

## Gravity Practise - Version 1

- 1.) A cliff diver is on a 30.0 m high cliff. With what velocity should they leave the cliff, (assume the person jumps out horizontally) in order to miss 8.0 m of rock coming from the cliff's base?

2.) A mountain goat butts you off a 50.0 m high cliff with a horizontal velocity of 3.0 m/s. How far from the base will you strike the ground?

3.) A golfer strikes a ball giving it a velocity of 35 m/s at  $35^\circ$ . If the course is completely flat how far will the ball travel before bouncing?

4.) Use the information in #3 to find the maximum height to which the ball will rise.

5.) Two stars of a 'binary system' are  $2.00 \times 10^{12}$  m apart, find the force of attraction between the stars if one has mass  $2.0 \times 10^{30}$  kg and the other  $6.0 \times 10^{31}$  kg.

6.) Two masses are attracted by a gravitational force of 15 N. If they are identical mass and are 12 m apart find the mass of each.

7.) A physics 11 student is blasted into orbit to a distance of 3 earth radii from the centre of the planet. What gravitational field strength would the student measure here?

8.) The moon has a radius of  $1.74 \times 10^6$  m and mass  $7.35 \times 10^{22}$  kg. What would be the force of gravity on a 10.0 kg mass on the moon's surface?

Bonus - A kid throws a rock on a  $45^\circ$  angle with velocity 10.0 m/s off a 10.0 m high cliff. How far from the base of the cliff will the rock land?