

## Soalan Subjektif

13.1

Jasad Lain dalam Sistem Suria, iaitu Meteoroid, Asteroid dan Komet  
*Other Objects in the Solar System, such as Meteoroids, Asteroids and Comets*

Buku Teks: m.s. 270 - 275

1. Pada waktu malam, Aslin ternampak tahi bintang (seperti dalam Rajah 1.1) yang sangat cantik melintasi langit. Tahi bintang tersebut menghilang dalam waktu yang sangat pendek.  
*At night, Aslin saw a shooting star (as in Diagram 1.1) across the sky. The shooting star disappeared in a short amount of time.*



Rajah 1.1 / Diagram 1.1

- (a) Apakah tahi bintang dan mengapakah jasad ini bercahaya? **TP 4**

*What is a shooting star and why does it look bright?*

**KBAT** Menganalisis

Shooting star is a [ ] that is [ ] up in the Earth's atmosphere due to friction with [ ] burning air meteor

- (b) Pada pendapat anda, apakah yang telah terjadi kepada tahi bintang tersebut yang menyebabkannya menghilang dalam waktu yang pendek? Jelaskan jawapan anda. **TP 4**

*In your opinion, what happened to shooting star that cause it to disappear in a short time? Explain your answer.*

**KBAT** Menganalisis

As the meteor [ ] down, it will [ ] until there was no material left and it finally [ ] burn falls disappeared

- (c) Rajah 1.2 menunjukkan satu lagi fenomena yang boleh dilihat di langit kita.

*Diagram 1.2 shows another phenomenon that can be seen in our sky.*



Rajah 1.2 / Diagram 1.2

- Apakah fenomena di atas dan jelaskan proses yang menyebabkannya terjadi? **TP 4**

*What is the phenomenon and explain the process that causes it to happen?*

**KBAT** Menganalisis

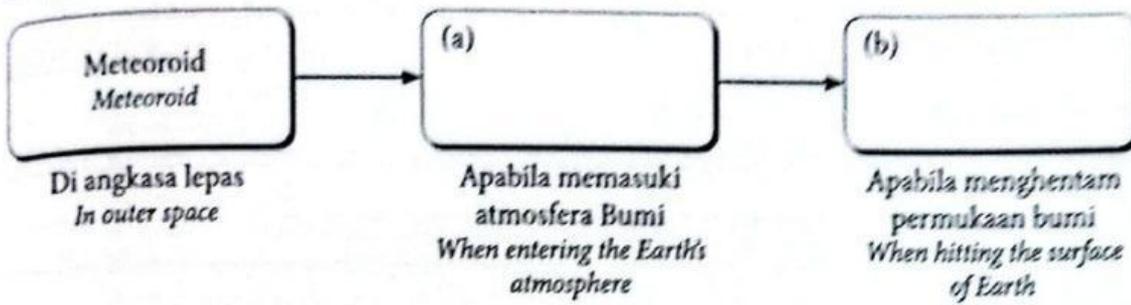
Meteor [ ]. Meteor showers happen when [ ] meteors enter the [ ] at the same time.

many

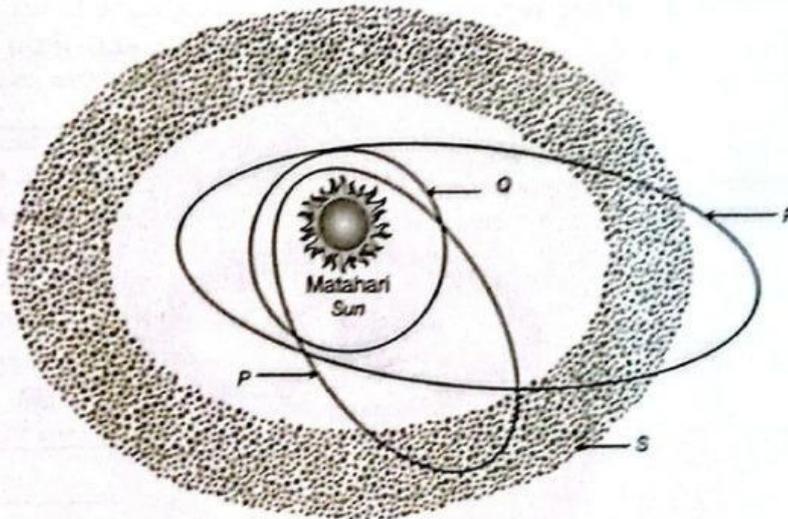
Earth

shower

2. Lengkapkan carta alir di bawah mengenai pergerakan meteoroid. **TR 2**  
 Complete the flow chart below regarding the movement of meteoroids.



3. Rajah 2 menunjukkan lokasi asteroid dalam sistem suria kita.  
 Diagram 2 the location of asteroids in our solar system.



Rajah 2 / Diagram 2

- (a) Kenal pasti P, Q, R dan S. **TR 1**  
 Identify P, Q, R and S.

P : \_\_\_\_\_  
 Q : \_\_\_\_\_  
 R : \_\_\_\_\_  
 S : \_\_\_\_\_

- (b) Di manakah kedudukan Lingkaran Asteroid? **TR 1**  
 Where is the location of the Asteroid Belt?

In between the orbits of \_\_\_\_\_ and \_\_\_\_\_

- (c) Apakah kaitan antara asteroid dan meteoroid? **TR 4**  
 What is the relationship between an asteroid and a meteoroid?

Some \_\_\_\_\_ originated from the fragments of \_\_\_\_\_.

- (d) Antara asteroid di dalam dan di luar Lingkaran Asteroid, yang manakah mempunyai risiko lebih besar untuk berlanggar dengan Bumi? Jelaskan jawapan. **IP 4**  
*Among the asteroids inside and outside the Asteroid Belt, which asteroid would have a higher risk to crash with the Earth? Explain.* **KBAT Menganalisis**

Asteroids that are \_\_\_\_\_ the asteroids belt such as \_\_\_\_\_, Aten and Amor because the crash between the earth and the asteroids can happen at the \_\_\_\_\_ of the orbits or in region near the Earth's orbit and the asteroid's orbit.

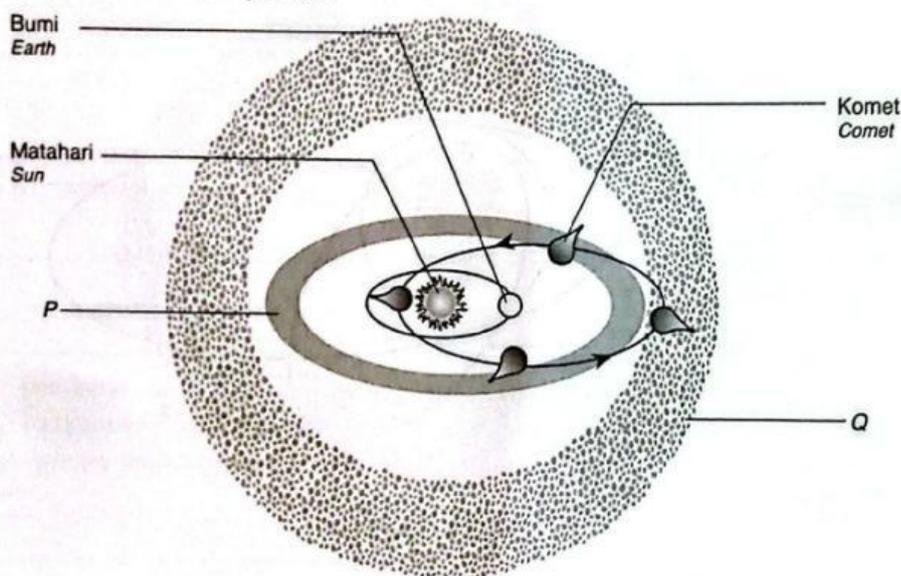
interactions

outside

Apollo

4. Rajah 3 menunjukkan pergerakan komet.

*Diagram 3 shows the movement of comet.*



Rajah 3 / Diagram 3

- (a) Kenal pasti P dan Q. **IP 1**  
*Identify P and Q.*

P: \_\_\_\_\_

Q: \_\_\_\_\_

- (b) Nyatakan satu persamaan antara P dan Q. **IP 2**  
*State the similarity between P and Q.*

Both are the region where there are many \_\_\_\_\_ bodies that will become \_\_\_\_\_ when knocked out of their \_\_\_\_\_

comets

orbits

icy

- (c) Namakan dua komponen utama komet. **IP 1**  
*Name the two main components of a comet.*

• H \_\_\_\_\_

Head

Tail

• T \_\_\_\_\_

(d) Tandakan (✓) pada pernyataan yang betul mengenai komet. **IP 2**  
Tick (✓) for the correct statement about comet.

(i) Komet ialah gumpalan ais, batuan, debu dan gas beku yang mengelilingi Matahari.

*A comet is a lump of ice, rocks, dusts and frozen gasses that is revolving around the Sun.*

(ii) Komet mengelilingi Matahari dalam orbitnya sendiri yang berbentuk elips.

*A comet revolves around the Sun in its elliptical shaped orbit.*

(iii) Komet bergerak pada kelajuan  $100 \text{ km s}^{-1}$ .

*A comet moves at the speed of  $100 \text{ km s}^{-1}$ .*

(iv) Apabila menghampiri Matahari, komet mencair dan kelihatan seperti berekor.

*When approaching the Sun, the comet melts and looks as if it has a tail.*

(v) Ekor komet sentiasa dalam keadaan menjauhi Matahari disebabkan oleh angin suria.

*A comet's tail is always in a direction away from the Sun due to the solar wind.*

5. Pada 15 Februari 2013, sebuah asteroid telah menghentam permukaan Bumi di Chelyabinsk, sebuah bandar di Rusia. Gelombang kejutan yang dihasilkannya telah mencederakan 1 200 orang. Tenaga yang terhasil daripada letupan itu dikatakan melebihi 470 kilo tan TNT.

*On 15<sup>th</sup> February 2013, an asteroid collided on Earth surface in a town called Chelyabinsk in Russia. The shock wave produced through the impact injured 1 200 people there. The amount of energy produced in the collision is estimated to be more than 470 kilo tan TNT.*

(a) Apakah yang boleh dilakukan oleh saintis untuk menyelamatkan Bumi daripada insiden sebegini? **IP 4**

*What can be done by the scientists to save the Earth from an incident like this?*

**KBAT** Menganalisis

In this incident, the direction of the asteroid could not be diverted as it is approaching towards Earth. [ ] and moving of key infrastructures and [ ] can be done to minimize loss. Other than that, scientist can also [ ] the asteroid before it hits the Earth.

valuables

destroy

Evacuation

(b) Apakah teknik yang boleh digunakan untuk mengawal asteroid yang boleh mengancam Bumi sebelum memasuki atmosfera Bumi? **IP 2**

*What are the techniques to control threatening asteroids before they even enter the Earth's atmosphere?*

- Kinetic impactor - a spacecraft that [ ] itself into the asteroid to move its orbit.
- Gravity tractor - a spacecraft that [ ] an asteroid for a long time and change the asteroid's path using its [ ]

follows

slam

gravity