

Practice Questions MS - Topic 1: The Lunar Disc



By Ben Fletcher

Feel free to contact me by my school email if you have any queries or want an explanation of a question. – Ben F :)

1a) 1 mark – Spec 2.8

- B1 for “we can only see one side of the moon” or similar

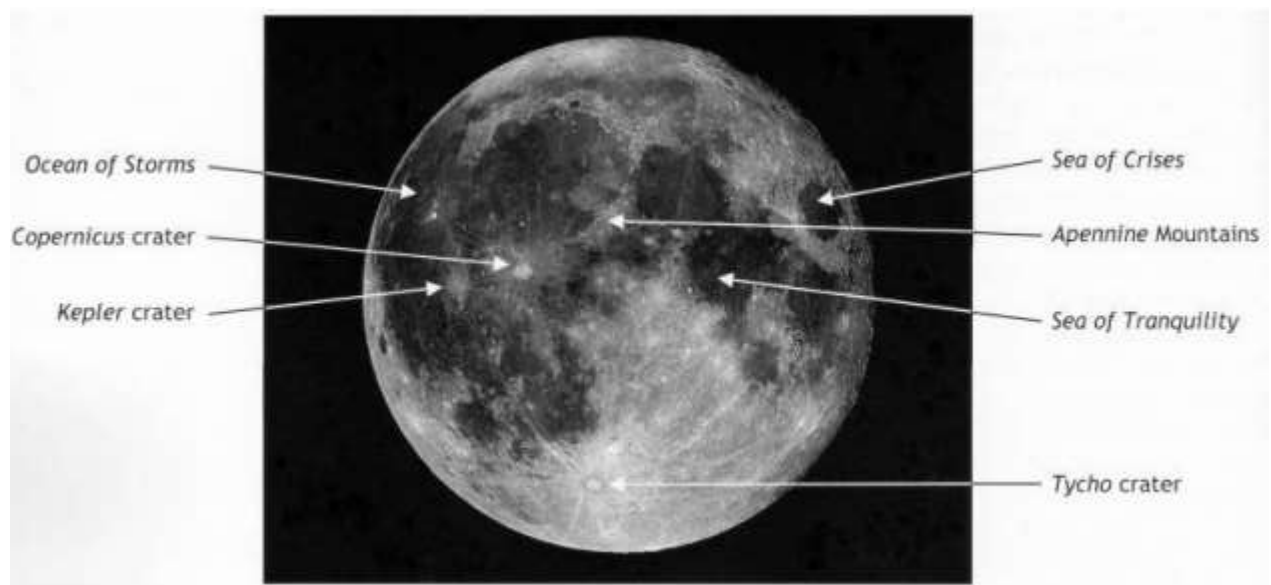
1b) 1 mark – Spec 2.6 + 2.7

- B1 for 27.3 (days)

1c) 5 marks – Spec 2.6

- M1 for 380,000km used
- M2 for calculation of moon’s orbit’s circumference: $380000\text{km} * 2\pi = 2,387,610\text{km}$
- M3 for calculation of moon’s orbital period in seconds: $27.3 * 24 * 3600 = 2,358,720\text{ s}$
- M4 for distance divided by time: $2,387,610/2,358,720$
- A1 for 1.01 km/s (or increased accuracy: 1.012248)

2a) 7 marks – Spec 2.5



2b) 3 marks – Spec 2.4

- Craters:
- B1 for “from meteoroid collisions” or similar

- Maria:
- B1 for “lava cools in impact craters” or similar
- Terrae:
- B1 for “formed as lunar surface cooled” or similar

3a) 1 mark – Spec 2.1

- B1 for “**oblate** spheroid”

3b) 2 marks – Spec 2.2 + Spec 1.2 + Spec 3.1

- M1 for 13000km/3500km
- A1 for 3.7x (or increased accuracy: 3.71428)

3c) 5 marks – Spec 2.2 + Spec 3.1

- M1 for calculation of solar radius: $1.4 \times 10^6 / 2 = 700,000 \text{ km}$
- M2 for calculation of star's radius: $700,000 * 2.5 = 1,750,000 \text{ km}$
- M3 for calculation of star's diameter: $1,750,000 \text{ km} * 2 = 3.5 \times 10^6$
- M4 for star diameter/moon diameter: $3.5 \times 10^3 / 3.5 \times 10^6 = 1000$
- A1 for 3 (orders of magnitude)
- Give M1 and M3 if the division by 2 for radius of sun has been cancelled out with the multiplication by 2 for diameter of star

4) 10 marks – Spec 2.8

- B1 for “libration in longitude”:
- B2 for “elliptical orbit of moon means different speeds of moon” or similar
- B3 for “steady rotation of moon on axis” or similar
- B4 for “mismatch means we see around **eastern and western** edges of moon” or similar

- B1 for “libration in latitude”
 - B2 for “moons orbit is inclined” or similar
 - B3 for “we can look over **north and south** edges” or similar
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- B1 for “diurnal libration”
 - B2 for “different angles and moonrise and set” or similar
 - B3 for “lets us see past **eastern and western** edges”