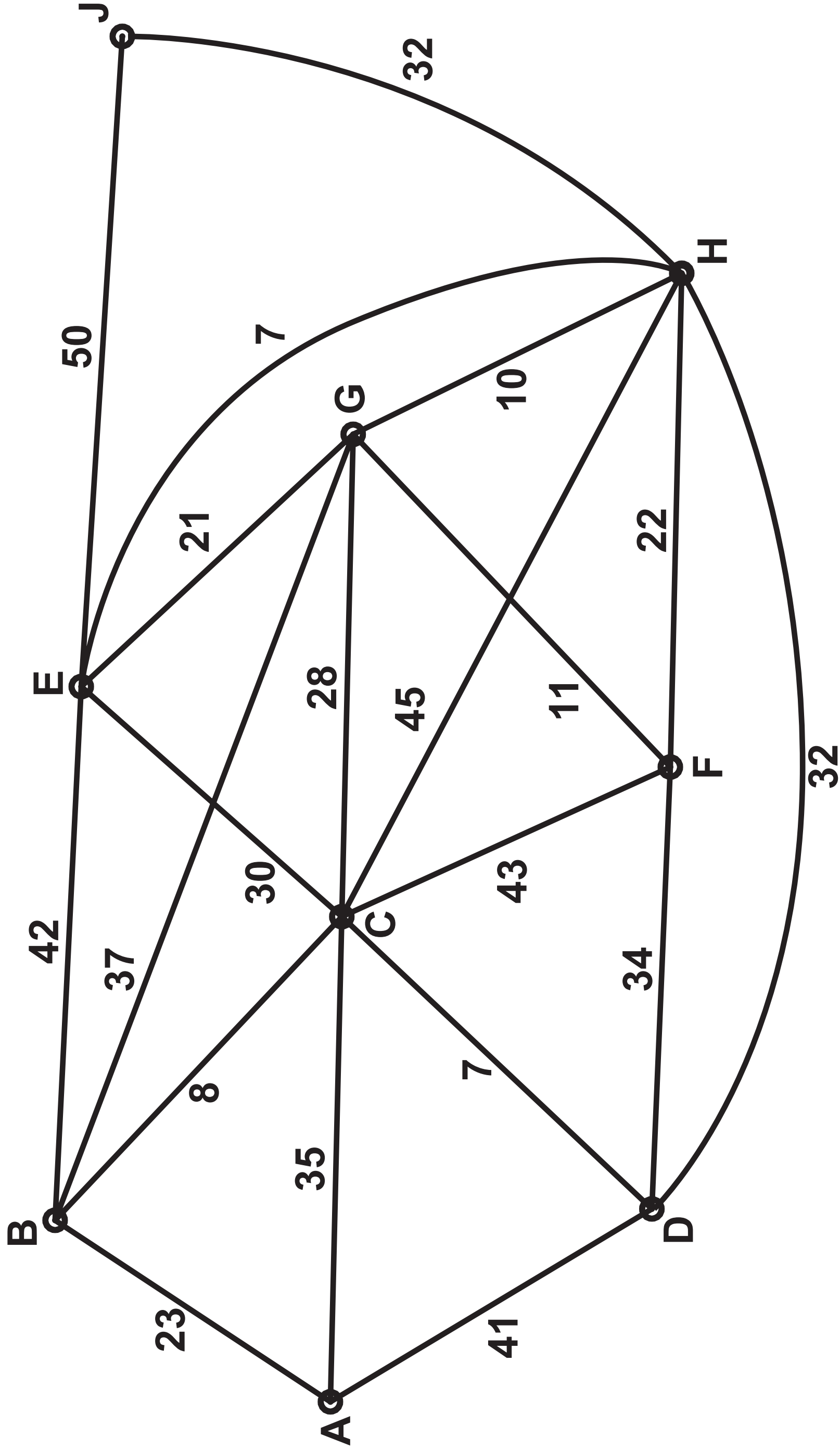


Diagram 6

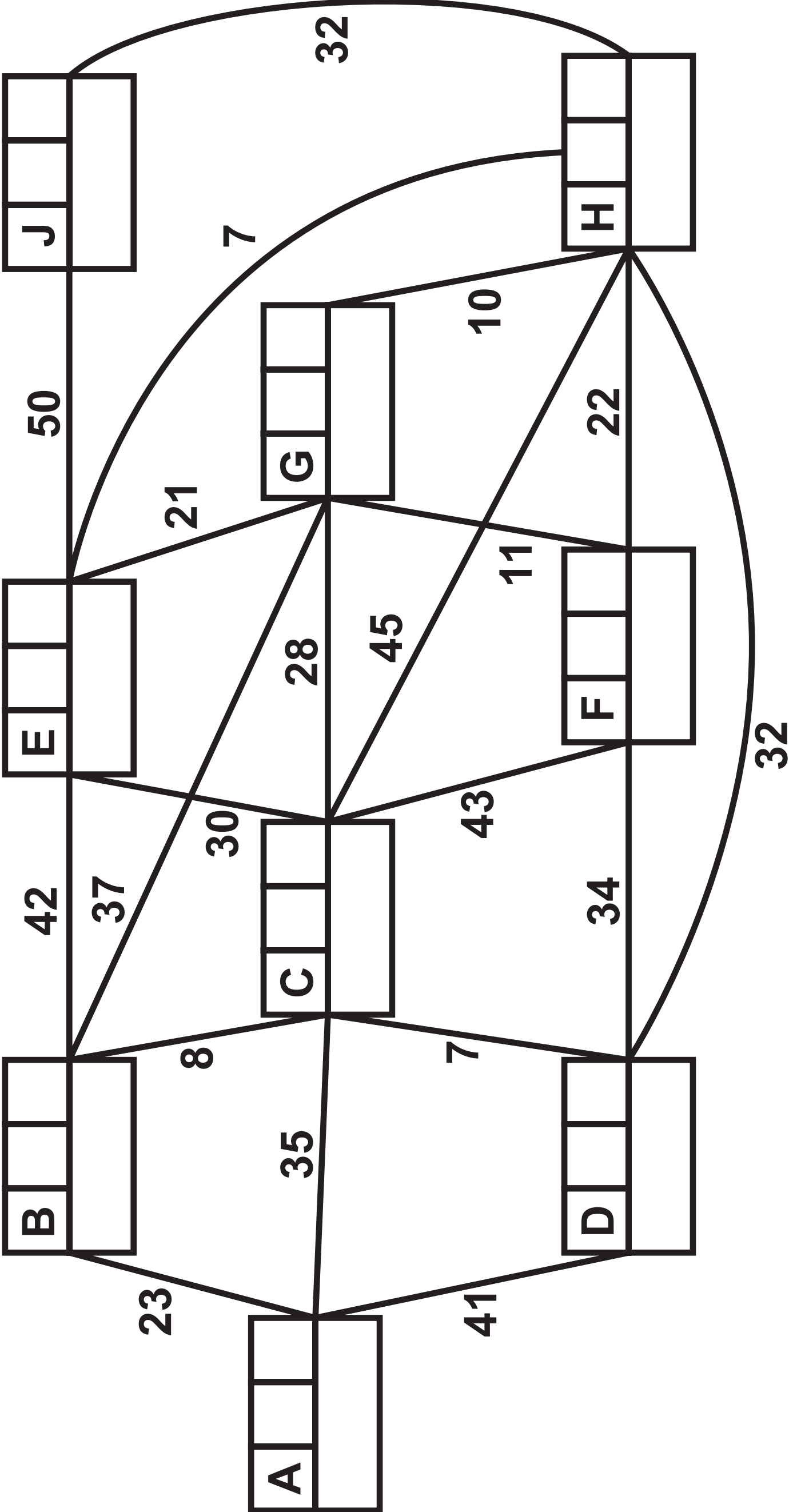
Activity	Number of workers
A	2
B	1
C	2
D	2
E	3
F	2
G	1
H	3

Diagram 8



KEY:

Vertex	Order of labelling	Final value
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Shortest path from A to J: _____

Length of shortest path from A to J: _____

[The total weight of the network is 423]

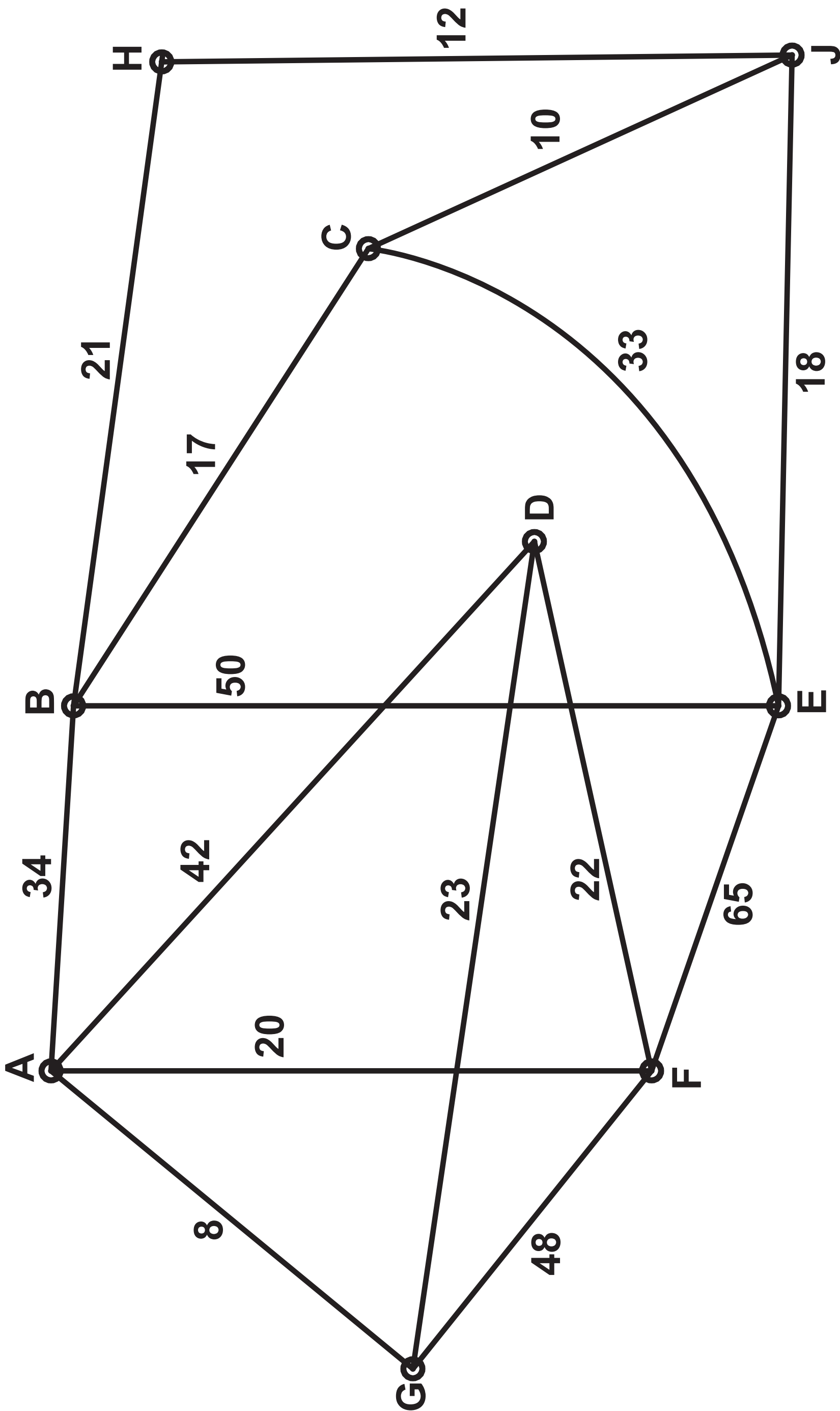
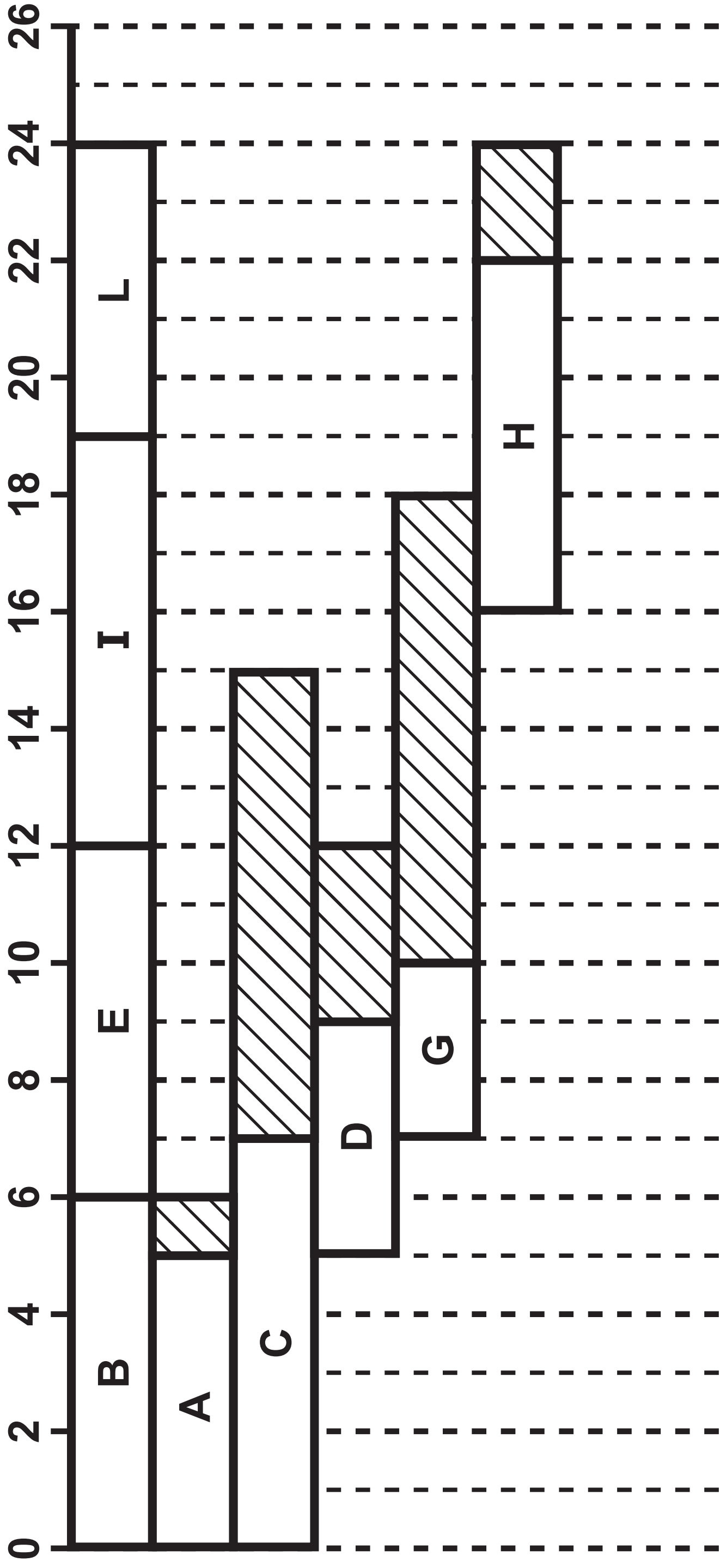


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	A	B	C	D	E	F	G	H	J
A	–	34	51	31	79	20	8	55	61
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J	61	27	10	92	18	81	69	12	–

Diagram 12

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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



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