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## PASSAGE VI

Scientists theorize that the release of X-rays by distant stars and the amount of distortion or "bending" the X-rays endure as they travel out of their solar system can help indicate the presence of planets orbiting these stars. The distortion of the X-rays would be caused by the gravitational pull exerted by the planets. Specifically, high 'bending' in these rays would indicate the presence of large planets, while a low level of bending would most likely signify the presence of smaller planets.

In addition to determining whether or not there are planets circling a distant star, the amount of X-ray distortion can determine the planets' orbital pattern. A circular orbit produces increasing or decreasing distortions of the same level. For instance, if a star's X-rays are bent 1 meter the first day, 2 meters the fourth day, 4 meters the seventh day, and so on, it indicates a circular orbit. See Figure 1. If however, the pattern of bending is random, as in a bending of 5 meters the first day, 3 meters the second day, 0 meters the third day, and 7 meters the fourth day, then the planet's orbit is elliptical. See Figure 2. Further, if the paths of the X-rays are not bent in any way, it is assumed that the star lacks any planets.
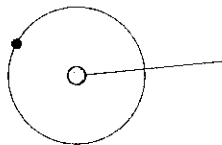
Figure 1   Circular orbit
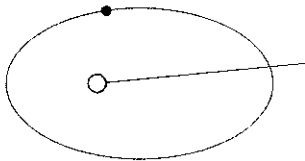
Figure 2   Elliptical orbit

Table 1 shows the amount of distortion of X-rays released by 4 different stars over a period of 10 days.

Table 1			
	X-ray distortion (m)		
	Day 1	Day 4	Day 7	Day 10
Star 1	1.00	1.75	2.50	3.25
Star 2	0.00	0.00	0.00	0.00
Star 3	8.00	4.00	2.00	1.00
Star 4	0.20	0.10	0.11	0.11
Note: Assume that there are no other objects that could affect the X-rays.			

29. According to Table 1, which star most likely has no planets?
A. Star 1
B. Star 2
C. Star 3
D. Star 4

30. Based on the information in the passage, how many of the stars listed in Table 1 have at least one planet with a circular orbit?
F. 0
G. 2
H. 3
J. 4

31. Which of the following statements is best supported by information in the passage?
A. Star 3 is likely orbited by at least one large planet.
B. Star 4 has a circular orbit.
C. Star 1 has an elliptical orbit.
D. Star 2 is likely orbited by several small planets.

32. If X-ray distortion were observed for an additional three days, one could predict that the path of the X-rays produced by Star 1 on day 13 would be distorted by:
F. 0.75 meters.
G. 1.00 meter.
H. 3.75 meters.
J. 4.00 meters.

33. According to information in the passage, which of the following assumptions could be true?
A. X-rays are affected by certain physical forces.
B. X-rays are simply bits of energy and are, therefore, unaffected by physical forces.
C. Planets with elliptical orbits are more common than are planets with circular orbits.
D. The presence of planets orbiting a star can only be detected using X-ray distortion.

34. Based on information in the passage, which of the following stars most likely has at least one planet with an elliptical orbit?
F. Star 2 only
G. Star 4 only
H. Stars 1 and 3 only
J. Stars 1, 3, and 4 only

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