

Reflection and Self-Assessment**Completion:** Circle the statement that best describes the completion of this practice.

- I completed every question on the practice.
- I did not complete some questions on the practice because:

Answer Checking: Circle the statement that best describes how you checked your answers

- I checked all my answers against the key at the back and corrected any that were incorrect.
- I did not check all my answers and correct any mistakes because:

Online Worked Solution: Circle the statement that best describes how you used the online worked solutions.

- I did not use the online worked solution at all.
- I used the online solution to understand some questions I got incorrect.
- I used the online solution to help me learn how to answer some questions.

Confidence: Circle the statement that best describes your confidence in answering questions of this type in the future.

- I am confident I can answer nearly any question of this type correctly without using notes or other assistance.
- I am confident I can answer **MOST** questions of this type correctly without using notes or other assistance.
- I am **NOT** confident I can answer most questions of this type correctly without using notes or other assistance.

Time: Circle the statement below that best describes the total amount of time you spent actively working on this practice:

Less than an hour	Between one and two hours	Between two and three hours	Between three and four hours	More than four hours
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3. Two asteroids each weighing 5.00×10^6 kg are placed a certain distance apart. What is the magnitude of the force of gravity acting on each of them if

a. The distance between their centres is 500.0 m?

b. The distance between the centres is 250.0 m?

c. The distance between their centres is 5.00 m?

4. An 85 kg astronaut is 65 m from the centre of their spaceship which has mass of 98 000 000 kg.
- a. What is the force of gravity acting to pull the astronaut towards the spaceship?

 - b. What is the acceleration of astronaut towards the spaceship?

 - c. If the acceleration was constant at the value from b, how long would it take the astronaut to travel 1.0 metre toward the spaceship?

 - d. Why would the acceleration NOT be constant if the astronaut was pulled all the way to the spaceship?

5. The mass of the Earth is 5.98×10^{24} kg, a 1500 kg satellite orbits the Earth in uniform circular motion a distance of 1.6×10^7 metres from the centre of the Earth.

a. What is the force of gravity acting on the satellite?

b. What is the period of rotation for the satellite?

6. The mass of the Earth is 5.98×10^{24} kg, the mass of the moon is 7.35×10^{22} kg, and the centres of the moon and the Earth are 3.84×10^8 m apart.

a. What is the force of gravity from Earth acting on the Moon?

b. What is the period of rotation for the moon expressed in days if the moon orbits in uniform circular motion?

7. The mass of the Earth is 5.98×10^{24} kg, the period of Earth's orbit around the Sun is 365.24 days, and the distance between the Earth and the Sun is 151 million kilometres. Determine the mass of the Sun if we assume the Earth moves around the Sun in uniform circular motion.

Answer Key				
1a) 9.83 N	1b) 9.83 N	2) 2.2×10^{-6} N	3a) 6.67×10^{-3} N	3b) 2.67×10^{-2} N
3c) 66.7 N	4a) 1.32×10^{-4} N	4b) 1.55×10^{-6} m/s ²	4c) 1100 sec or 19 minutes	4d) As the object gets closer to spaceship the distance decreases so F_g increases and acceleration increases
5a) 2300 N	5b) 20 000 sec or 5.6 hours	6a) 1.99×10^{20} N	6b) 27.4 days	7) 2.05×10^{30} kg