

- 1) Which value, apparent magnitude, or absolute magnitude, do you think:
 - a) tells us how bright an object will appear from Earth?
 - b) tells us about the object's actual brightness?

- 2) The full Moon has an apparent magnitude of -12.6 , and when Mars is at its brightest in the night sky its apparent magnitude is $+2.0$.
 - a) Which of the two objects has the bigger apparent magnitude number?

 - b) Which object will look brighter from Earth, the full Moon or Mars? How do you know?

 - c) If a new object were discovered that looked even dimmer from Earth than Mars does, make up a possible apparent magnitude number for it.

- 3) Consider the following debate between two students.

Student 1: *I think a star with an apparent magnitude number of -2.0 would look brighter than a star with an apparent magnitude number of $+1.0$.*

Student 2: *I disagree. You don't understand the number scale for apparent and absolute magnitude. The bigger the number the brighter the star. So the $+1.0$ star would look brighter than the -2.0 star.*

Do you agree or disagree with either or both of the students? Explain your reasoning.

- 4) Star Y appears much brighter than Star Z when viewed from Earth, but is found to actually give off much less light. Assign a set of possible values for the apparent and absolute magnitudes of these stars that would be consistent with the information given in the previous statement.

5) The star Lee has an apparent magnitude of 0.1 and is located about 250 parsecs away from Earth. Which of the following is most likely the absolute magnitude for Lee?

- a) -6.9
- b) 0.1
- c) 7.1

Explain your reasoning.

6) Refer to the following table for Questions 6a–6d:

	Apparent Magnitude	Absolute Magnitude
Star A:	1	1
Star B:	1	2
Star C:	5	4
Star D:	4	4

a) Which object appears brighter from Earth: Star C or Star D? Explain your reasoning.

b) Which object is actually brighter: Star A or Star D? Explain your reasoning.

c) For Stars A–D, state whether the star is closer than, farther than, or exactly 10 parsecs away from Earth. Explain your reasoning.

d) Would the apparent magnitude number of Star A increase, decrease, or stay the same, if it were located at a distance of 40 parsecs? What about the absolute magnitude number? Explain your reasoning.

7) Star F is known to have an apparent magnitude of -26.7 and an absolute magnitude of 4.8 . Where might this star be located? What is the name of this star? Explain your reasoning.