

Astronomy
PAPER 1: Naked-eye Astronomy

Wednesday 12 June 2024 – Morning

Time: 1 hour 45 minutes

Diagram Booklet

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER 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 may be spare copies of some diagrams in case you need them.

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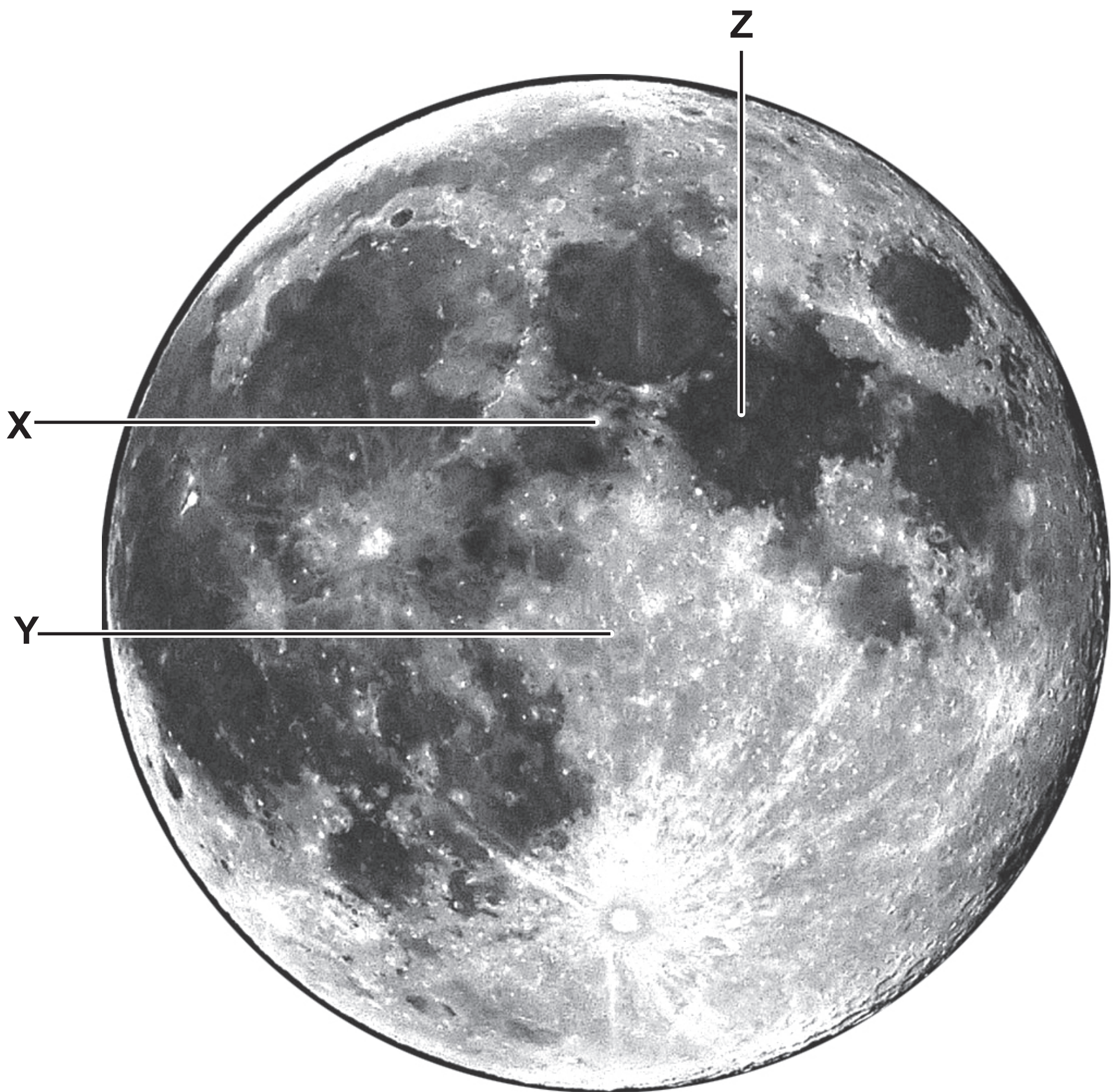
3–4	Question 1(a)
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10	Question 7(b)
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Spare Copies

14	Question 7(a)
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Question 1(a)

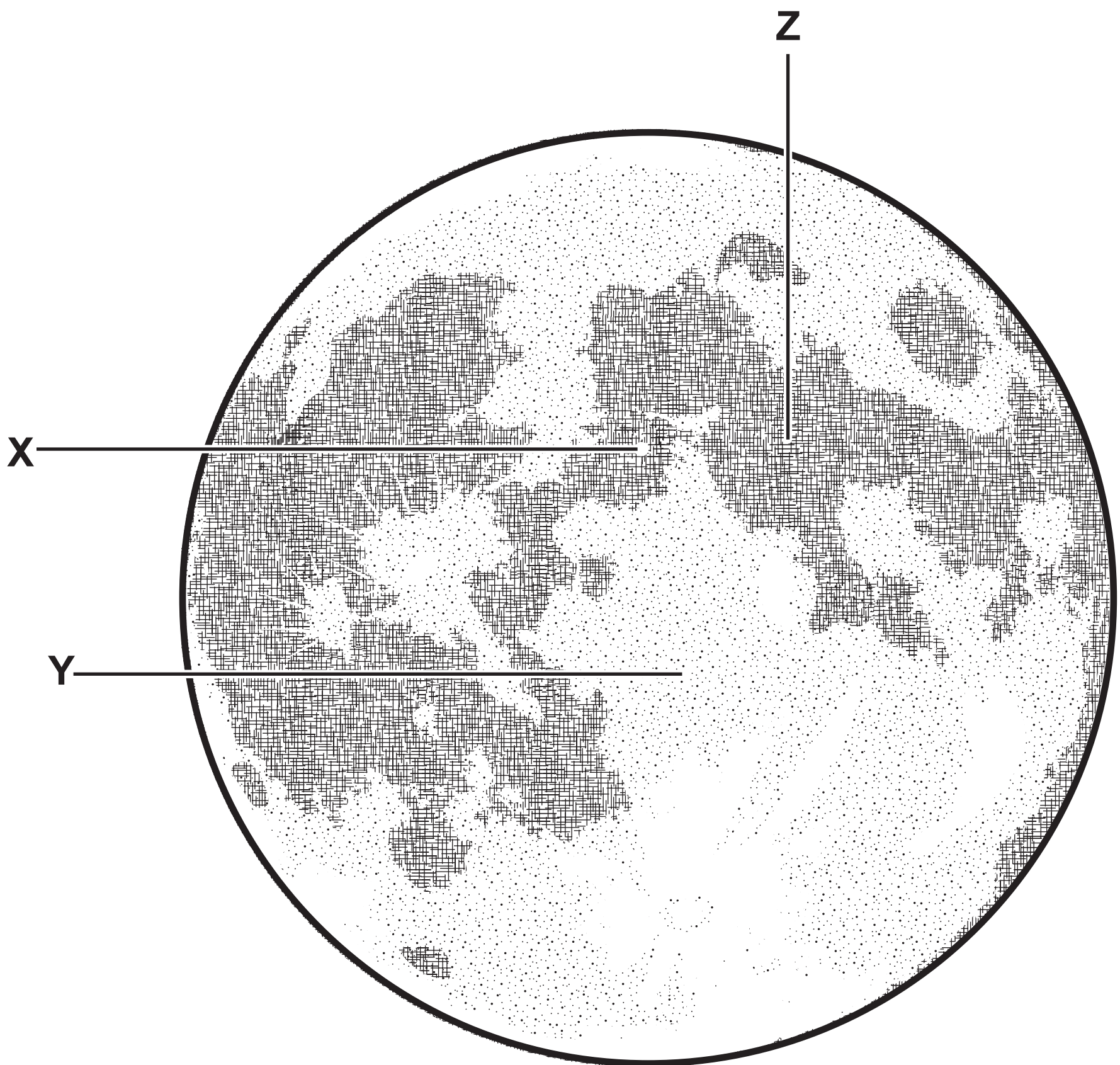
FIGURE 1 – image of the full Moon



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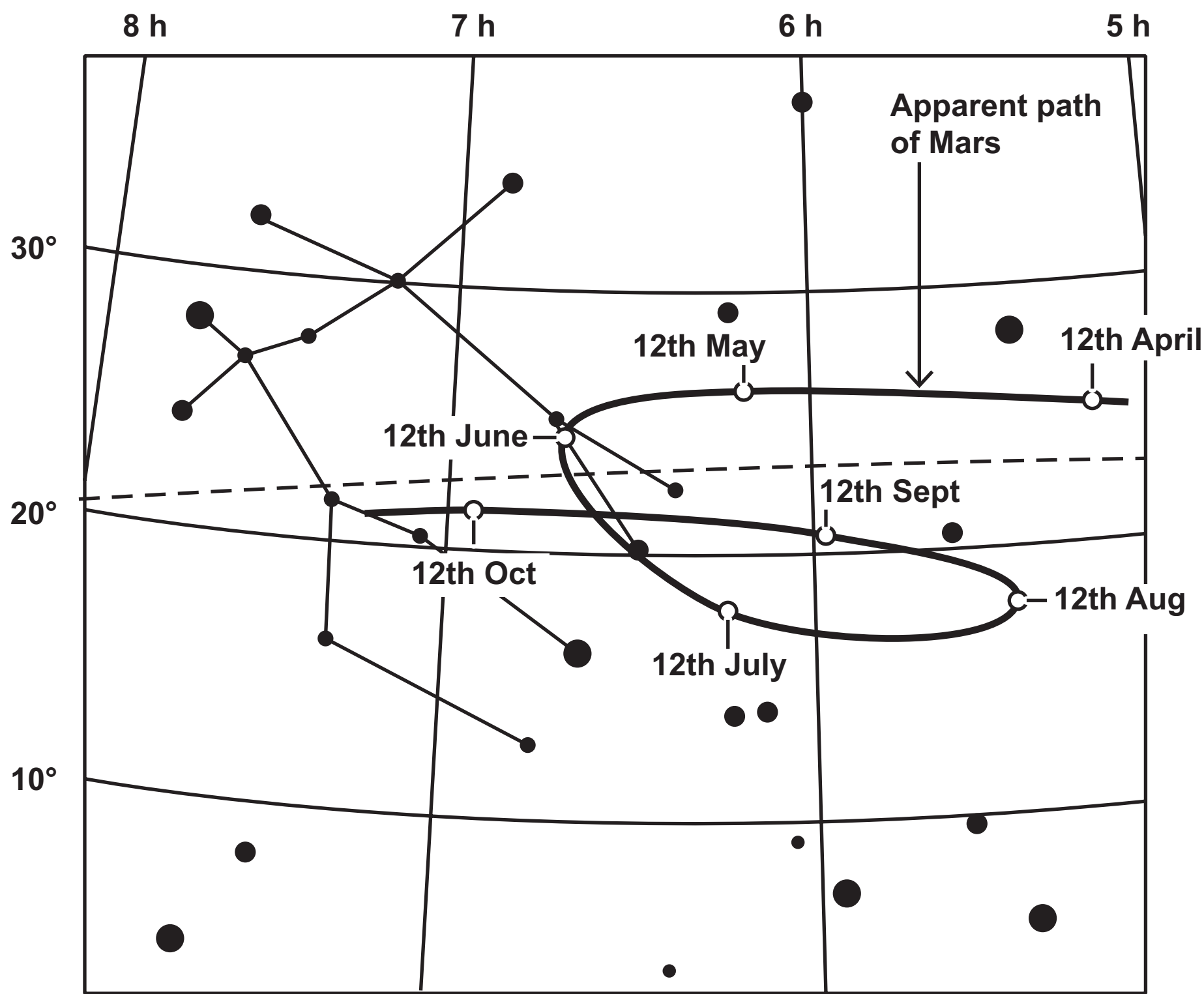
Question 1(a) continued.

FIGURE 1 – line drawing of the full Moon



Question 4

FIGURE 2



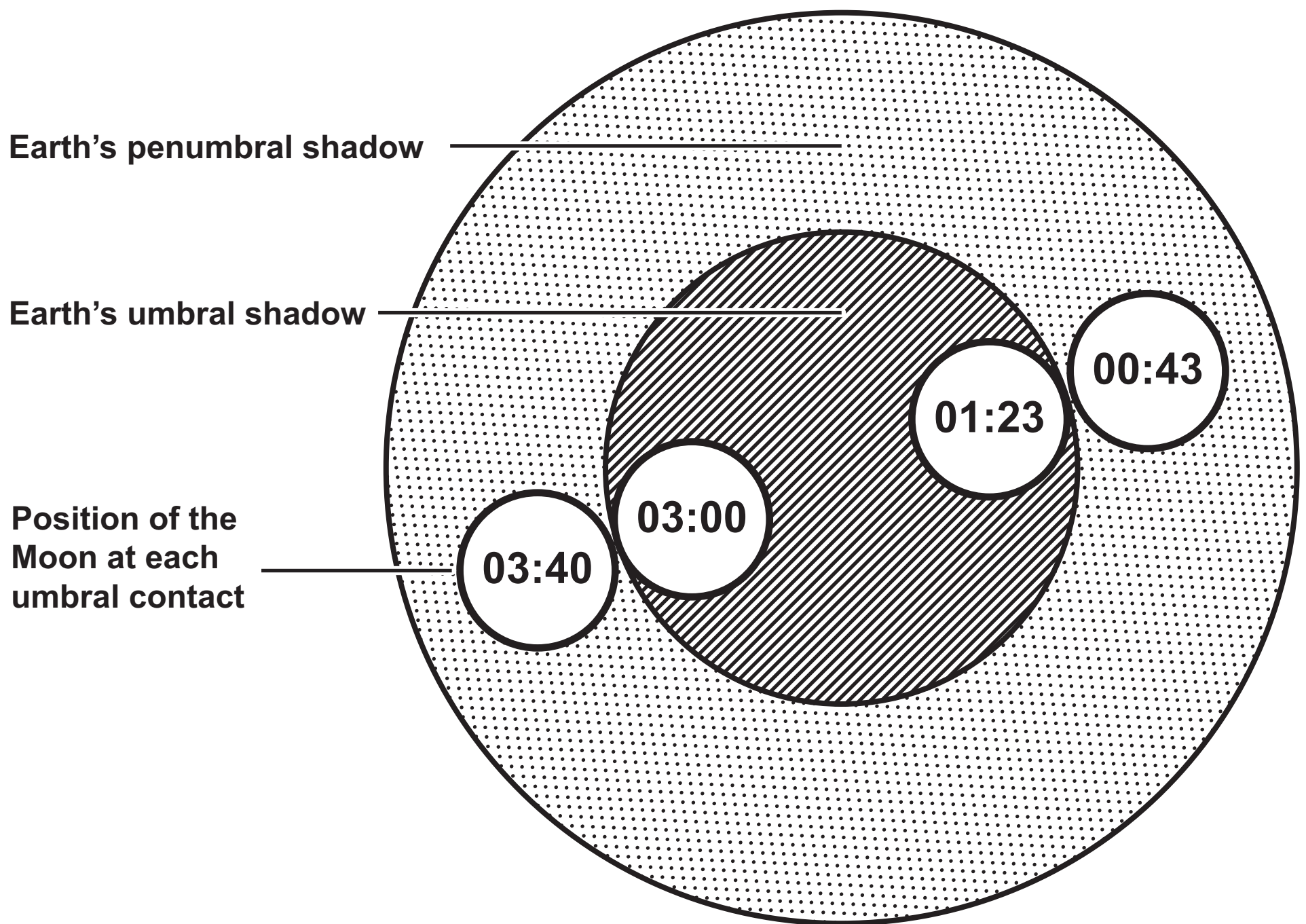
Question 5(a)

TABLE 1

Date	Level of water (m)			
	First high tide	First low tide	Second high tide	Second low tide
19 Oct	5·3	1·9	5·2	2·0
21 Oct	4·9	2·3	4·9	2·4
23 Oct	4·6	2·5	4·7	2·5
25 Oct	4·9	2·4	5·0	2·3
27 Oct	5·3	2·0	5·4	1·9
29 Oct	5·6	1·8	5·6	1·7
31 Oct	5·5	1·8	5·3	2·0

Question 5(b)

FIGURE 3



Question 6(c)

TABLE 2

Moon of Jupiter	Mean orbital radius (million km)	Orbital period (days)
Io	0.422	1.76
Europa	0.670	3.52
Ganymede	1.075	

Question 7(a)

FIGURE 4



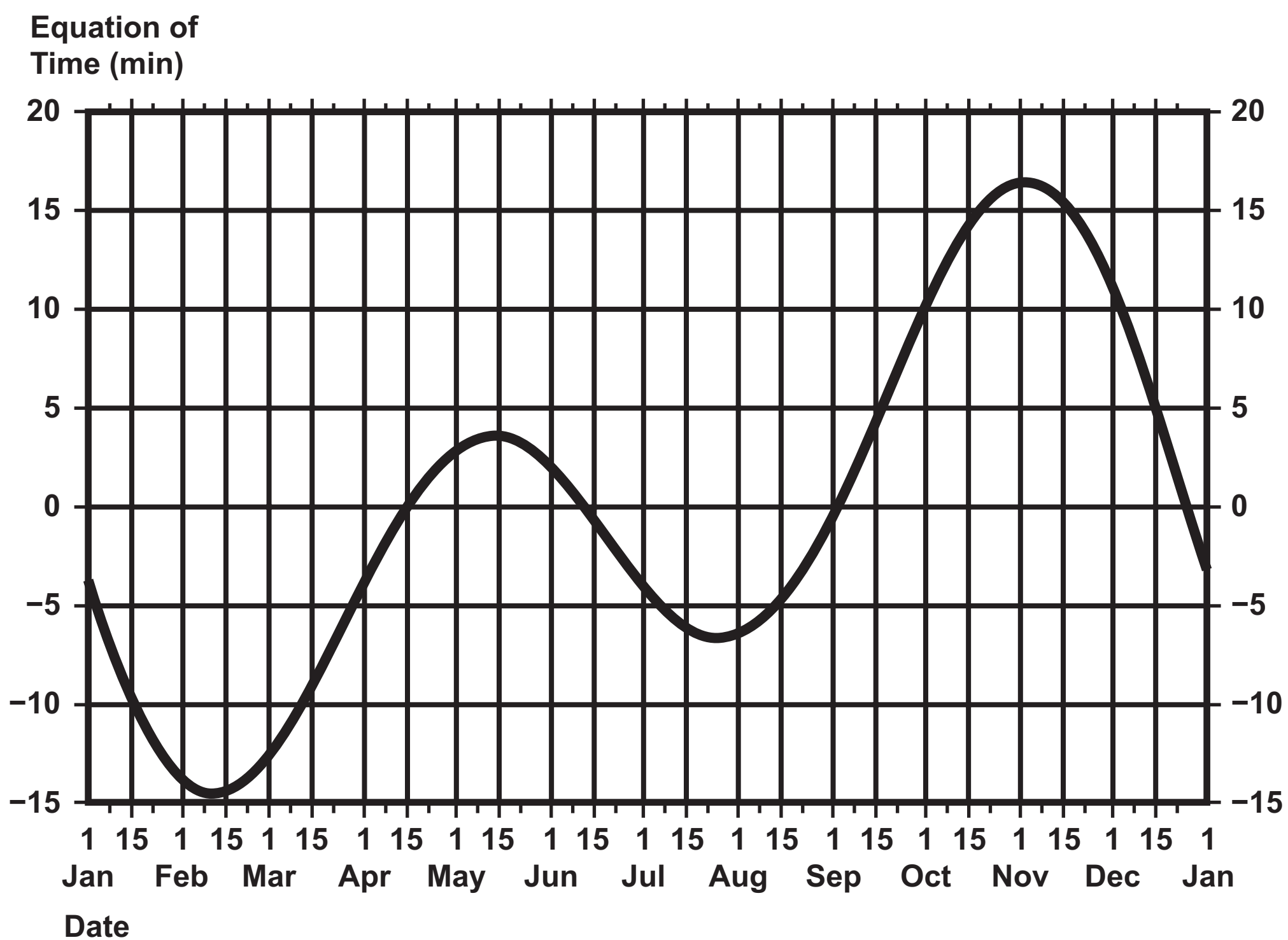
Question 7(b)

TABLE 3

Date	Duration of observation (seconds)	Number of times Polaris was observed to twinkle
10th March	25	12
11th March	15	8
12th March	30	20
13th March	20	17

Question 9(b)

FIGURE 5



Question 9(d)

FIGURE 6

KEY

Earth's elliptical orbit

●●●●●●●●●● Earth's axial tilt

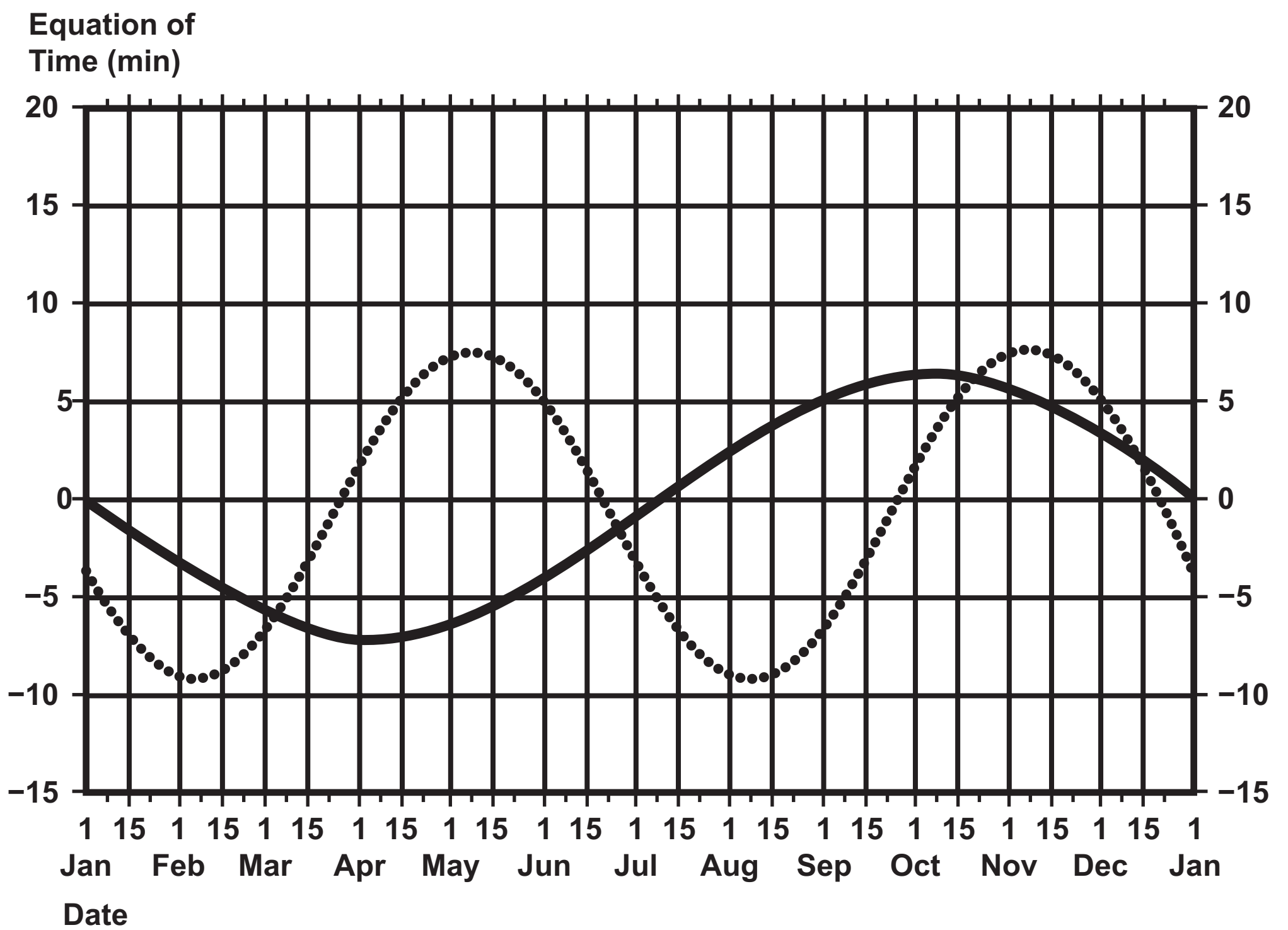
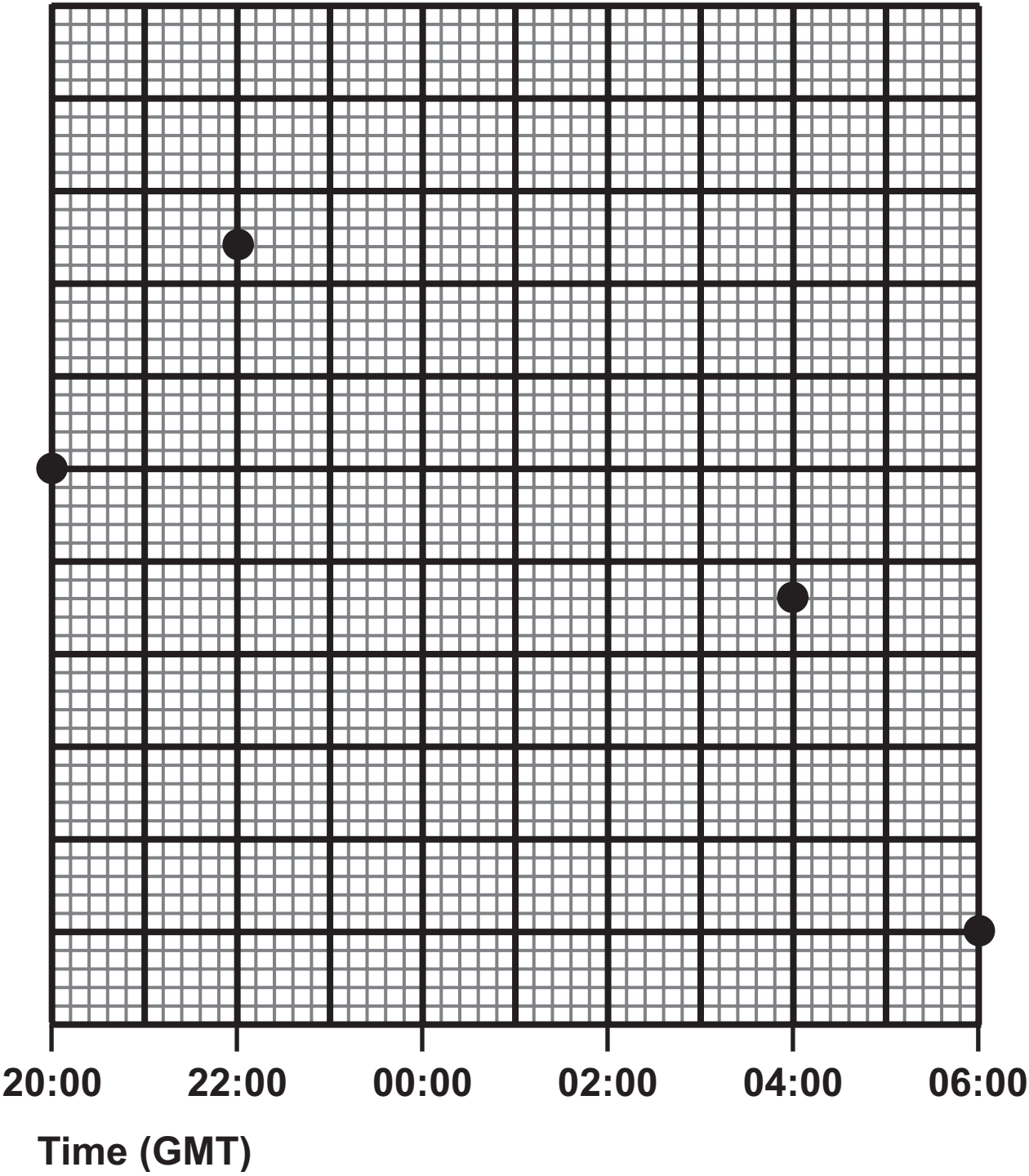


TABLE 4

Time (GMT)	Altitude of star A (°)
20:00	40
22:00	52
00:00	55
02:00	48
04:00	33
06:00	15

FIGURE 7

Altitude of star (°)



Question 7(a)

FIGURE 4

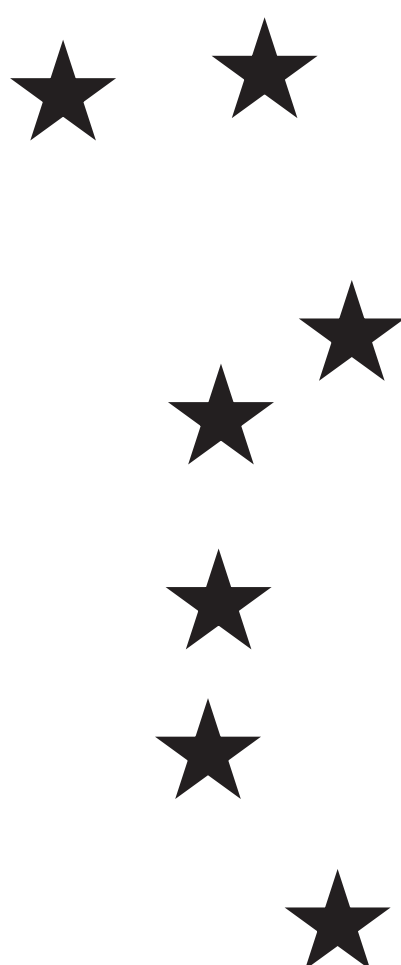


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FIGURE 7

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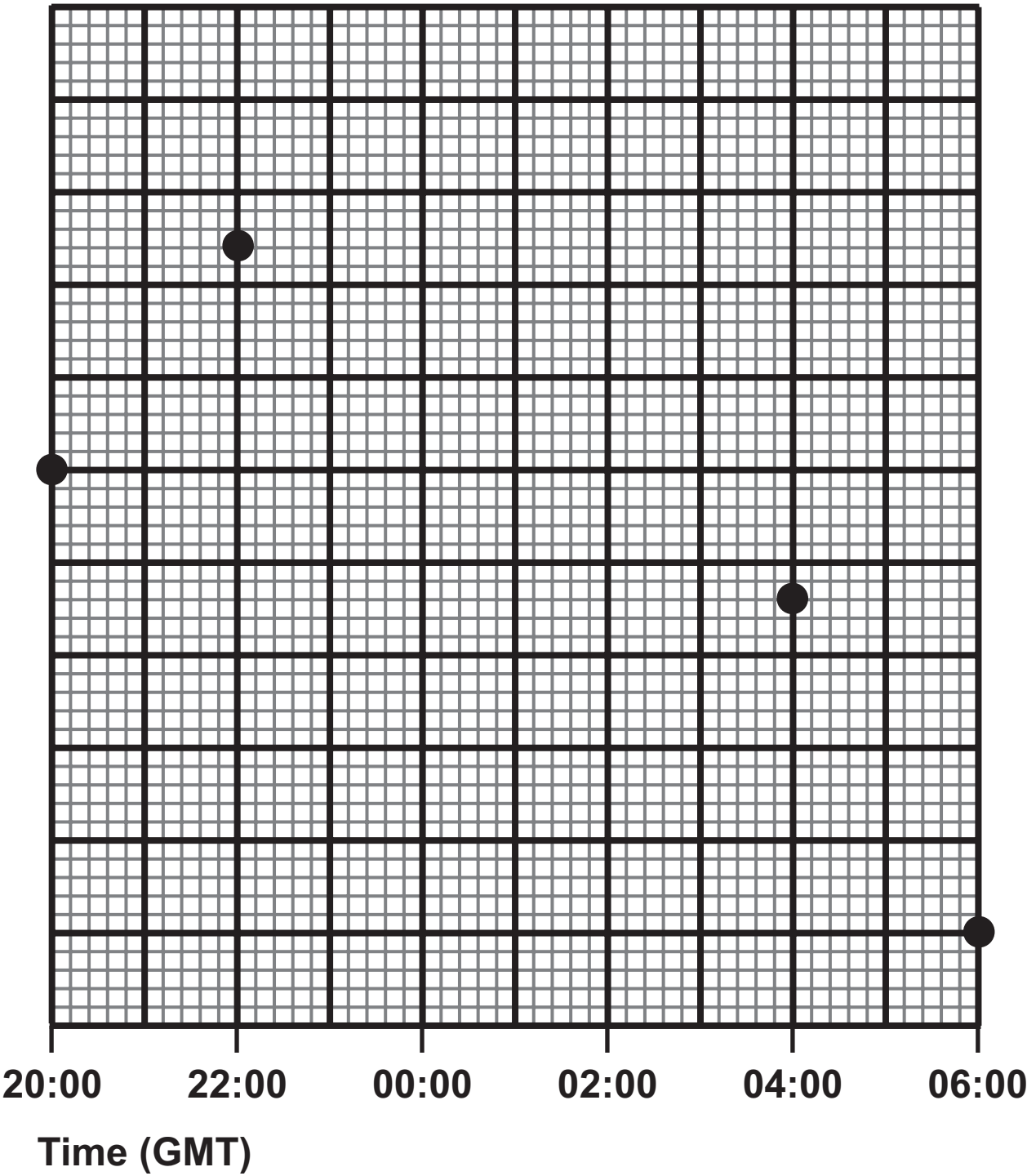


IMAGE CREDITS

Figure 5 – Source adapted from: © Dominic Ford 2011–2024. Taken from in-the-sky.org.