



KS3 Science

Space

Mark Scheme

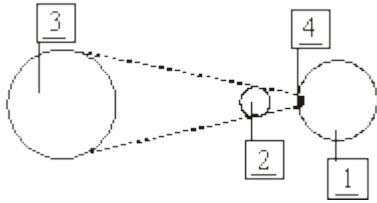
Time available: 34 minutes

Marks available: 51 marks

Mark schemes

1.

(a)



for **all four** numbers in the correct place, award two marks
for any **two** or **three** numbers in the correct place, award one mark

2 (L5)

(b) any **one** from

- 21st August
- 22nd August
- 23rd August

accept dates written in another format

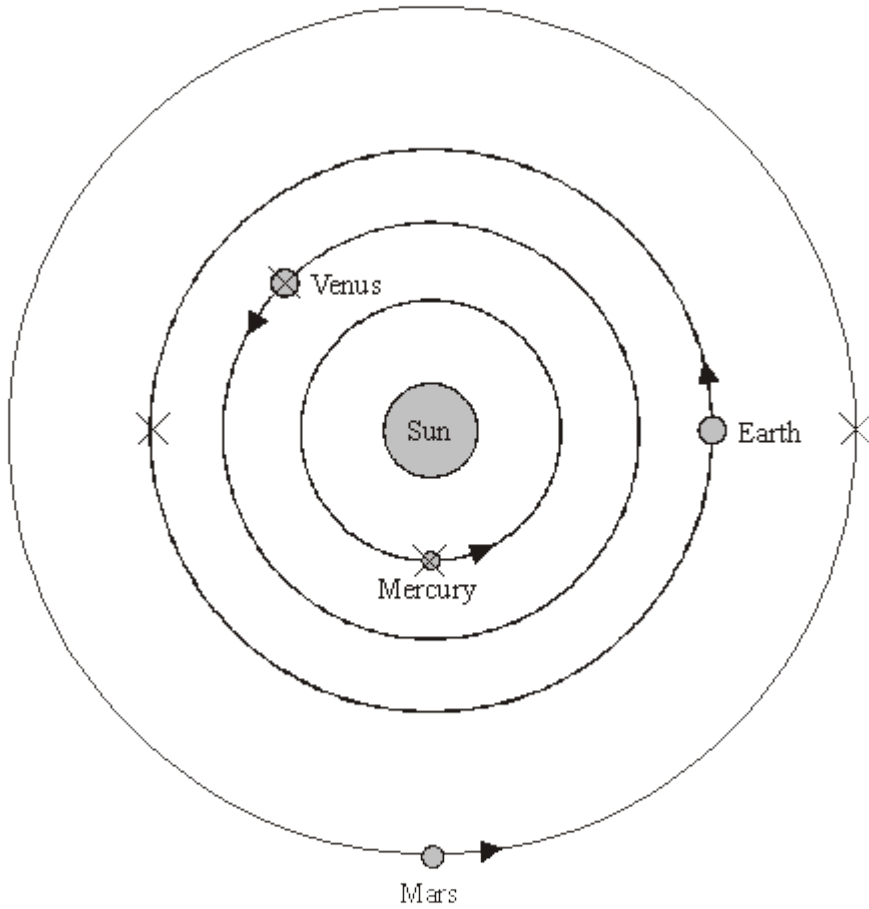
1 (L5)

- 2017

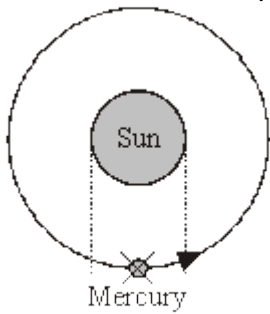
1 (L5)

[4]

2. (a)



for all **four** correct, award two marks
 for any **two** or **three** correct, award one mark
 accept a cross drawn that lies within the width
 of the Sun for each planet, e.g.



2 (L7)

(b) • 42

accept '150-108'

1 (L7)

• 258

accept '150+108'

1 (L7)

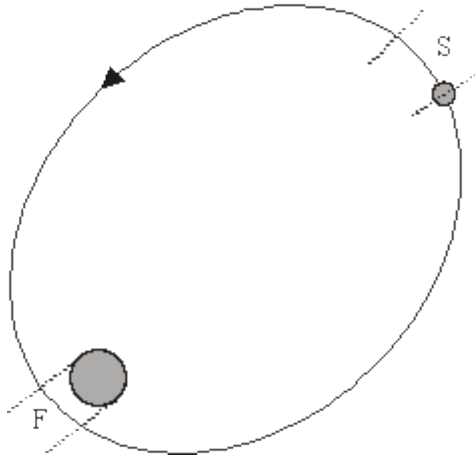
(c) 500

accept $\frac{150,000,000}{300,000}$ **or** $\frac{150 \text{ million}}{300,000}$

accept '8.3 minutes'
accept 'about 8 minutes'

1 (L7)

(d) (i)



both answers are required for the mark
accept an answer within the dotted lines
at either end of the ellipse

1 (L7)

(ii) attracted by the Sun's gravity
accept 'increased gravity near to Sun'

1 (L7)

[7]

3.

(a) (i) it orbits the Sun
accept 'it goes round the Sun'
'it has an orbit' is insufficient

1 (L5)

(ii) any **one** from

- it is not in the same plane as the other planets
- the orbit is out of line **or** at a different angle
accept 'it is not in line with the others'
'it has a different orbit' is insufficient
accept 'the orbit **or** it is tilted'
do **not** accept 'it is too small'
as this is not shown in the diagram

1 (L6)

(b) any **one** from

- it has the smallest diameter
accept 'it is too small'
'it is very small' is insufficient
- all the other planets are bigger

1 (L6)

(c) any **one** from

- Charon is a moon **or** satellite
accept 'it is a moon'
- other planets have moons
*accept 'the Earth **or** Saturn has a moon'*
'Charon orbits Pluto' is insufficient
accept 'moons do not orbit other moons'
accept 'other planets have objects orbiting them'

1 (L6)

(d) any **one** from

- both planets and moons have atmospheres
accept 'Venus has an atmosphere and Mercury does not'
- whether or not it has an atmosphere does not make it a planet
- there is no pattern in the atmospheres
accept 'Earth's moon does not have an atmosphere and Titan does'
- some planets do not have atmospheres
accept 'Titan has an atmosphere and so does Neptune'

1 (L6)

(e) any **one** from

- scientists cannot decide on what a planet is
- if Pluto is a planet there could be more planets orbiting our Sun **or** in our solar system
- there is evidence for and against Pluto being a planet
accept specific arguments for and against
e.g. 'it goes around the Sun but it is too small'
'there are reasons for and against' is insufficient
'it has an atmosphere like the Moon but orbits the Sun' is insufficient as atmosphere is not sufficient to classify moons or planets

1 (L6)

[6]

4.

(a) any **one** from

a comparative statement is needed

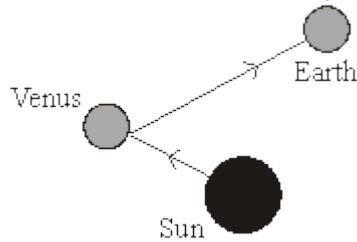
- Venus is nearer to the Sun
'it is closer' is insufficient
- the Sun's gravity on Venus is greater
- it travels faster
- it has a smaller orbit
accept 'it does not have as far to go'

1 (L5)

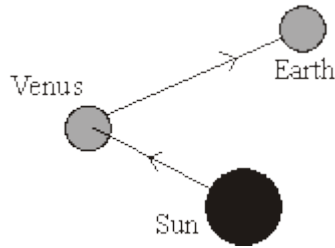
- (b) • a straight line from the Sun to Venus **and** a straight line from Venus to Earth

1 (L6)

- arrows drawn on both rays in the correct direction



accept two discontinuous straight lines that touch the Sun, Venus and the Earth



*do **not** accept a line from the Sun which touches the Earth*

1 (L6)

- (c) (i) any **one** from

- they had not been discovered
accept 'he did not know they existed'
- they had not been seen
accept 'they could not be seen'
*do **not** accept 'they did not exist'*
'they are too far away' is insufficient

1 (L5)

- (ii) any **one** from

- the Earth is not at the centre
answers must refer to the arrangement and not to missing planets
- the planets do not go round the Earth
or the planets orbit the Sun
- the Earth goes round the Sun
- the Sun is in the middle
accept answers which give the correct order of the planets in the solar system
'there are more planets' is insufficient

1 (L6)

[5]

5.

- (a) • gravity ✓
if more than one box is ticked, award no mark
1 (L4)
- (b) any **one** from
- telecommunications
accept 'communication'
 - television **or** TV
 - telephones
*accept 'phone' **or** 'fax'*
 - radio
 - weather
 - military **or** spy observations
 - land use observations
 - GPS
accept 'navigation'
 - internet
 - monitoring **or** taking pictures of the Earth
*'looking at **or** taking pictures of planets **or** stars
or galaxies' is insufficient as it is given in the question*
1 (L4)
- (c) • produces
reflects
*answers must be in the correct order
both answers are required for the mark*
1 (L4)
- (d) • a bar drawn to 4
1 (L4)
- (e) (i) • Hubble telescope Earth Sun
*accept 'Hubble' **or** 'telescope' for Hubble telescope
answers must be in the correct order
all three answers are required for the mark*
1 (L3)
- (ii) • They are further away than the Sun ✓
if more than one box is ticked, award no mark
1 (L3)

[6]

- 6.** (a) • X: the Sun 1 (L5)
- Y: Mercury 1
- (b) any **two** from
- it has a longer orbit
 - it is further from the Sun
 - the Sun's gravity is less
 - it is slower
- accept 'it has a bigger orbit'*
- accept 'it has a greater distance to cover'*
- accept 'it is further out'*
- accept 'Mars is closer to the Sun'*
- accept 'there is a smaller gravitational pull on it'*
- 'it is further away' or 'it is further' are insufficient*
- 2 (L6)
- (c) (i) any **one** from
- the orbit times were the same
 - it came at regular intervals
 - they saw it every 76 years
- accept 'he took 1531 from 1607 and 1607 from 1683'*
- 1 (L6)
- (ii) • 2062 1 (L5)

[6]

- 7.** (a) 1°
- accept '1' or '0.986'*
- accept any number between 0.9856 and 1.000*
- 1
- (b) 23.93 hours
- accept any number between 23.9 and 23.935 hours*
- or 23 hours and 56 minutes*
- accept ' $\frac{24 \times 360}{361}$ ' for one mark*
- 1

- (c) 366.26 **or** 366.31 times
consequential marking applies if the time is less than 24 hours in (b)
accept answers from 366.2 to 366.6 rotations
accept '366 times'

1

[3]

8.

- (a)
- *Earth: B*
 - *Sun: A*
 - *Moon: C*
- answers must be in the correct order*
if all three answers are correct, award two marks
*if one **or** two answers are correct, award one mark*

2 (L3)

- (b) any **one** from

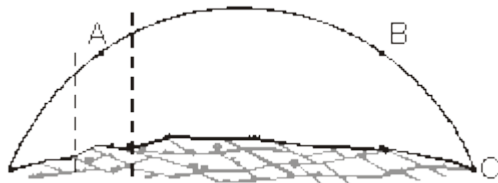
- weather forecasting
accept 'to look at the weather'
- communications
*accept 'telephone' **or** 'internet'*
- television **or** TV
- spying
- space telescope
accept 'Hubble telescope'
accept 'to find out more about the universe'
- global positioning system **or** GPS
accept 'navigation'
accept 'monitoring the Earth'
*accept 'searching for meteors **or** comets'*

1 (L4)

- (c) the Sun ✓
if more than one box is ticked, award no mark

1 (L3)

- (d) (i) point A marked halfway between 5.00 am and 1.00 pm



accept any point within the tolerances shown

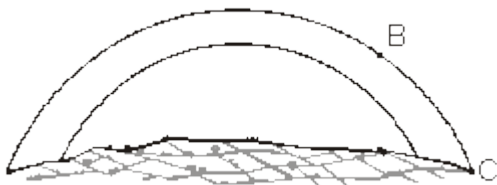
1 (L4)

- (ii) 4 hours ✓

if more than one box is ticked, award no mark

1 (L4)

- (e) a curve below the printed line at all points



ignore arrows

the line must start and finish on the horizon

*do **not** accept a curve which begins or finishes at the same points as the existing curve*

1 (L4)

[7]

9.

- (a) (i) A

1 (L3)

- (ii) D

1 (L3)

- (iii) E

1 (L4)

- (iv) G

accept 'Jupiter'

1 (L4)

- (b) (i) a bar drawn to 12 N/kg
*the top of the bar must be in the middle third between
10 and 15*

1 (L4)

- (ii) any **one** from

- Jupiter
- Saturn
- Neptune

1 (L4)

- (iii) Jupiter

1 (L4)

[7]