

Paper Reference 9FM0/3D
Pearson Edexcel
Level 3 GCE

Further Mathematics
Advanced
PAPER 3D: Decision Mathematics 1

Friday 21 June 2024 – Afternoon

Diagram Booklet

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

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.

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	A	B	C	D	E	F	G	H	J
A	—	50	59	26	50	40	87	63	59
B	50	—	28	61	79	63	45	64	48
C	59	28	—	33	57	35	70	36	45
D	26	61	33	—	24	64	71	37	33
E	50	79	57	24	—	40	64	30	31
F	40	63	35	64	40	—	47	70	71
G	87	45	70	71	64	47	—	34	67
H	63	64	36	37	30	70	34	—	33
J	59	48	45	33	31	71	67	33	—

Diagram 2

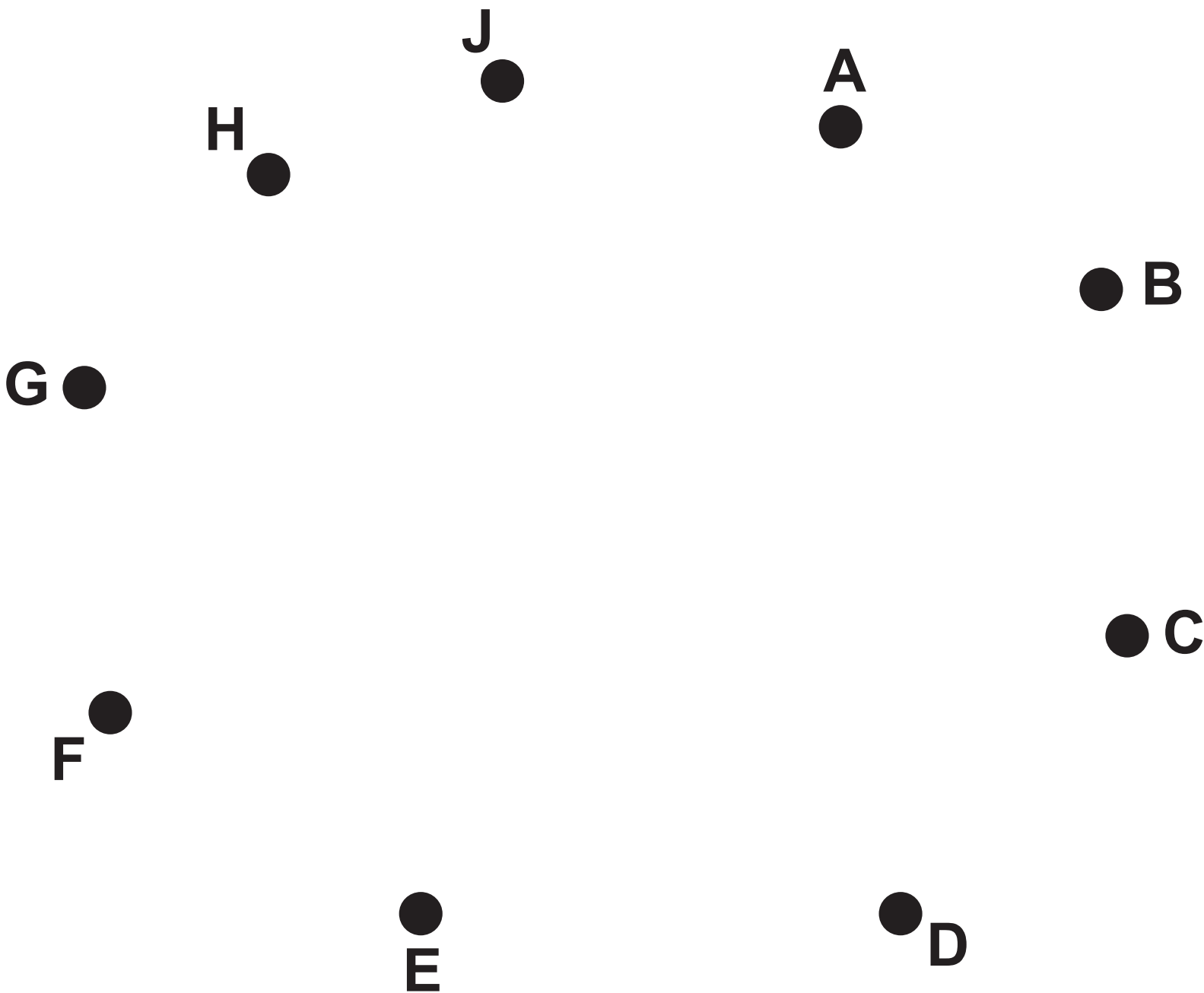


Diagram 3

[The total weight of the network is 413]

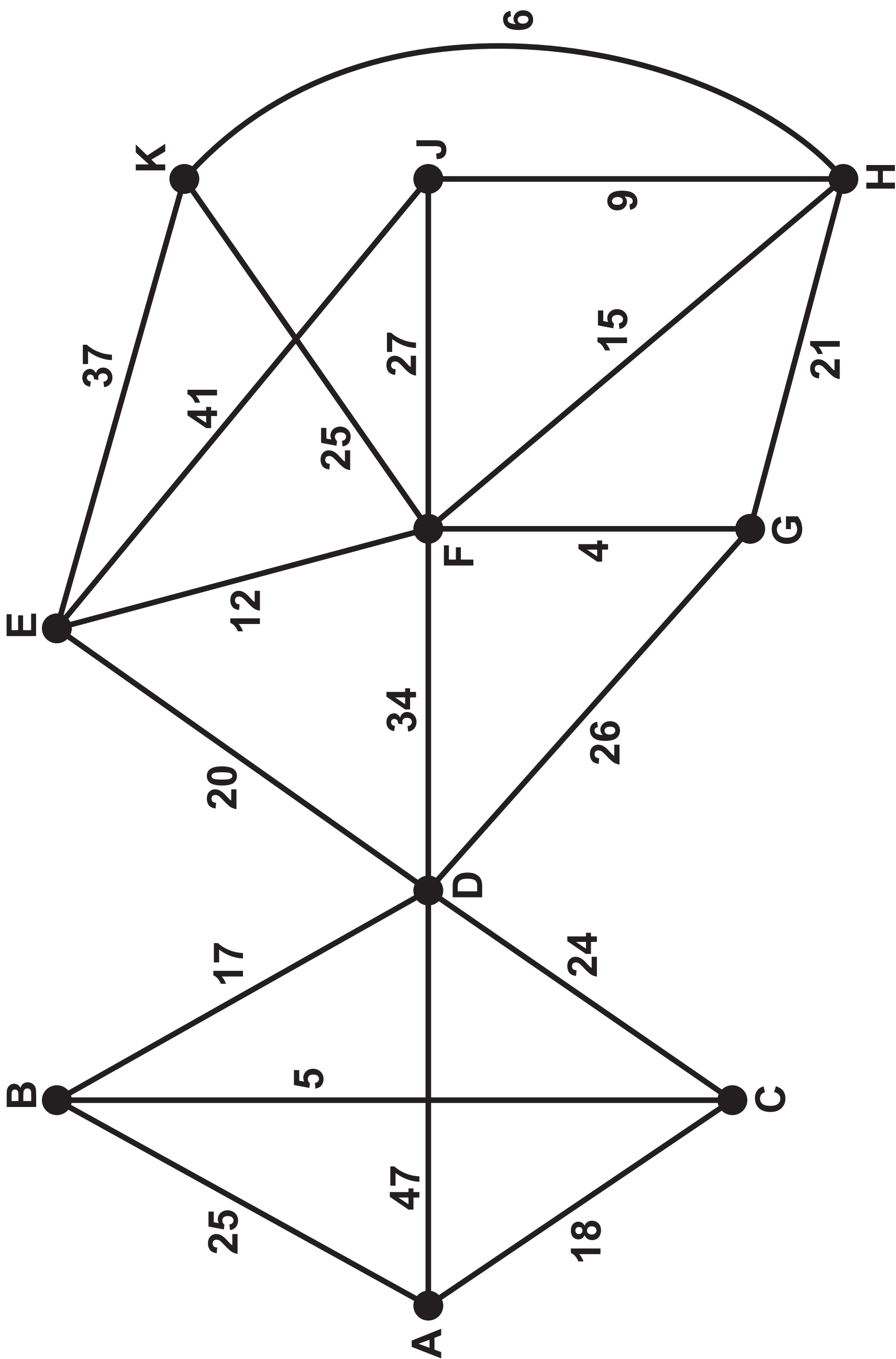
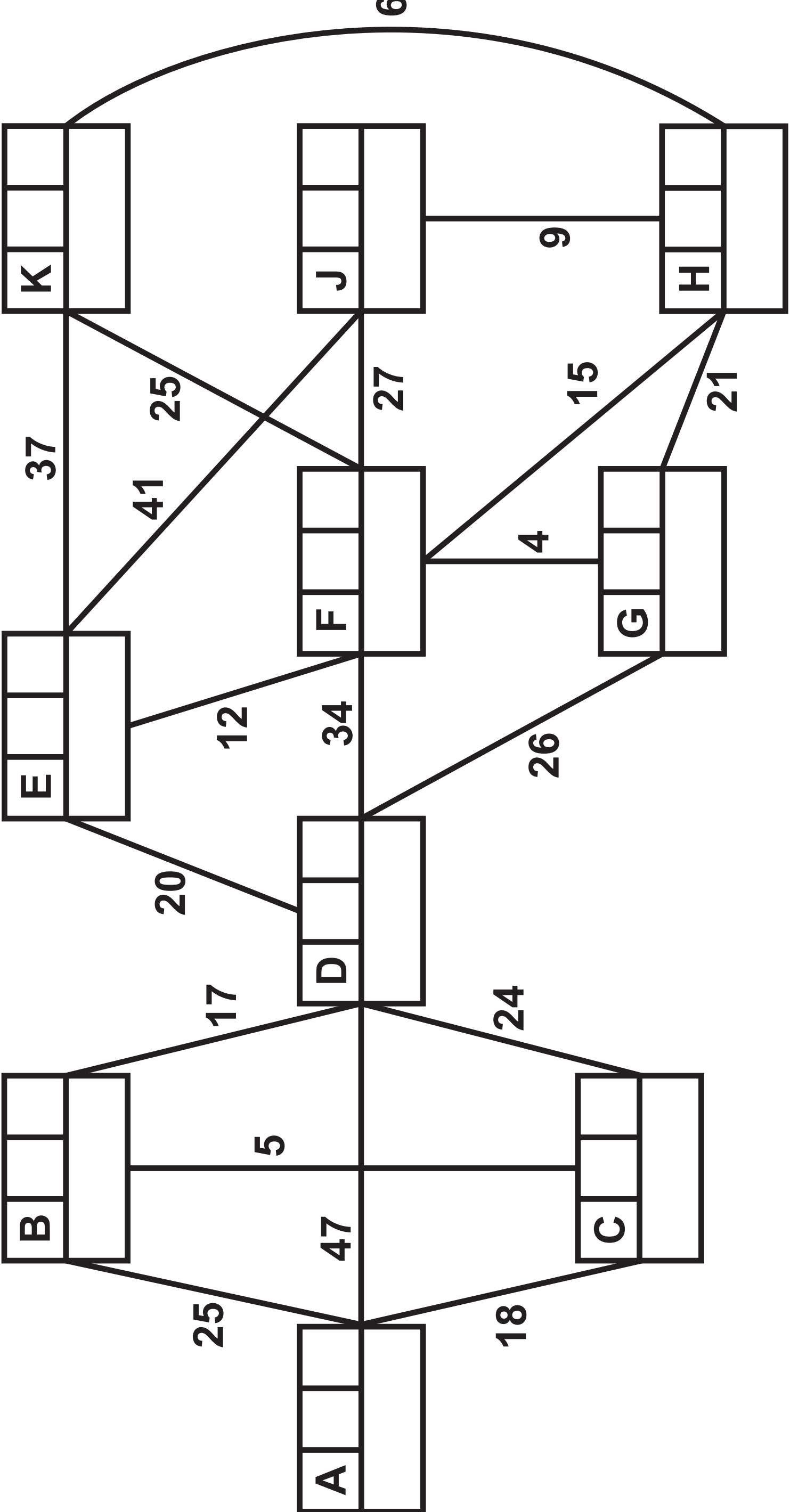


Diagram 4

KEY:

Vertex	Order of labelling	Final value
Working values		



Shortest path from A to J: _____

Diagram 5

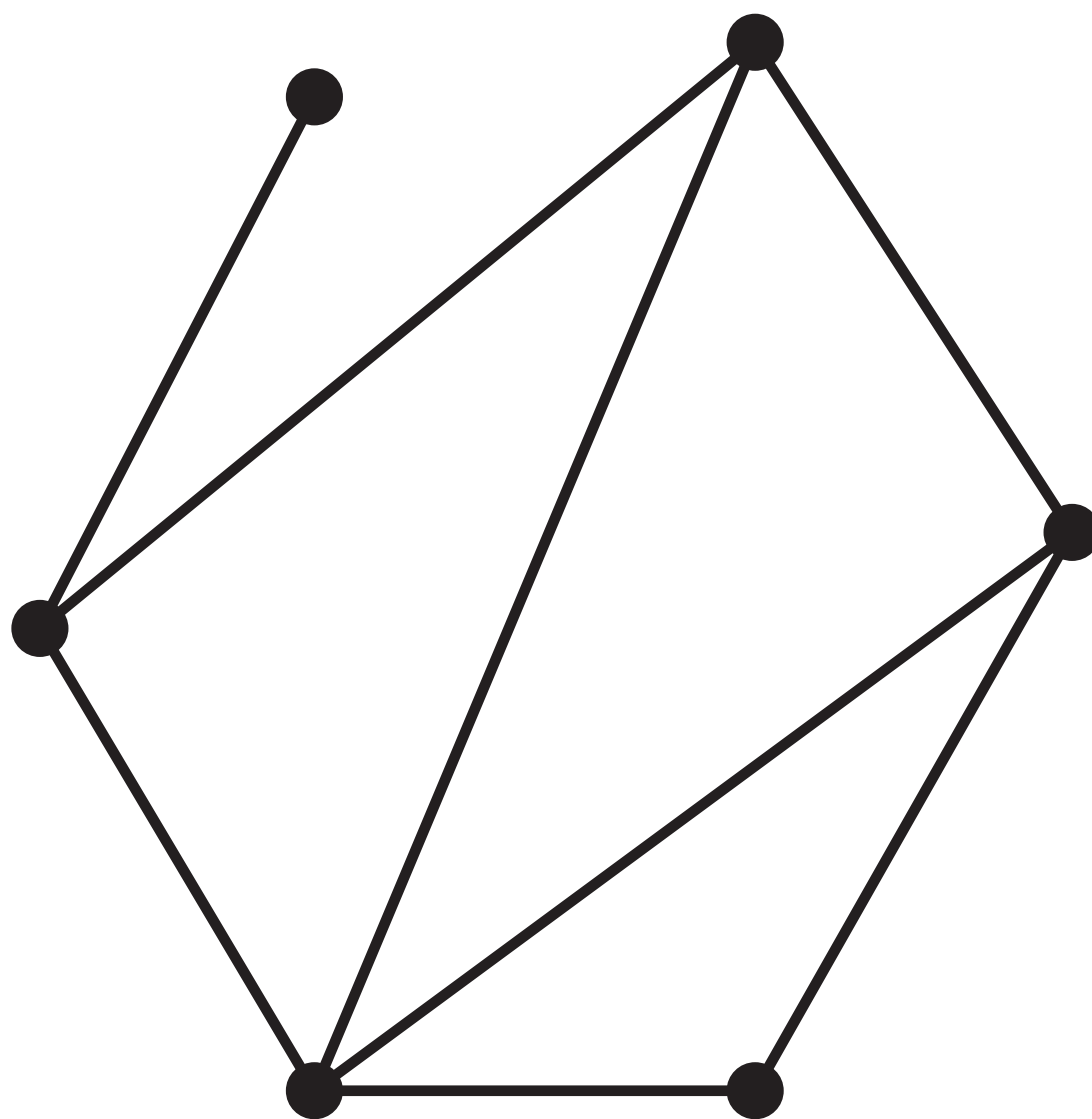


Diagram 6

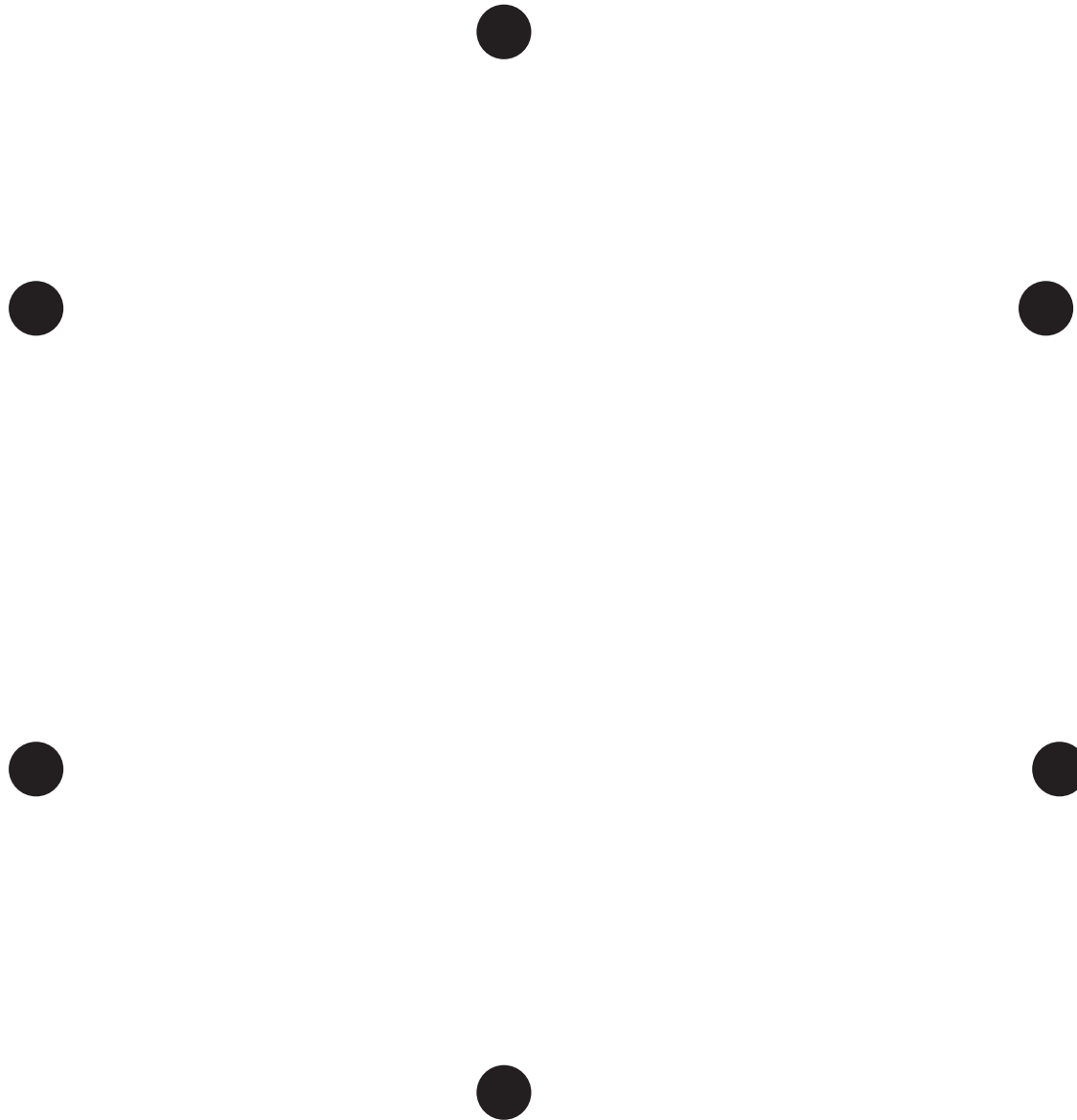


Diagram 7

b.v.	x	y	s ₁	s ₂	s ₃	a ₁	a ₂	Value
x	1	0	$-\frac{3}{5}$	0	$-\frac{1}{5}$	$\frac{3}{5}$	$\frac{1}{5}$	130

Diagram 8

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

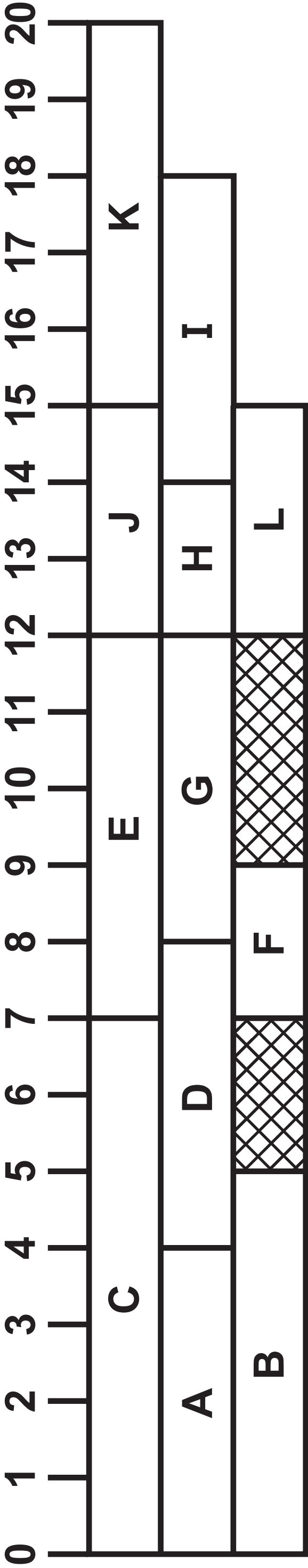


Diagram 10

b.v.	x	y	z	s ₁	s ₂	s ₃	Value
s ₁	0	$-\frac{1}{2}$	$\frac{3}{2}$	1	$-\frac{1}{2}$	0	30
x	1	$\frac{1}{4}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	0	10
s ₃	0	1	1	0	0	1	26
P	0	$-\frac{1}{4}$	$-\frac{11}{4}$	0	$\frac{3}{4}$	0	30

Diagram 11

b.v.	x	y	z	s ₁	s ₂	s ₃	Value
z	0	0	1	$\frac{1}{2}$	$-\frac{1}{4}$	$\frac{1}{4}$	$\frac{43}{2}$
x	1	0	0	$\frac{1}{4}$	$\frac{1}{8}$	$-\frac{1}{8}$	$\frac{57}{4}$
y	0	1	0	$-\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{9}{2}$
P	0	1	0	$\frac{5}{4}$	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{361}{4}$

	A	B	C	D	E	F	G	H	J
A	—	50	59	26	50	40	87	63	59
B	50	—	28	61	79	63	45	64	48
C	59	28	—	33	57	35	70	36	45
D	26	61	33	—	24	64	71	37	33
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H	63	64	36	37	30	70	34	—	33
J	59	48	45	33	31	71	67	33	—

Diagram 2

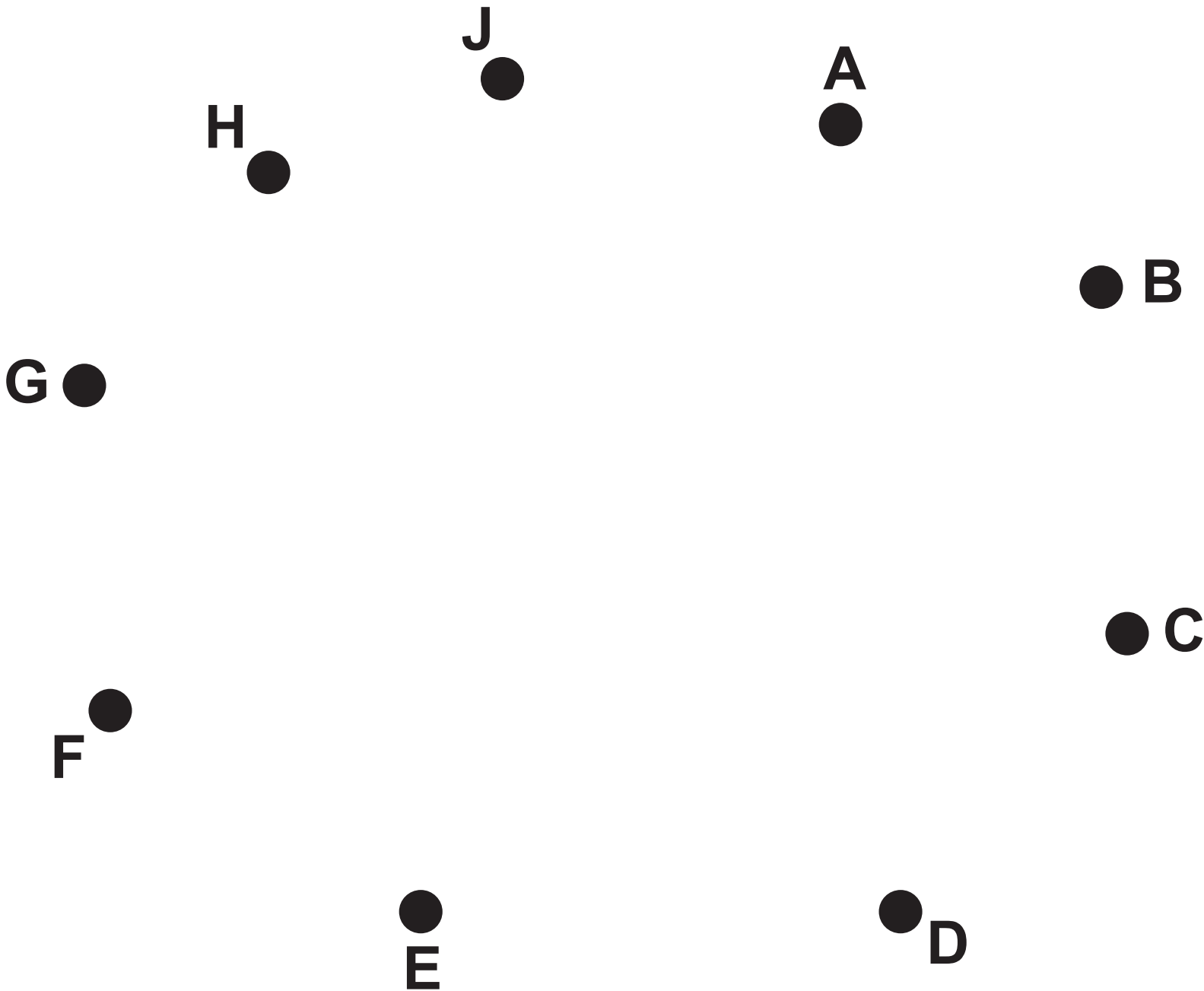


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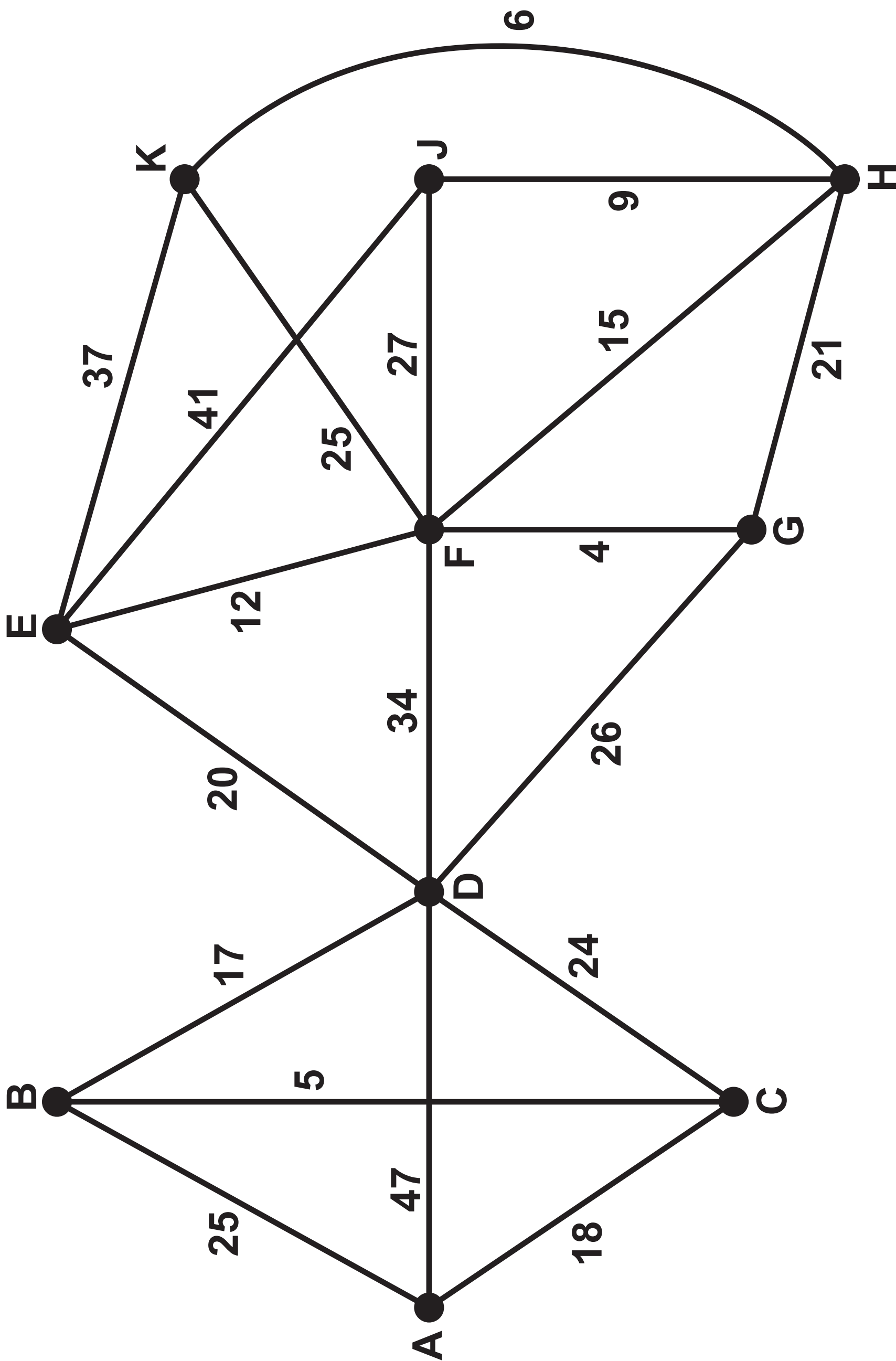
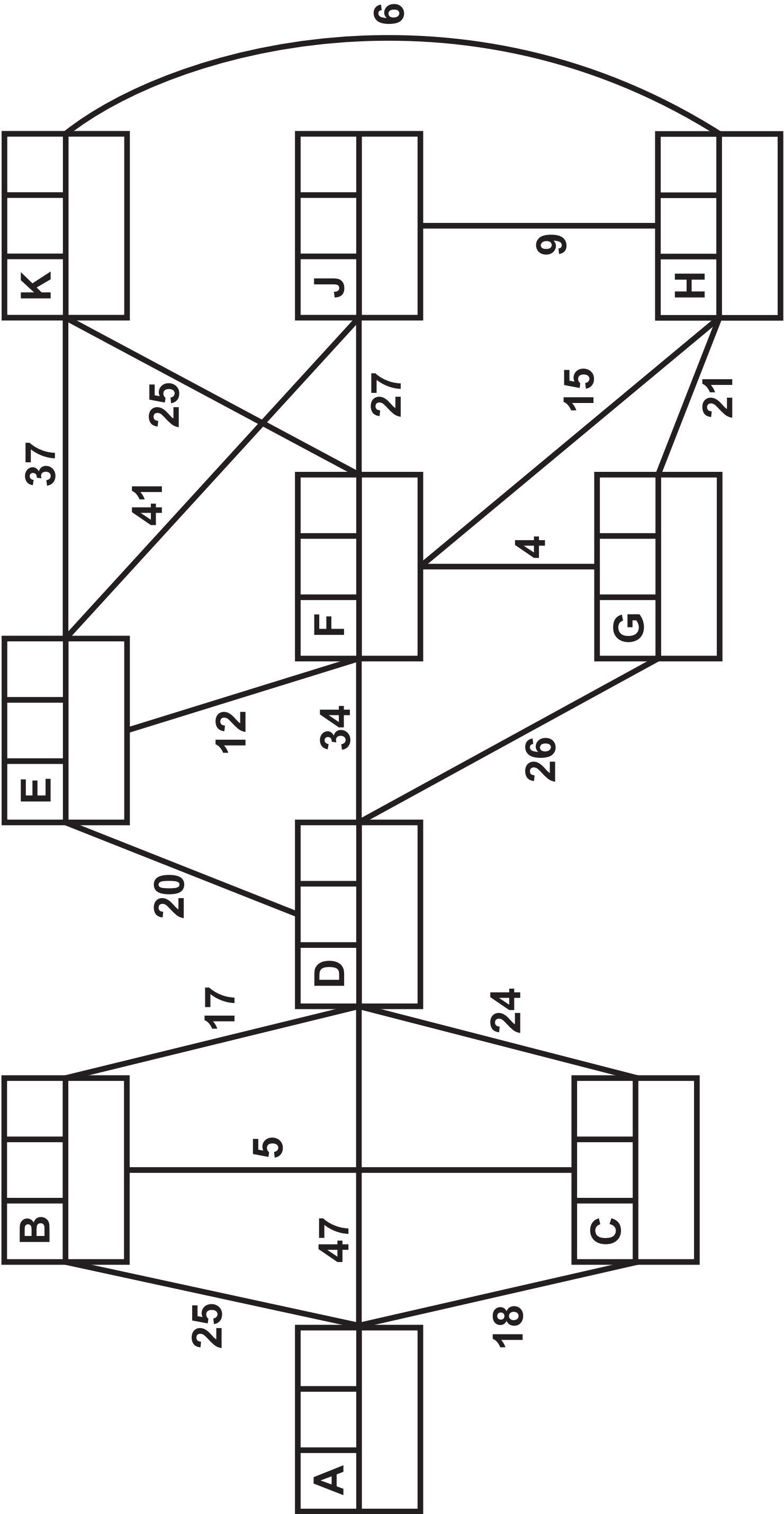


Diagram 4

KEY:

Vertex	Order of labelling	Final value
Working values		



Shortest path from A to J: _____

Diagram 5

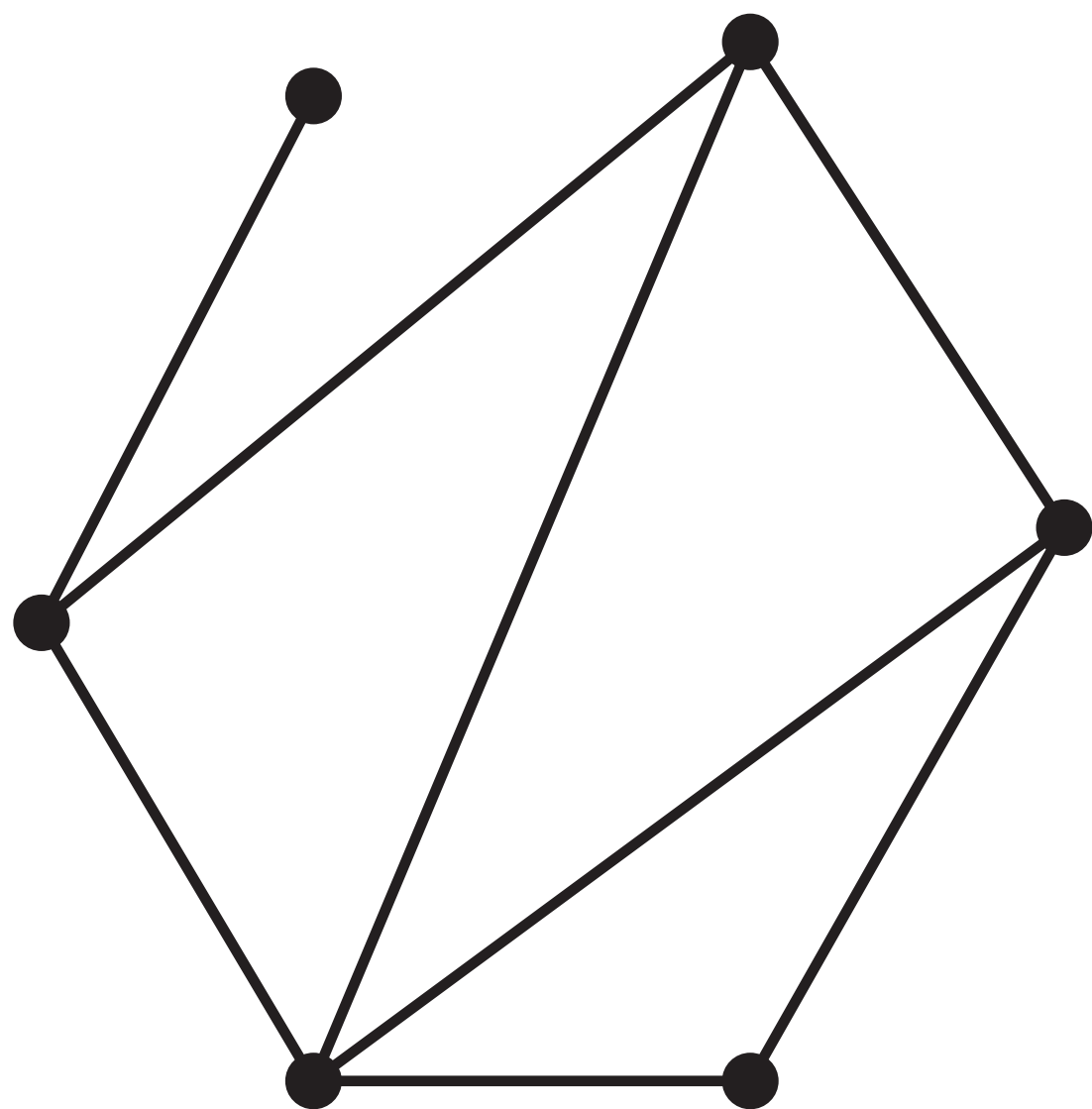


Diagram 6

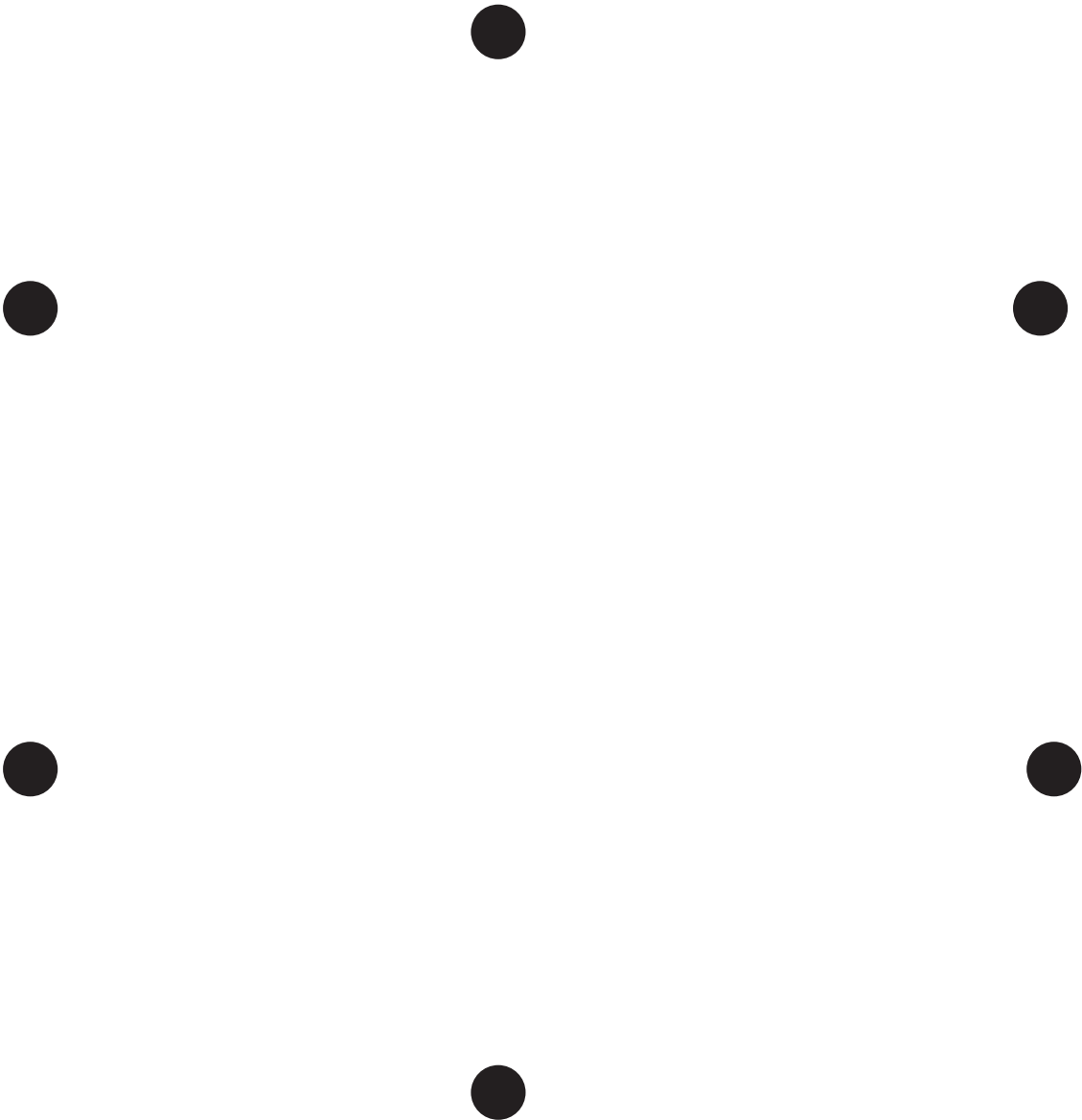


Diagram 7

b.v.	x	y	s ₁	s ₂	s ₃	a ₁	a ₂	Value
x	1	0	$-\frac{3}{5}$	0	$-\frac{1}{5}$	$\frac{3}{5}$	$\frac{1}{5}$	130

Diagram 8

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

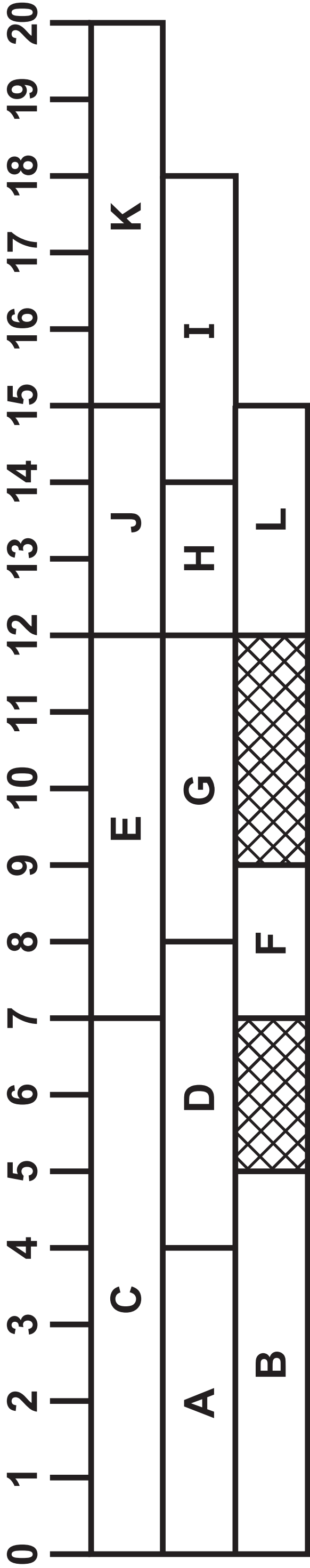


Diagram 10

b.v.	x	y	z	s ₁	s ₂	s ₃	Value
s ₁	0	$-\frac{1}{2}$	$\frac{3}{2}$	1	$-\frac{1}{2}$	0	30
x	1	$\frac{1}{4}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	0	10
s ₃	0	1	1	0	0	1	26
P	0	$-\frac{1}{4}$	$-\frac{11}{4}$	0	$\frac{3}{4}$	0	30

Diagram 11

b.v.	x	y	z	s ₁	s ₂	s ₃	Value
z	0	0	1	$\frac{1}{2}$	$-\frac{1}{4}$	$\frac{1}{4}$	$\frac{43}{2}$
x	1	0	0	$\frac{1}{4}$	$\frac{1}{8}$	$-\frac{1}{8}$	$\frac{57}{4}$
y	0	1	0	$-\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{9}{2}$
P	0	1	0	$\frac{5}{4}$	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{361}{4}$