12.1 Sistem Suria
Solar System

Buku Teks: m.s. 252 – 264

1. Nyatakan sama ada pernyataan berikut **BENAR** atau **PALSU**. TP2
State whether the statement below is TRUE or FALSE.

(a) Jarak purata di antara Bumi dan Matahari ialah 1 A.U.
The distance between the Earth and the Sun is 1 A.U.

(b) Planet Zuhrah mempunyai dua bulan yang dinamakan Phobos dan Demos.
Venus has two moons called Phobos and Demos.

(c) Pluto ialah planet kesembilan dari Matahari.
Pluto is the ninth planet from the Sun.

(d) Sistem suria kita terdiri daripada Matahari, lapan planet dan pelbagai bintang kecil.
Our solar system consists of the Sun, eight planets and various small stars.

(e) Matahari ialah objek terbesar di dalam sistem suria kita.
The Sun is the largest object in our solar system.

2. Padankan planet-planet berikut dengan ciri-cirinya yang betul. TP 2
Match the following planets to its correct characteristics.

(a) Utarid *Mercury*	(i) Mengambil masa 164.8 tahun untuk membuat satu putaran mengelilingi Matahari. *Takes 164.8 years to orbit the Sun.*
(b) Zuhrah *Venus*	(ii) Dikenali sebagai planet rumah hijau. *Known as green house planet.*
(c) Bumi *Earth*	(iii) Paksi putarannya hampir selari dengan orbitnya. Mengambil masa 84 tahun untuk mengorbit Matahari. *Its axis is almost parallel to its orbit. Takes 84 years to orbit the Sun.*
(d) Marikh *Mars*	(iv) Planet kedua terbesar dalam sistem suria. *Second largest planet in solar system.*
(e) Musytari *Jupiter*	(v) Tarikan gravitinya yang kuat melindungi Bumi daripada objek-objek angkasa yang besar. *Its strong gravitational force protects the Earth from large space objects.*
(f) Zuhal *Saturn*	(vi) Dikenali sebagai planet merah dan mempunyai dua bulan. *Known as the red planet and has two moons.*
(g) Uranus *Uranus*	(vii) Jaraknya kira-kira 57.9 juta km dari Matahari. *Its distance is about 57.9 millions km from the Sun.*
(h) Neptun *Neptune*	(viii) 71% kawasannya dilitupi air dan 29% ialah daratan. *71% of its surface area is water and 29% is land.*

3. Rajah 1 menunjukkan empat planet dalam sistem suria kita.
Diagram 1 shows four planets in our solar system.

Utarid *Mercury* | Zuhrah *Venus* | Bumi *Earth* | Marikh *Mars*

Rajah 1 / *Diagram 1*

(a) Berikan empat persamaan yang terdapat pada planet-planet di atas berbanding empat planet yang lain. TP 4
Give four similarities among the four planets above compared to the other four planets.

KBAT Menganalisis

- Smaller _____ and sizes
- More dense
- Has _____ surface
- _____ to the Sun

solid Closer mass

(b) Pada pendapat anda, mengapakah planet Zuhrah kadang-kala dianggap sebagai kembar kepada planet Bumi? TP 4

In your opinion, why does Venus sometimes considered as the Earth's twin? KBAT Menganalisis

Because Venus and Earth are almost the same _____ and have about the same mass. They are also _____ planets.

size | neighbouring

4. Hitungkan jarak planet-planet berikut dari Matahari dalam unit A.U dan tahun cahaya (ly). TP 3

Calculate the distance of the following planets from the Sun in A.U *and light years* (ly). KBAT Mengaplikasi

Planet *Planet*	Jarak dari Matahari *Distance from the Sun*		
	(km)	(A.U.)	(ly)
(a) Utarid/ *Mercury*	5.79×10^7	(i)	(ii)
(b) Marikh/ *Mars*	2.28×10^8	(i)	(ii)
(c) Zuhal/ *Saturn*	1.43×10^9	(i)	(ii)
(d) Neptun/ *Neptune*	4.50×10^9	(i)	(ii)

5. Berikut adalah ciri-ciri planet dalam sistem suria kita.

The following are the characteristics of the planets in our solar system.

Jadual 1/ *Table 1*

Planet *Planet*	Jarak dari Matahari (juta km) *Distance from Sun* (millions km)	Purata suhu permukaan *Average surface temperature*	Jisim relatif berbanding Bumi *Relative mass compared to Earth*	Ketumpatan *Density* ($g\ cm^{-3}$)	Tarikan graviti *Gravitational pull* (N/kg)
Utarid/ *Mercury*	57.9	167	0.055	5.40	3.70
Zuhrah/ *Venus*	108.2	457	0.815	5.20	8.87
Bumi/ *Earth*	149.6	14	1.000	5.50	9.80
Marikh/ *Mars*	227.9	−55	0.107	3.90	3.71
Musytari/ *Jupiter*	778.3	−153	317.8	1.30	24.79
Zuhal/ *Saturn*	1429.0	−185	95.159	0.70	10.44
Uranus/ *Uranus*	2871.0	−214	14.536	1.27	8.69
Neptun/ *Neptune*	4504.0	−225	17.147	1.60	11.15

(a) Secara teorinya, planet yang berada lebih dekat dengan Matahari akan mempunyai suhu permukaan yang lebih tinggi. Jelaskan mengapa Zuhrah mempunyai suhu yang lebih tinggi daripada Utarid. TP 4

By theory, a planet which is closer to the Sun will have a higher surface temperature. Explain why Venus has a higher temperature than Mercury. KBAT Menganalisis

Venus has a high content of _____ in its atmosphere. This causes _____ to be trapped and _____ its surface temperature.

increasing | heat | carbon dioxide

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(b) Planet seperti Utarid dan Marikh yang mempunyai jisim lebih kecil daripada Bumi, mempunyai tarikan graviti yang lebih rendah daripada Bumi. Jelaskan mengapa Uranus yang mempunyai jisim yang lebih besar daripada Bumi mempunyai tarikan graviti yang lebih rendah. TP 4

Planets such as Mercury and Mars that have smaller mass than the Earth, have a lower gravitational pull compared to the Earth. Explain why the Uranus that has larger mass compared to the Earth has a lower gravitational pull.

KBAT Menganalisis

Although Uranus has a very large [ ] compared to the Earth, this gases giant has a very [ ] density. Therefore, the strength of its [ ] is low.

low gravity mass

(c) Berdasarkan jawapan anda di 5(b), apakah faktor-faktor yang mempengaruhi kekuatan graviti sesuatu planet? TP 2

Based on your answer in 5(b), what are the factors that affect the strength of gravity of a planet?

The mass and density of the planet.

6. Rajah 2 menunjukkan putaran planet Zuhrah dan Bumi pada paksinya.
Diagram 2 shows the rotation of Venus and Earth on its axis.

Rajah 2 / *Diagram 2*

(a) Bumi berputar pada paksinya dari barat ke timur. Berikan dua fenomena yang terjadi di Bumi disebabkan oleh putaran tersebut? TP 2

The Earth rotates on its axis from west to east. Give two phenomenons that take place because of the rotation.

- The occurence of day and night
- The Sun rises in the _____ and sets in the _____

(b) Ramalkan fenomena yang terjadi di planet Zuhal disebabkan oleh putarannya. TP 3

Predict the phenomenons that happen in Venus because of its rotation.

KBAT Mengaplikasi

- The occurence of day and night
- The Sun rises in the _____ and sets in the _____

(c) Apakah yang mungkin terjadi sekiranya Bumi berhenti berputar pada paksinya? TP 5
What would happen if the Earth stopped rotating on its axis?

KBAT Menilai

A day would last as long as a [ ] because the Earth rotates around the Sun. Everywhere would received six months of daylight and six months [ ] night . This causes extreme temperatures that would dry up the planets or ma[ ]rozen.

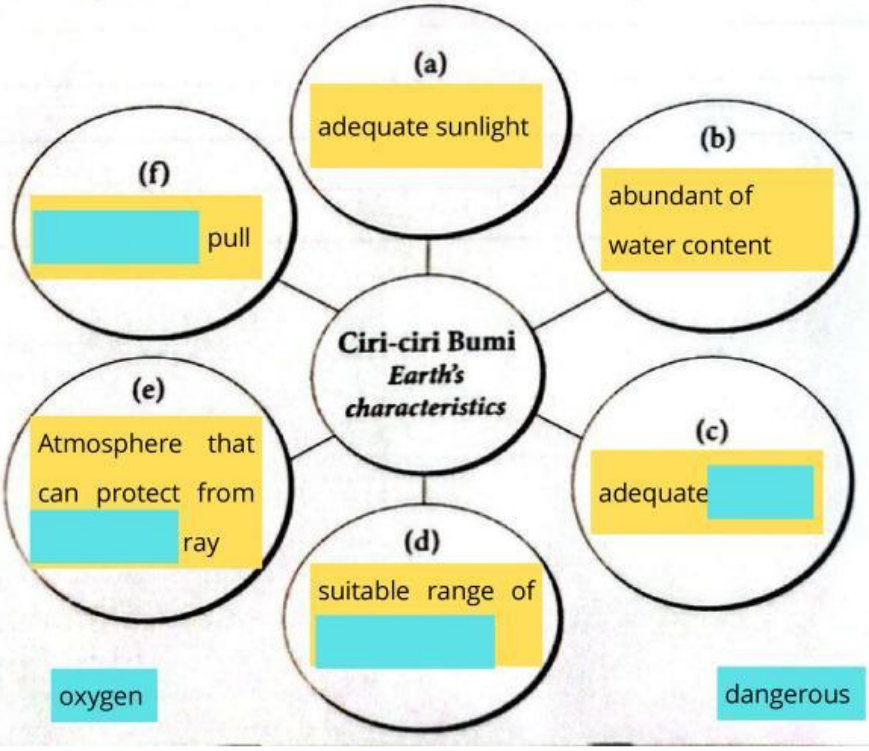
night frozen year

7. Isikan tempat kosong. TP 2
Fill in the blanks.

(a) _____ adalah satu-satunya satelit semula jadi Bumi. Bulan mempunyai (b) _____ sendiri dan bergerak mengelilingi (c) _____. Bulan mengambil masa yang sama untuk berputar pada (d) _____ dan beredar mengelilingi (e) _____ iaitu (f) _____ hari. Saiz Bulan ialah (g) _____ kali ganda lebih kecil daripada Bumi.

The (a) _____ is the only natural satellite of the Earth. The Moon has its own (b) _____ and revolves around the (c) _____. It takes the same amount of time to rotate on its (d) _____ and rotate around the (e) _____ which is (f) _____ days. The size of the Moon is (g) _____ times smaller than the Earth.

8. Lengkapkan peta minda di bawah dengan ciri-ciri Bumi sebagai planet yang paling sesuai untuk hidupan. TP 1
Complete the mind map below with the characteristics of the Earth as the most suitable planet for living things.



temperatures

gravitational

oxygen

dangerous

9. (a) Apakah yang dimaksudkan dengan jejak ekologi? TP 2
What does it mean by ecological footprint?

Ecological footprint is the measure of the _____ of water and land to provide the basic _____ of humans (food, water, shelter and others) as well as the ability of the Earth to reabsorb all human wastes and _____ resources after they have been used by human.

reproduce needs ability

(b) Senaraikan enam kawasan yang dipantau. TP 1
List down the six areas that are monitored.

1. _____ footprint
2. _____ area
3. Forest
4. _____ area
5. Fishing area

Farming Construction Carbon

(c) Mengapakah penting bagi setiap orang untuk mengetahui jejak ekologi mereka? TP 5
Why is it important for everyone to know their ecological footprint?
KBAT Menilai

Ecological footprints gives us _____ on the quantity of Earth's resources that we _____. This will help us to be thrifty to _____ our remaining resources on the Earth.

consume preserve information