

Astronomy
PAPER 1: Naked-eye Astronomy

Diagram Booklet

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.

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

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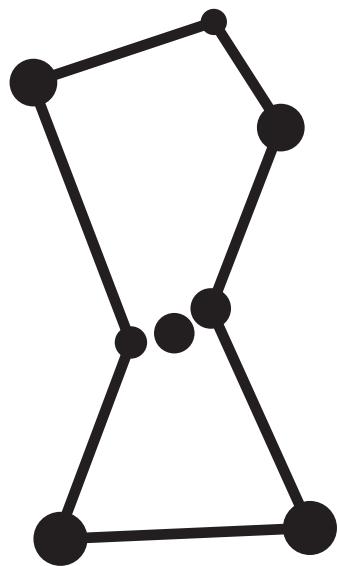
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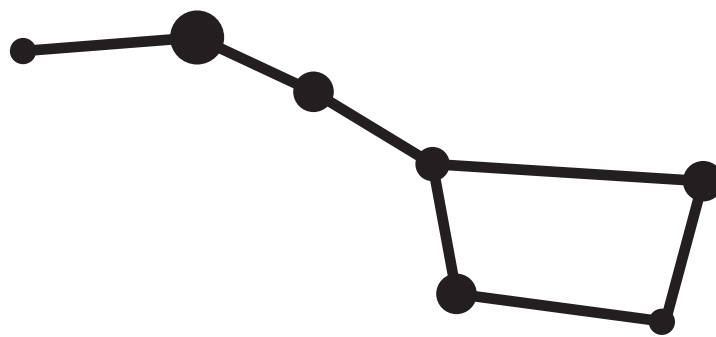
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Question 1(a)

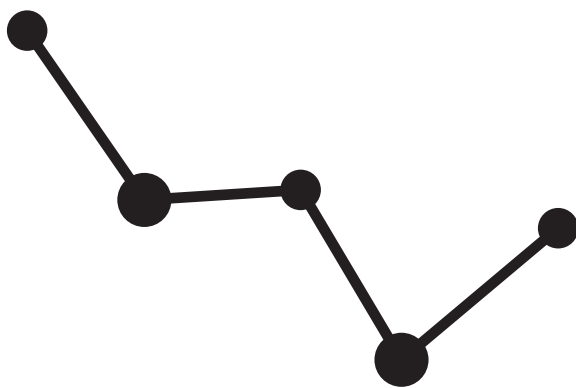
FIGURE 1



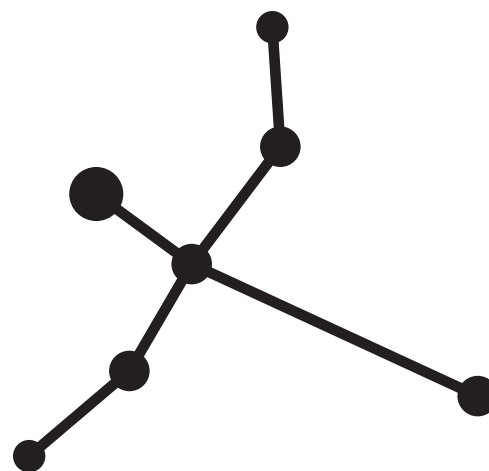
Sketch A



Sketch B



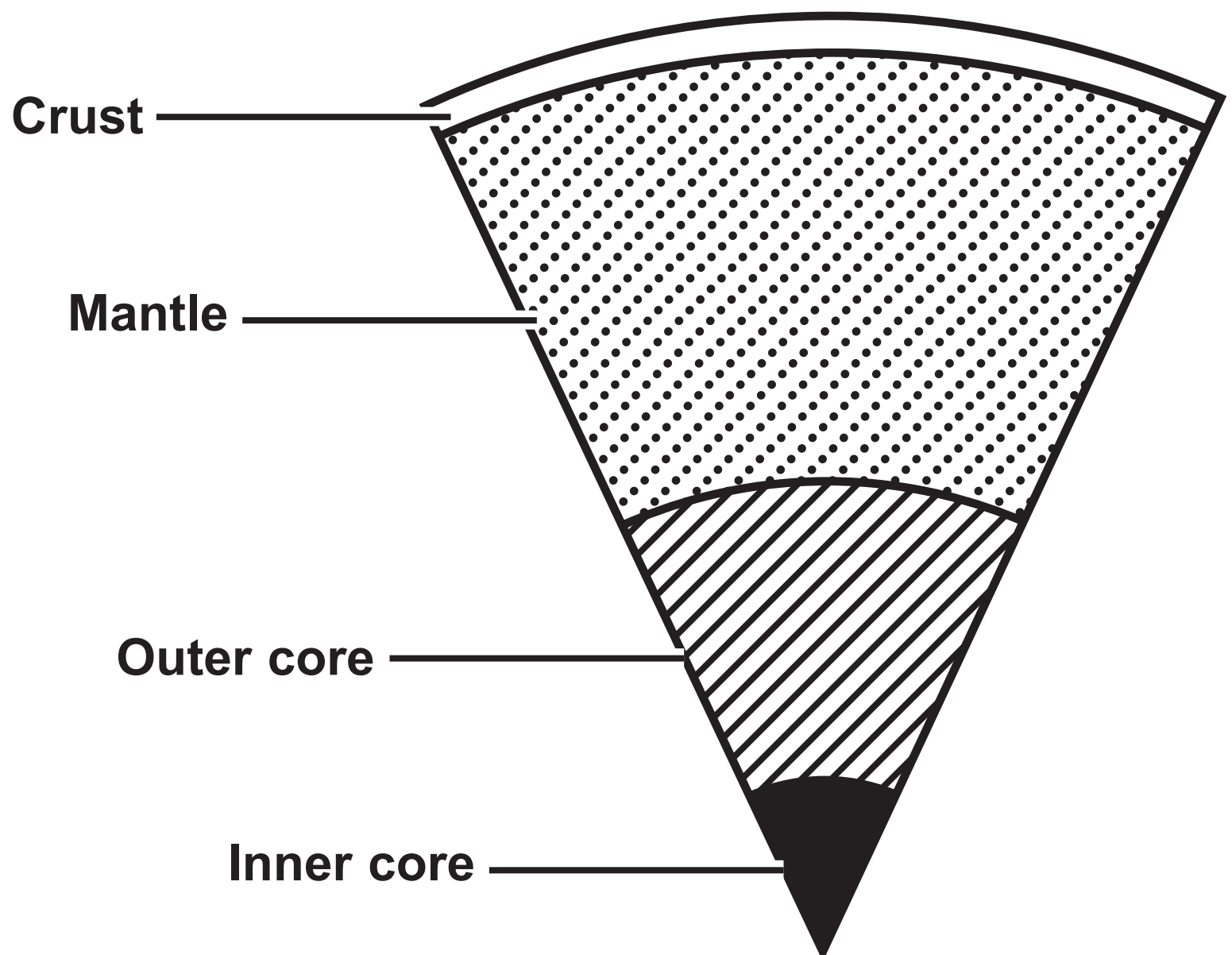
Sketch C



Sketch D

Question 2(a)

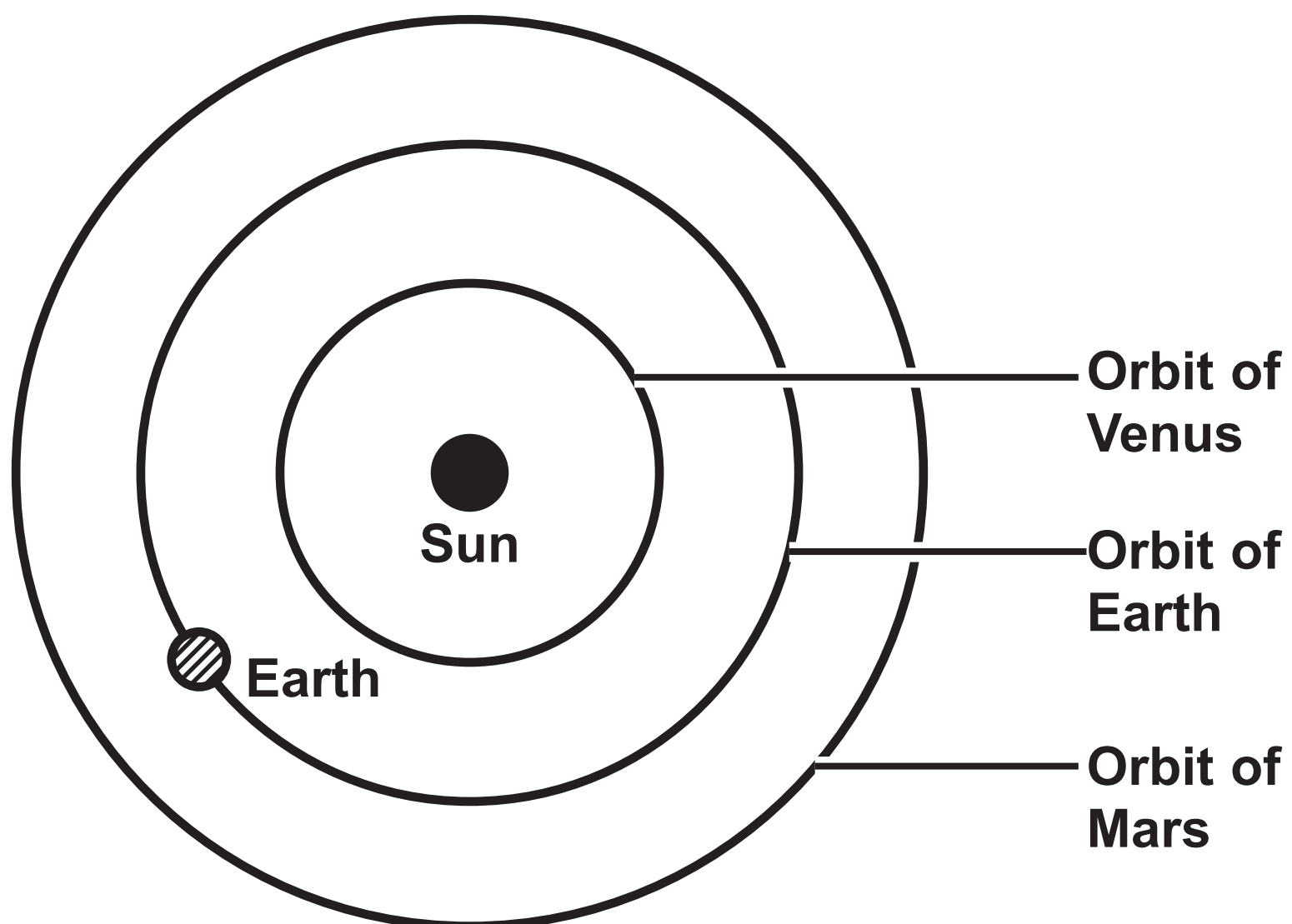
FIGURE 2



Question 3(a)

FIGURE 3

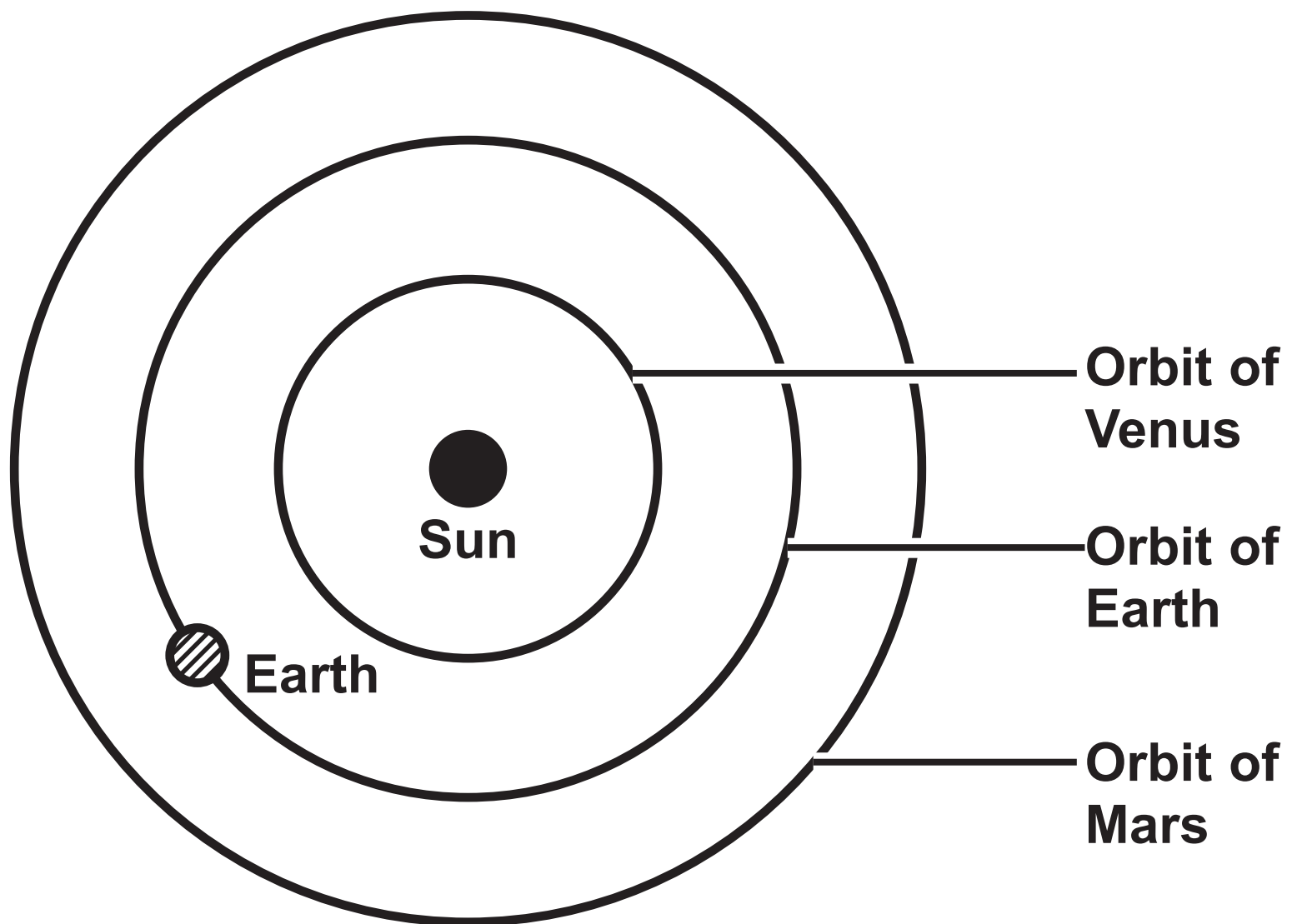
Not to scale



Question 3(a)

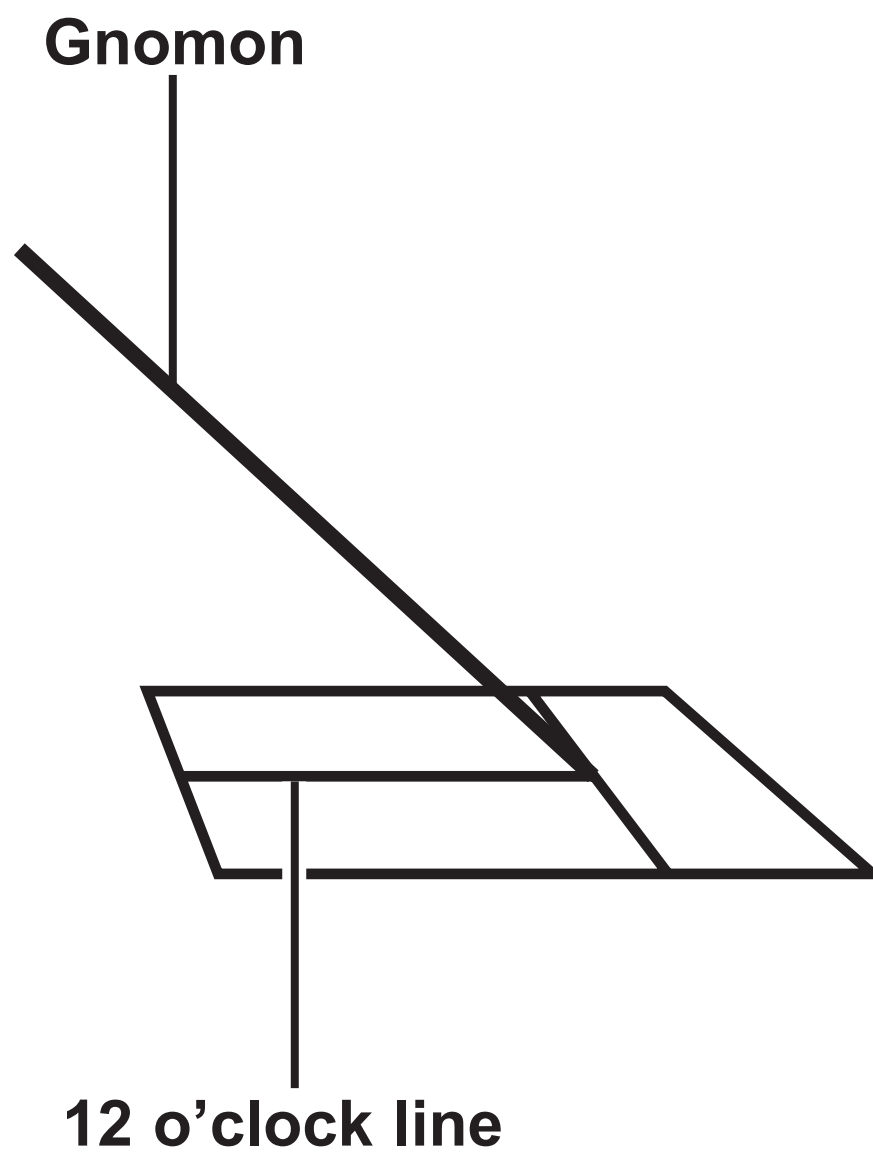
FIGURE 3

Not to scale



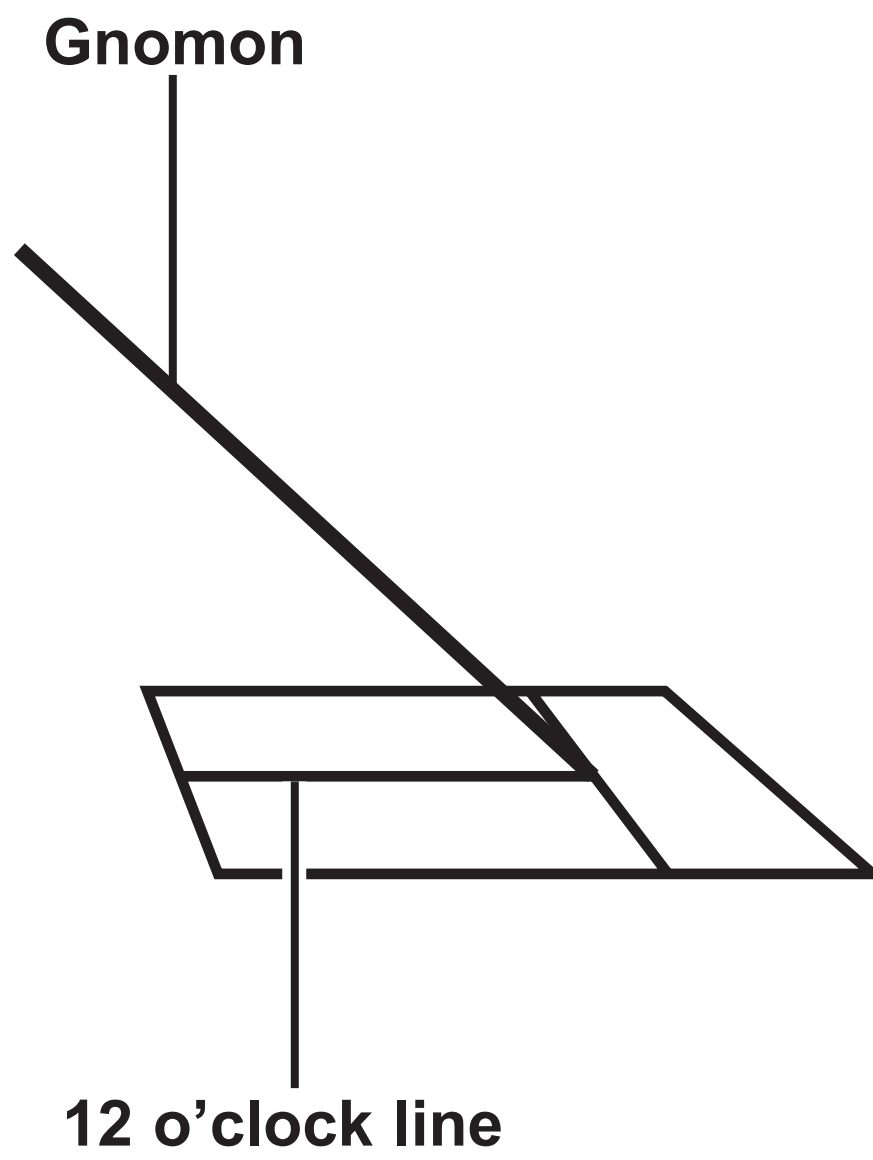
Question 4(b)

FIGURE 4



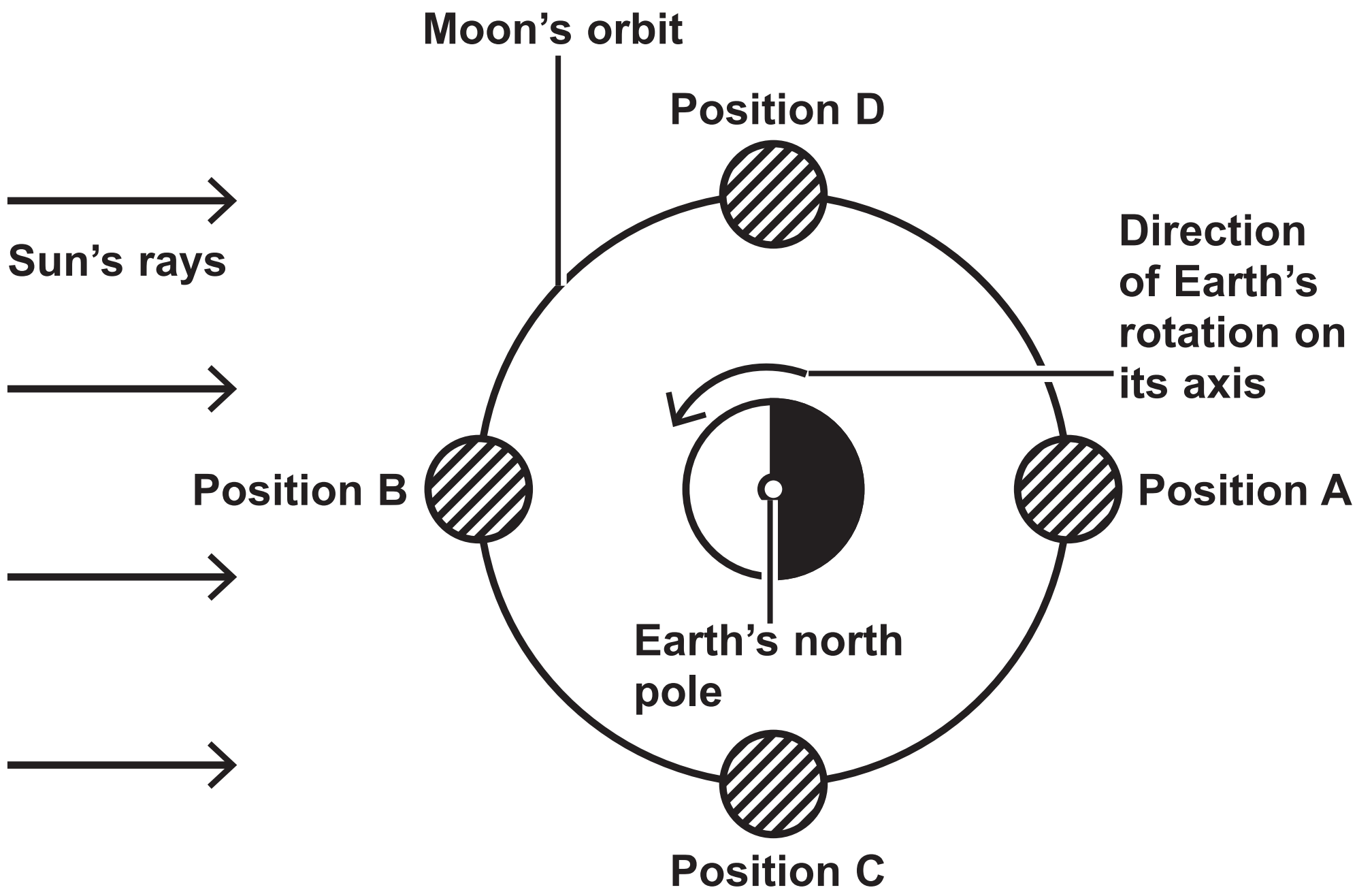
Question 4(b)

FIGURE 4



Question 5(a)

FIGURE 5



Question 5(a)

TABLE 1

Position	Name of the Moon's phase when seen from Earth	Time at which the Moon will cross the observer's meridian
A	Full	00:00 (midnight)
B		
C		

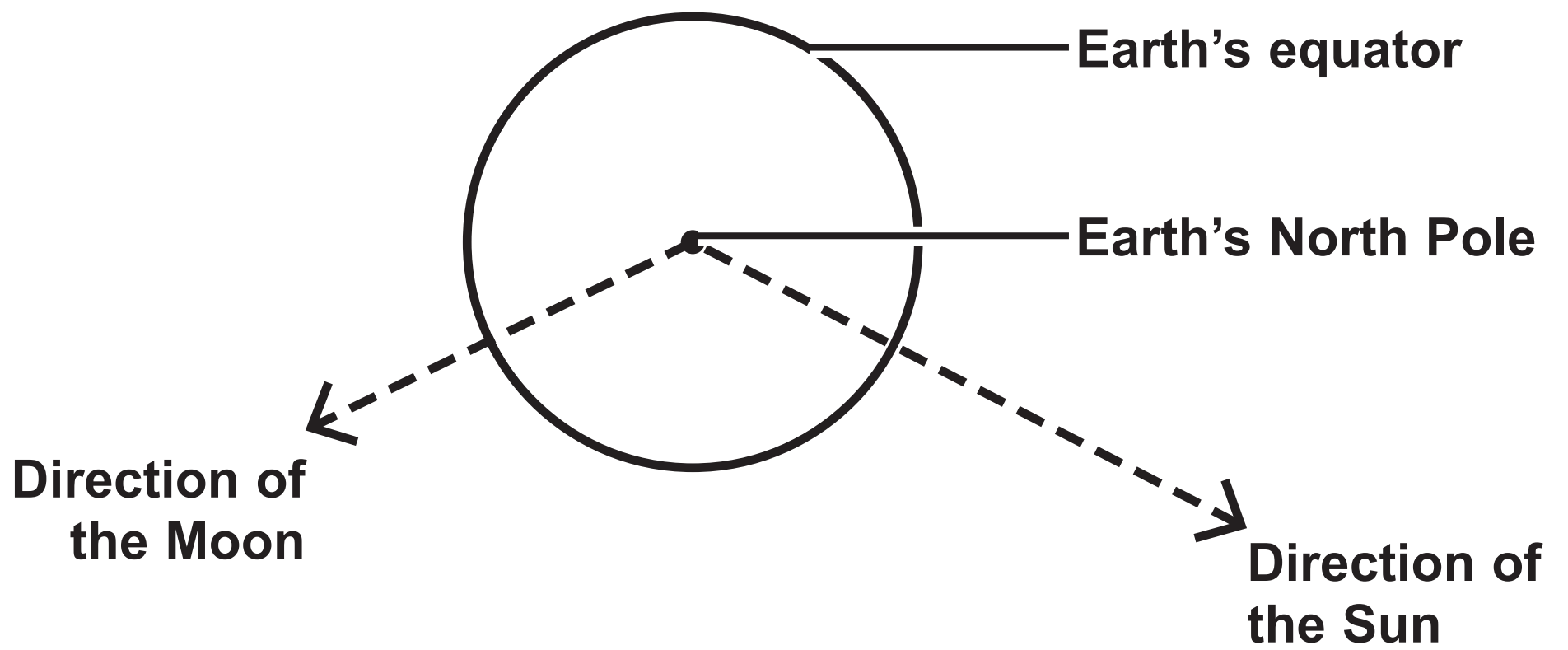
Question 5(a)

TABLE 1

Position	Name of the Moon's phase when seen from Earth	Time at which the Moon will cross the observer's meridian
A	Full	00:00 (midnight)
B		
C		

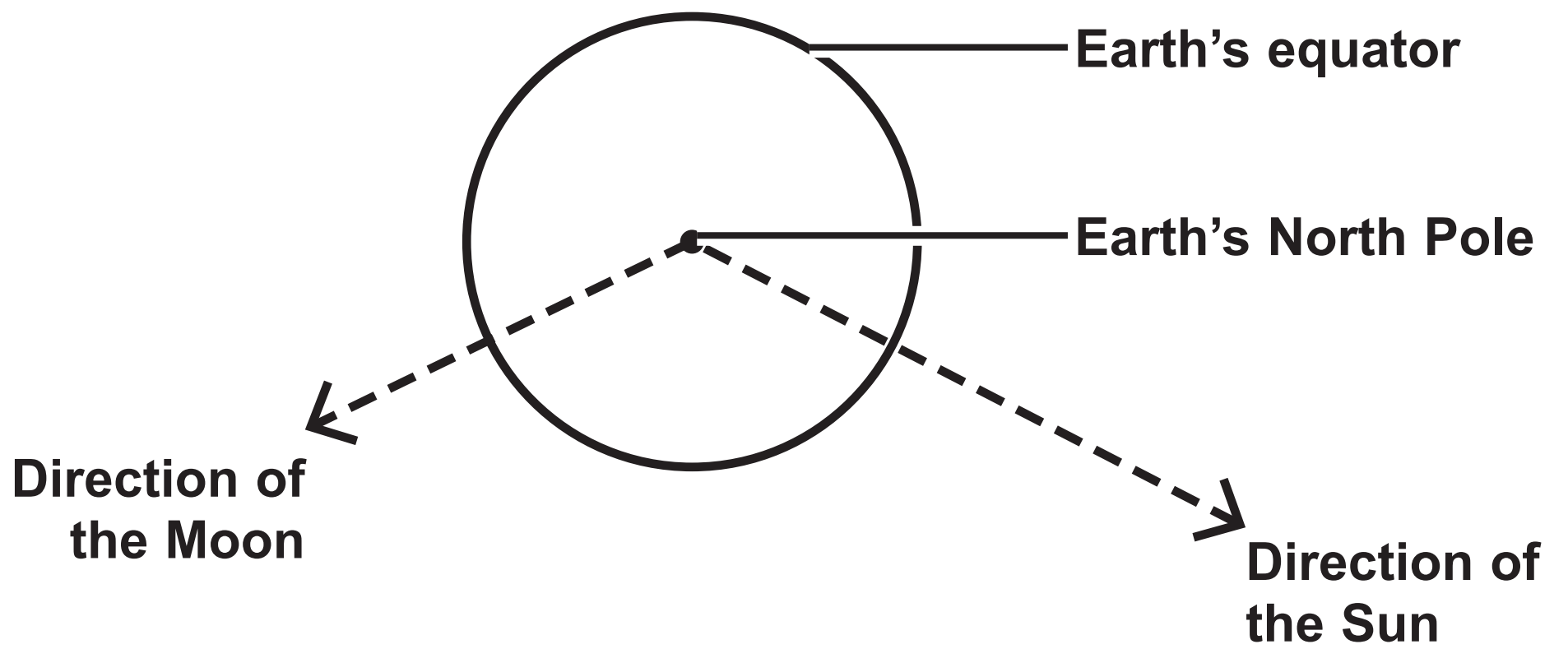
Question 5(b)

FIGURE 6



Question 5(b)

FIGURE 6



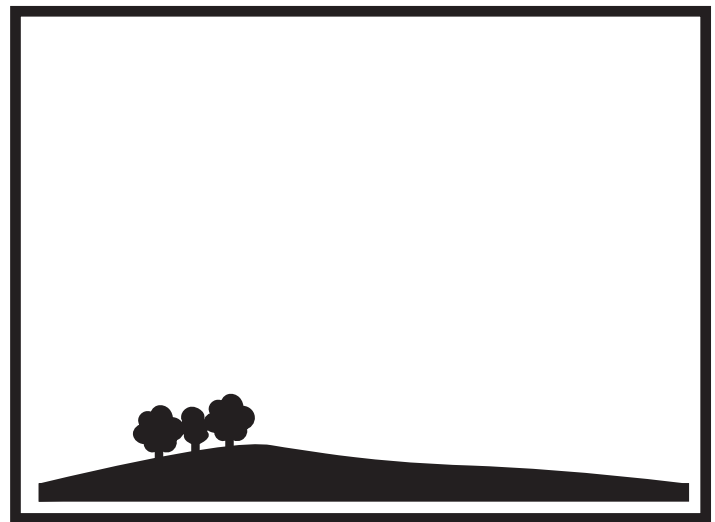
Question 5(c)

FIGURE 7

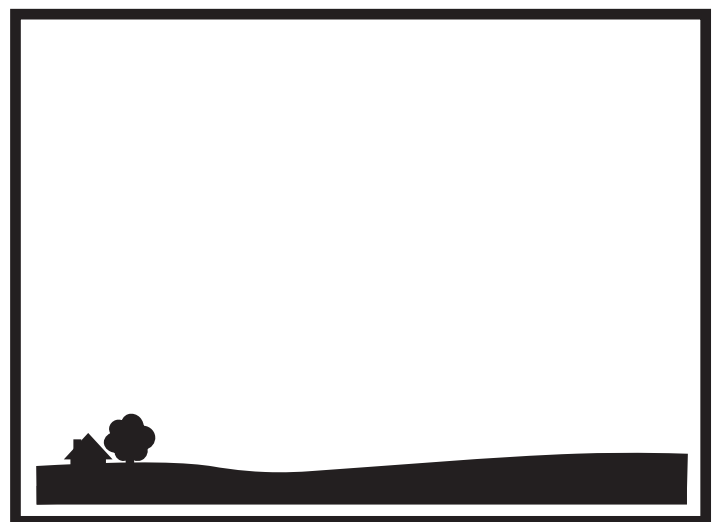
Observation from 60°N



Observation from the equator



Observation from 60°S



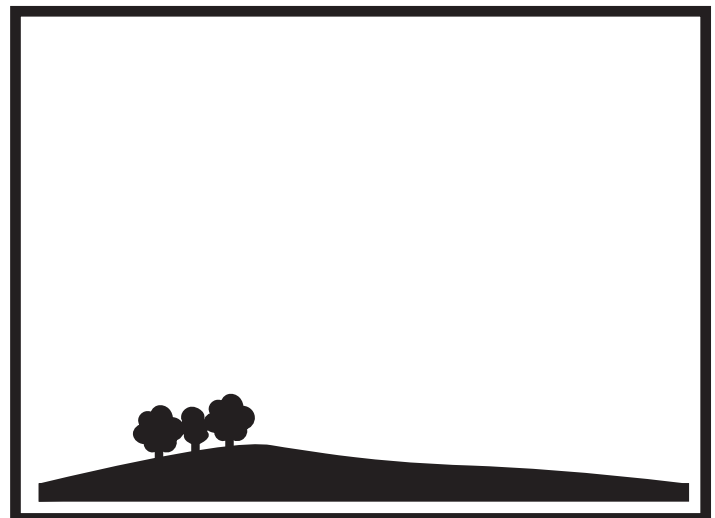
Question 5(c)

FIGURE 7

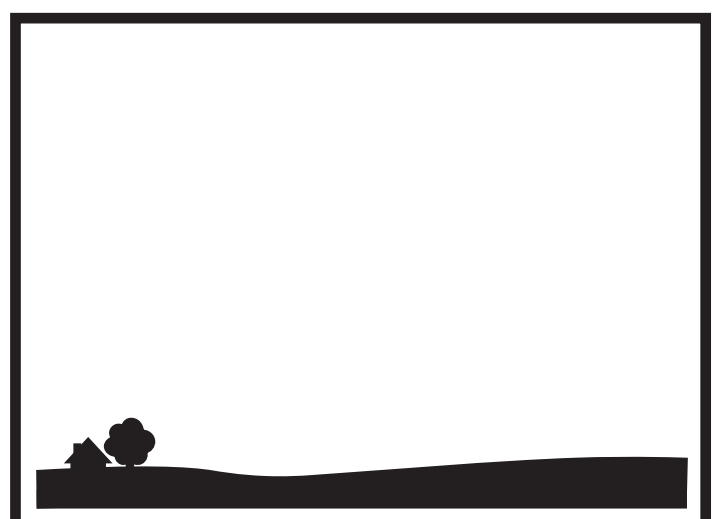
Observation from 60°N



Observation from the equator

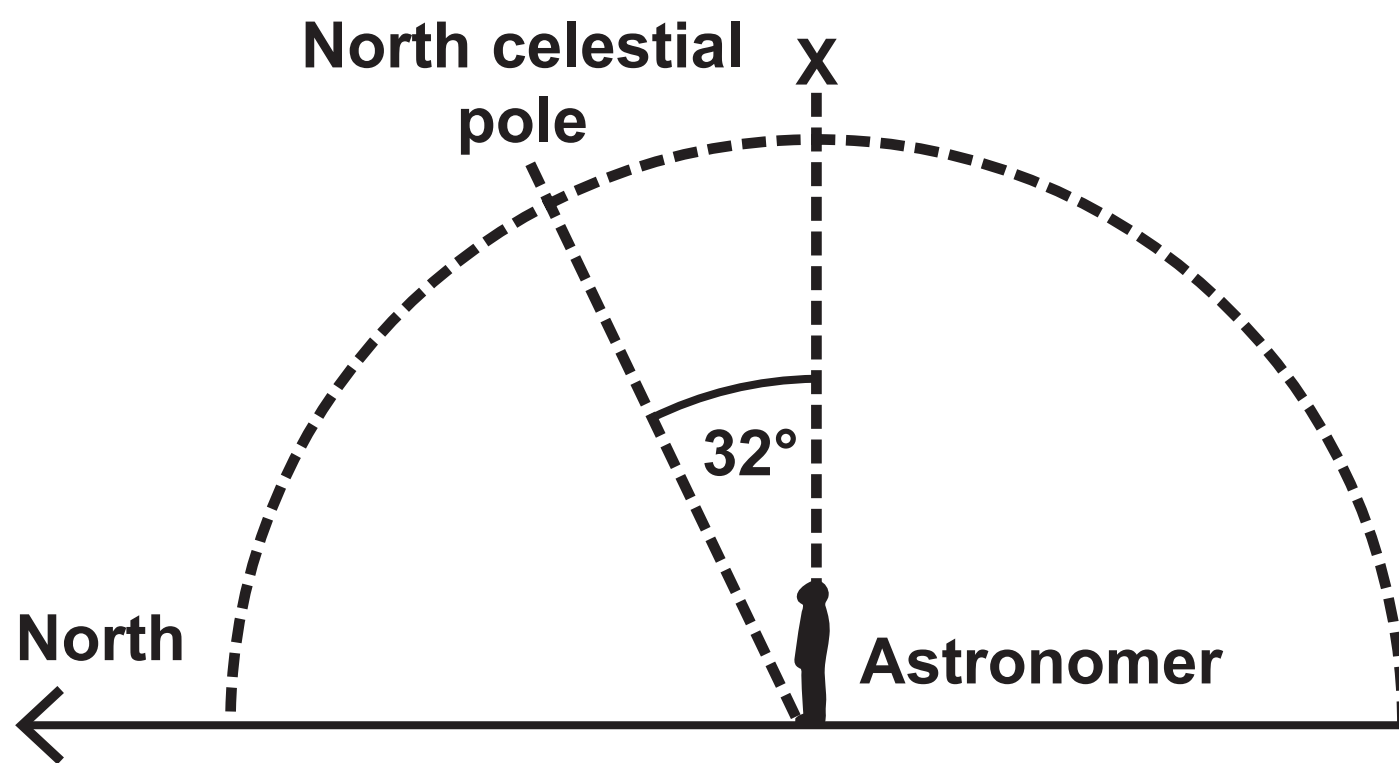


Observation from 60°S



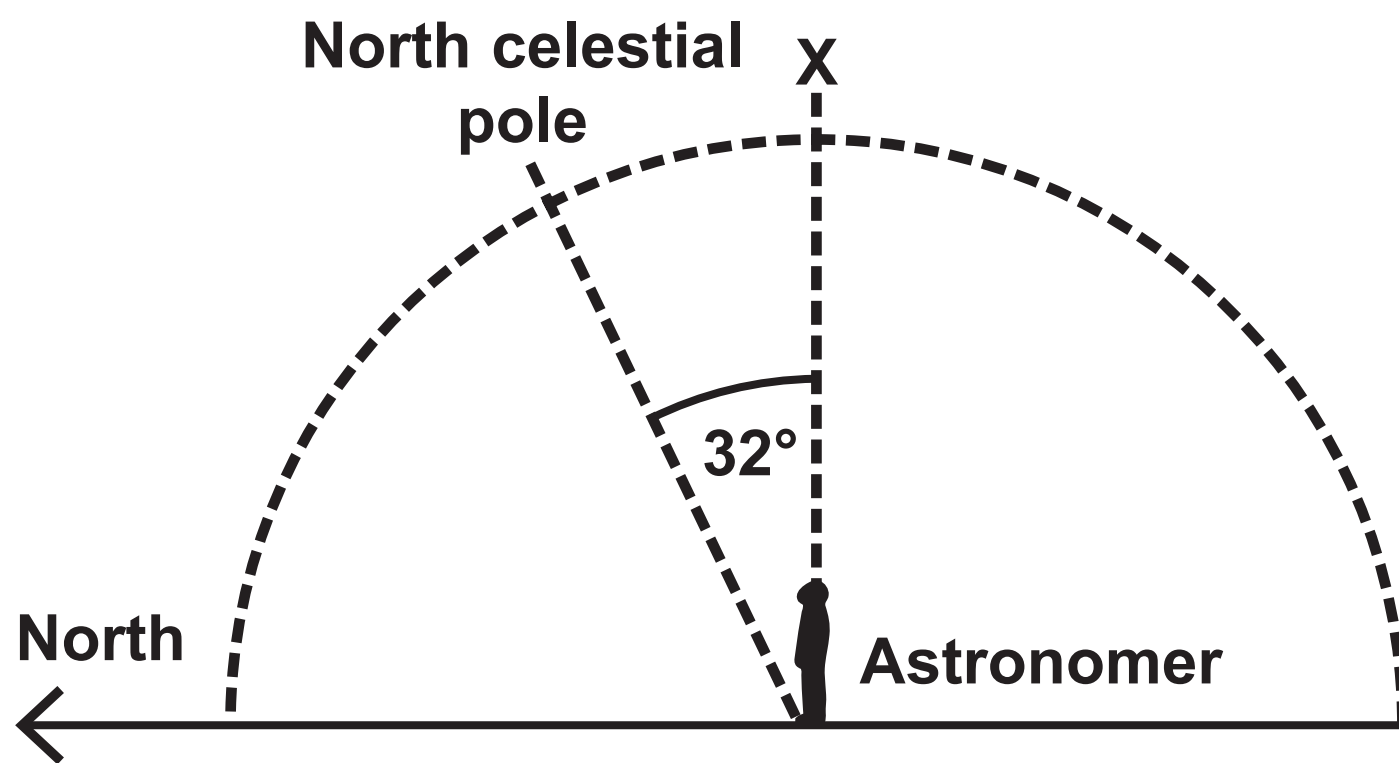
Question 6(b)

FIGURE 8



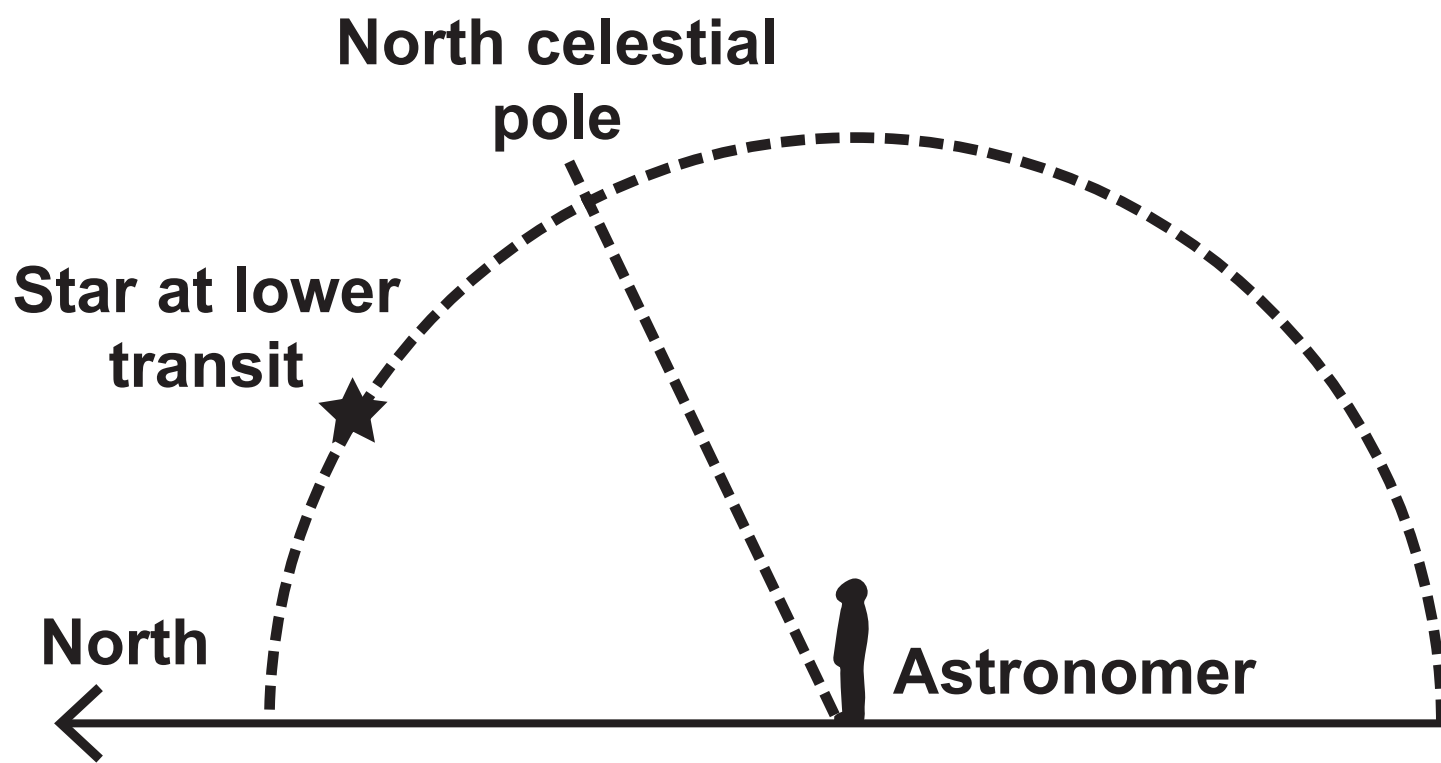
Question 6(b)

FIGURE 8



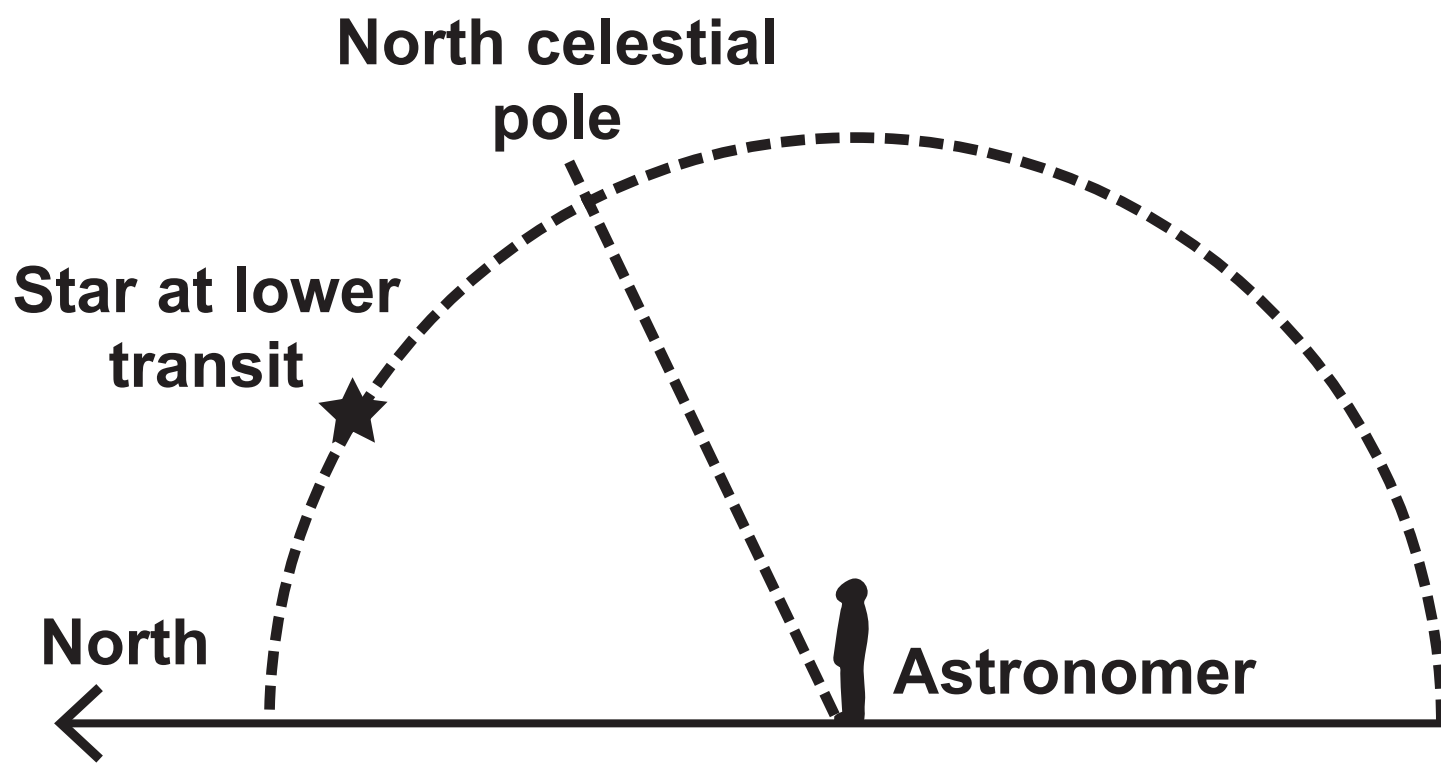
Question 6(c)

FIGURE 9



Question 6(c)

FIGURE 9

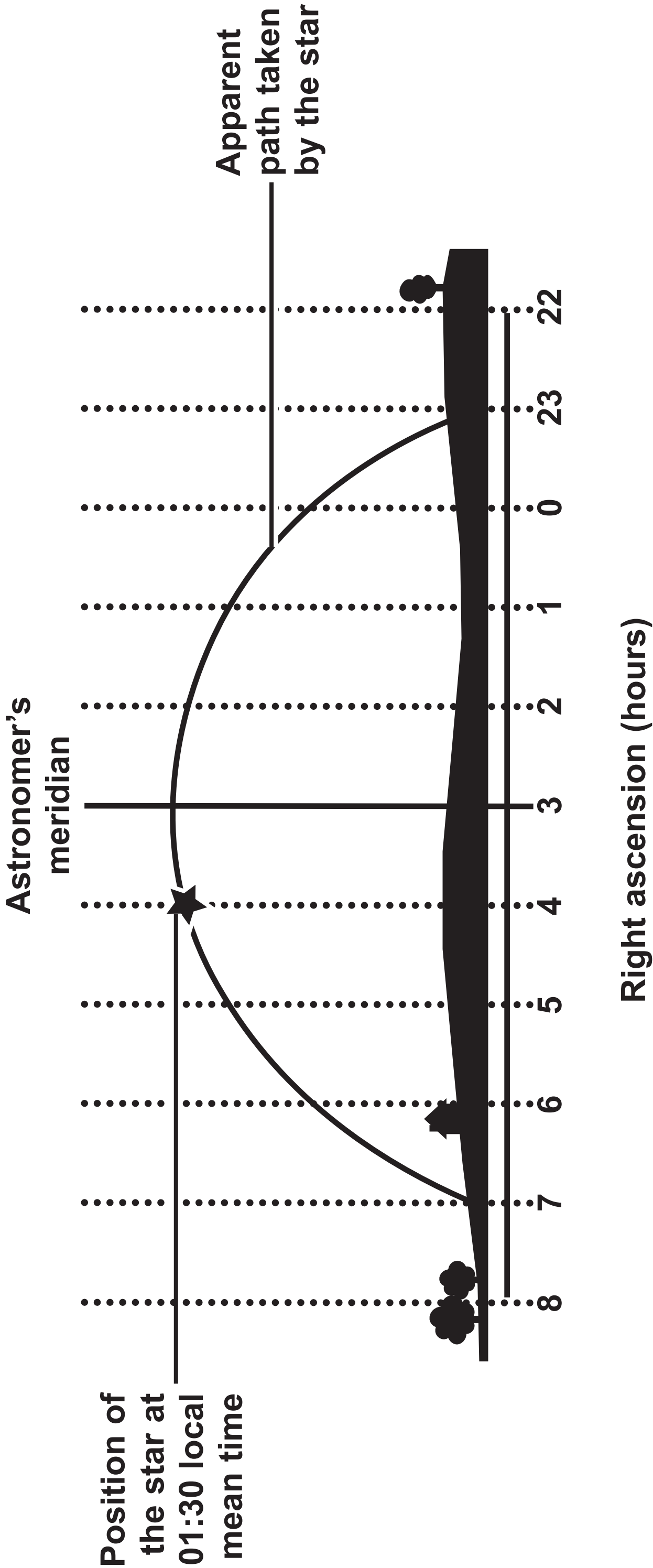


Question 7(c)

FIGURE 10

Observation	Description of observation	Suggested object
1	a bright streak of light that travelled across the sky in under one second	a meteor
2	a faint fuzzy blob of light about half the size of the full Moon	a galaxy
3	a very bright star (visible before all the other stars in the sky) seen on the western horizon just after sunset	the planet Uranus
4	about six or seven faint stars tightly clustered together	a star cluster
5	a steady, faint point of light moving quite quickly across the sky in about 2 minutes. It disappeared before it reached the horizon	an aeroplane

FIGURE 11



Question 8(b)

TABLE 2

	Alice (London)		Bob (European city)	
Date	Time of sunrise (GMT)	Day length (h:m)	Time of sunrise (GMT)	Day length (h:m)
Feb 1	07:39	09:09	05:30	10:17
Mar 1	06:44	11:00	04:56	11:22
Apr 1	06:35	12:59	04:09	12:38
May 1	05:31	14:53	03:28	13:47

Question 9(b)

FIGURE 12

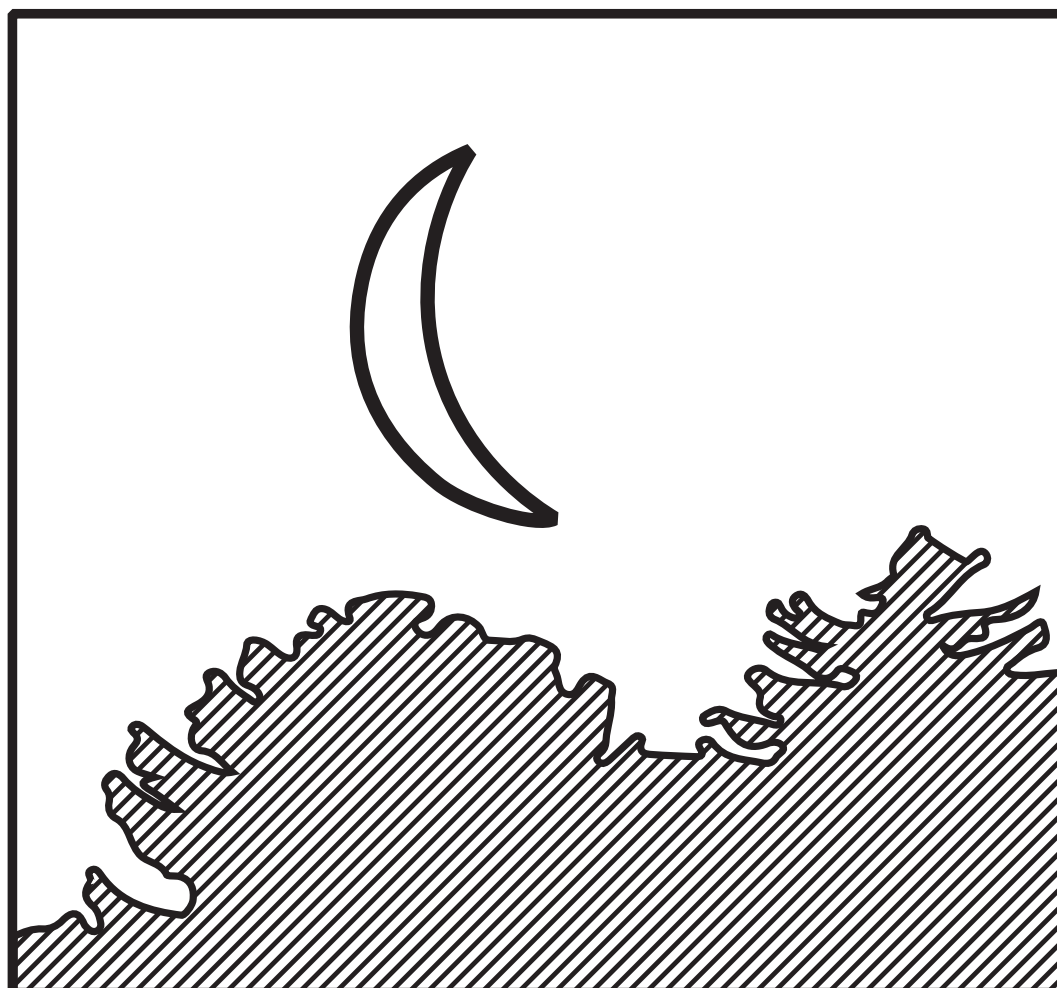
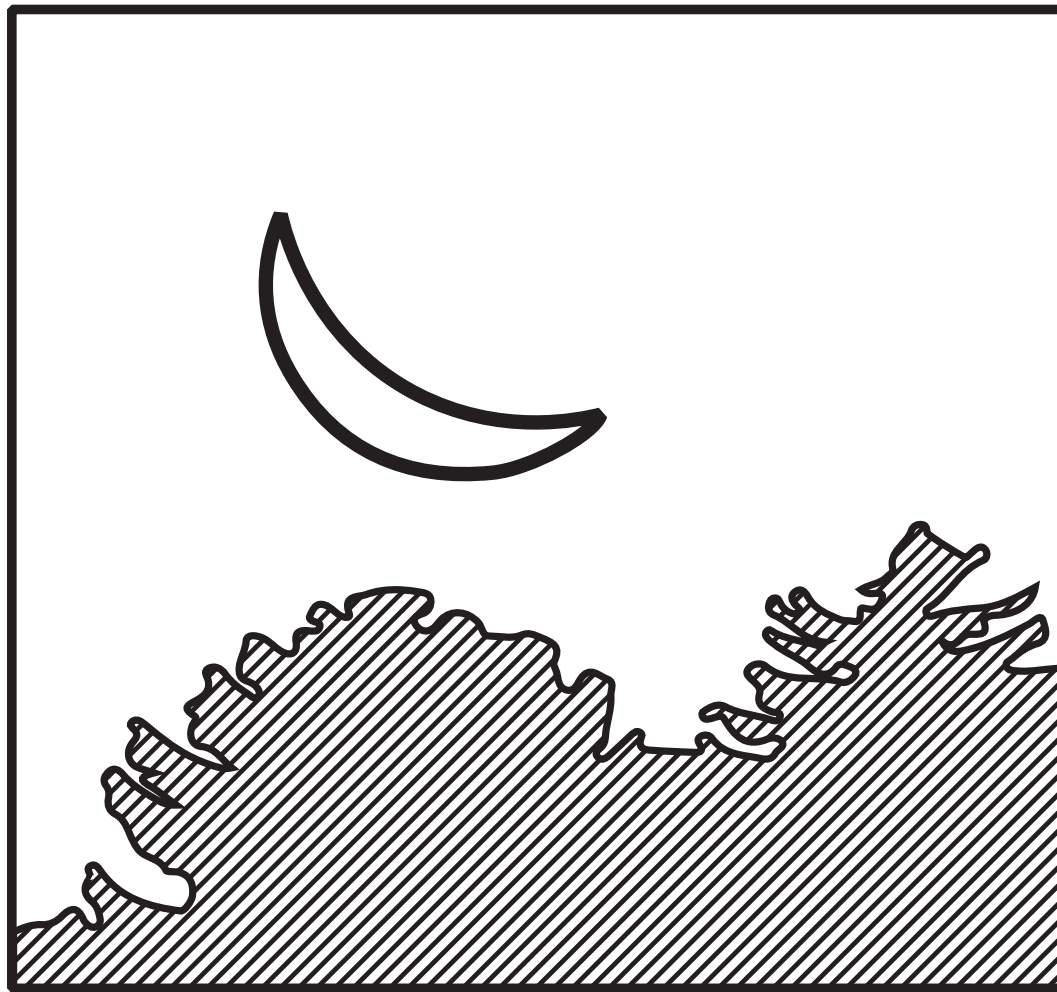


FIGURE 13

November 2008						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Question 10

T = orbital period of the moon in days.

r = mean orbital radius of the moon $\times 10^5$ km.

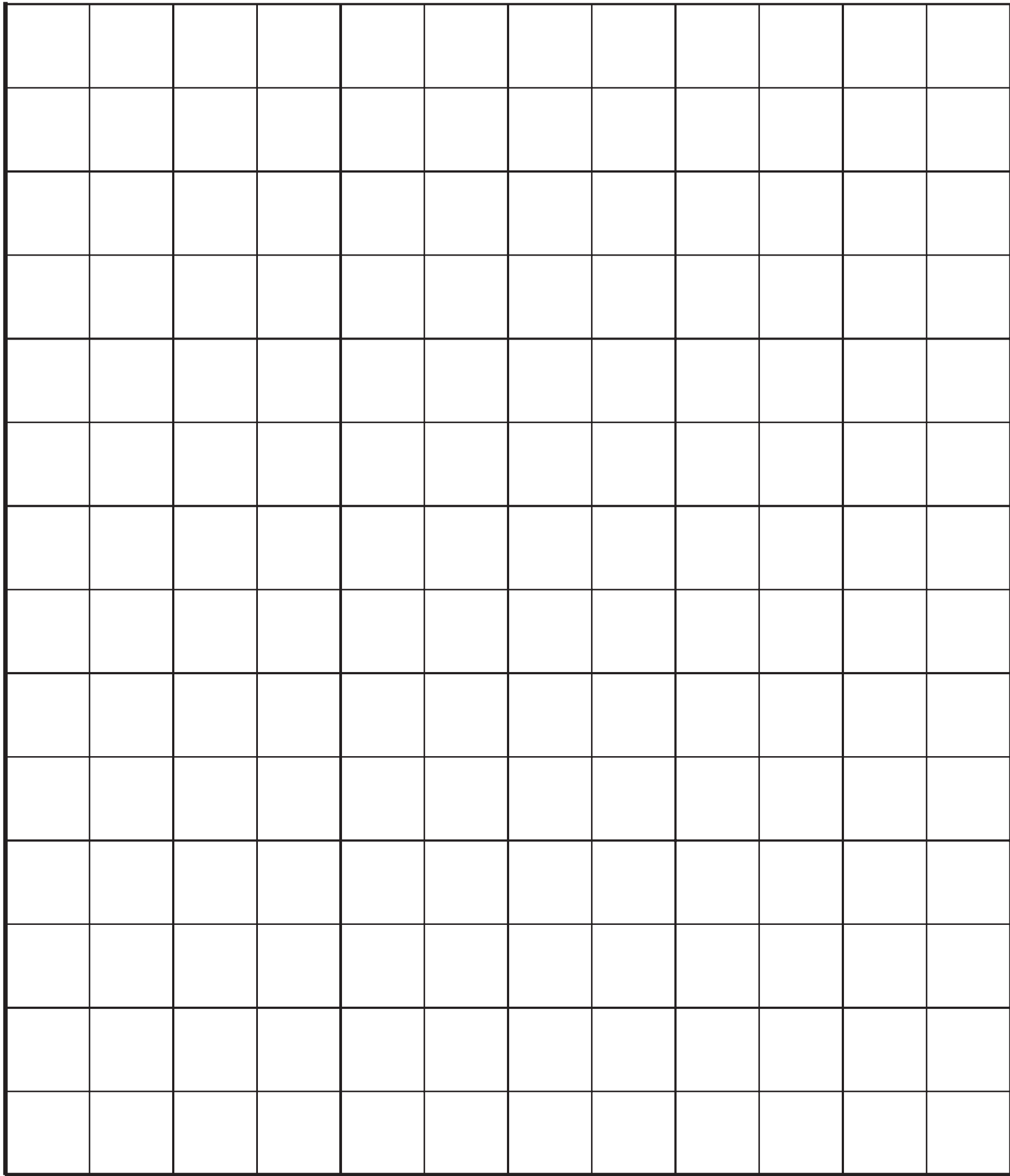
TABLE 3

Moon	T, the orbital period of the moon (days)	r, the mean orbital radius of the moon ($\times 10^5$ km)	T ² , the orbital period of the moon squared (days ²)	r ³ , the mean orbital radius of the moon cubed ($\times 10^{15}$ km ³)
Puck	0·8	0·9	0·6	0·7
Mab	0·9	1·0	0·8	1·0
Miranda	1·4	1·3	2·0	2·2
Ariel	2·4	1·8	5·8	5·8

Question 10(a)(i)

FIGURE 14

T^2 , the orbital period of the moon squared (days²)



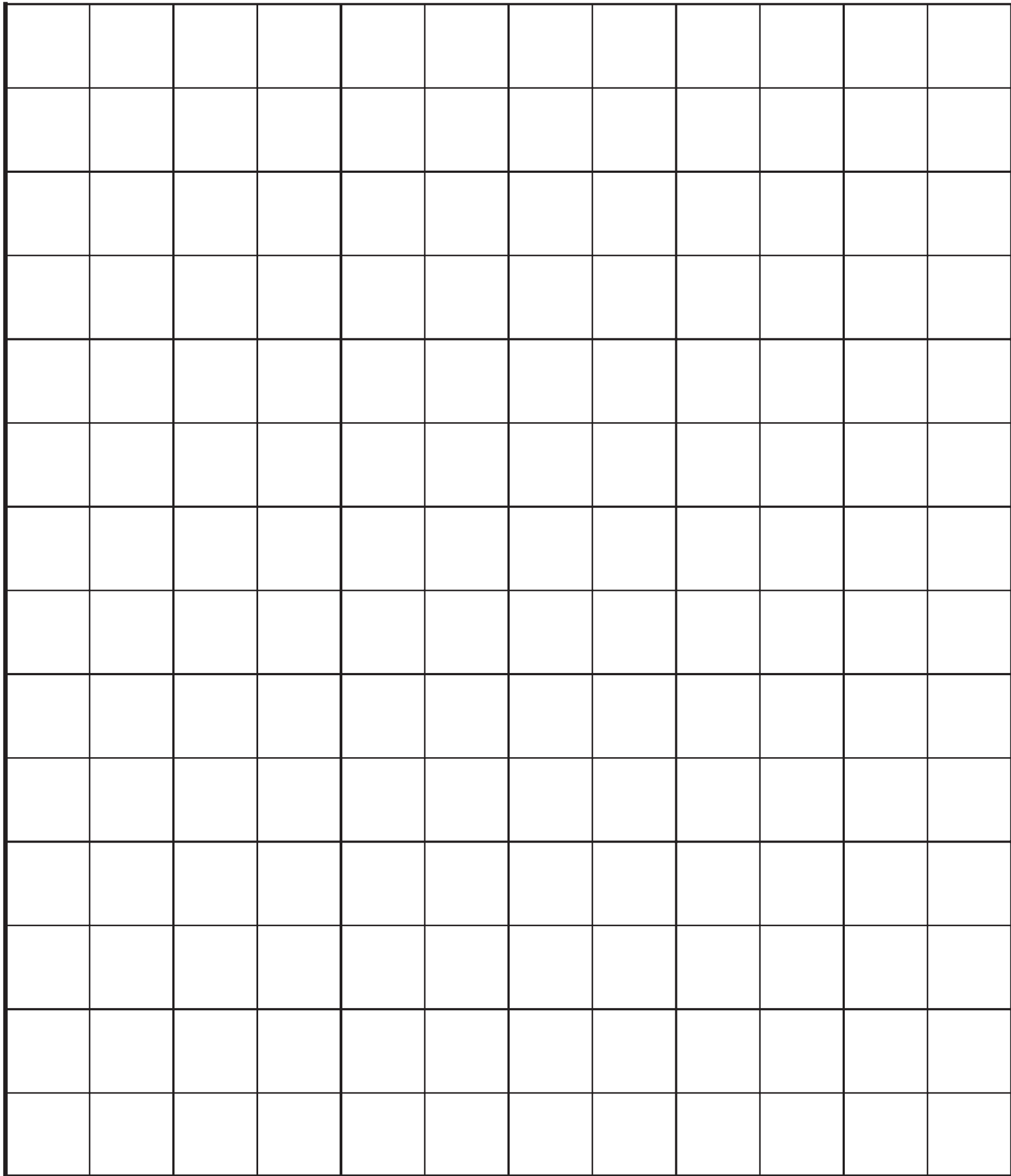
0 1 2 3 4 5 6

r^3 , the mean orbital radius of the moon cubed ($\times 10^{15}$ km³)

Question 10(a)(i)

FIGURE 14

T^2 , the orbital period of the moon squared (days²)



0 1 2 3 4 5 6

r^3 , the mean orbital radius of the moon cubed ($\times 10^{15}$ km³)