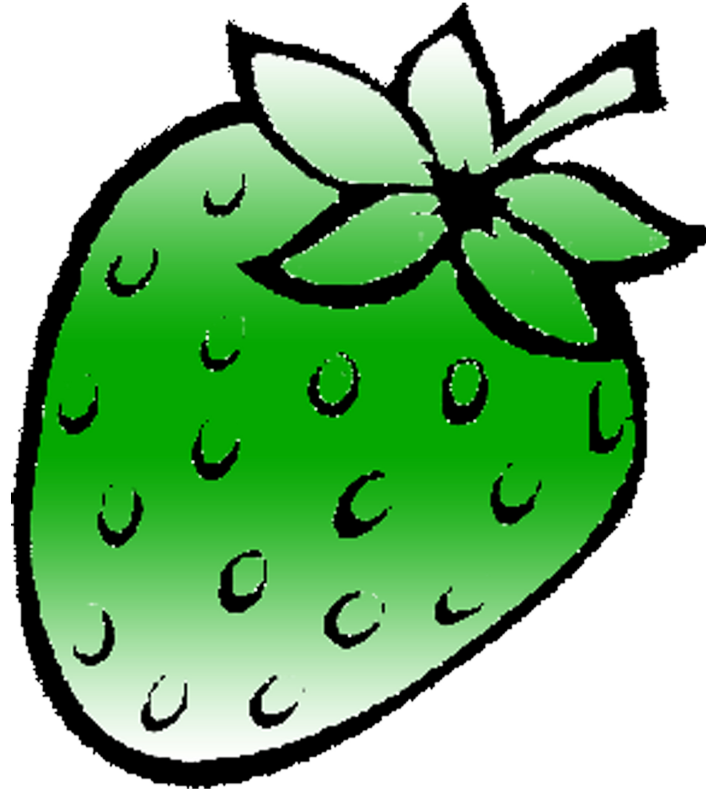# STRAWBERRY

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KINEMATICS OF PARTICLES

1. Water drops from a faucet at the rate of 6 drops per second. The faucet is 200 mm above the sink. When one drop strikes the sink how far is the next drop above the sink?
    Ans : 194.3 mm

2. In a flood relief area a helicopter going vertically up with a constant velocity drops first batch of food pockets which take 4 seconds to reach the ground. No sooner this batch reaches the ground, second batch of food packets are released and this batch takes 5 seconds to reach the ground. From what height was the first batch released? Also determine the velocity with which the helicopter is moving up?   (T)   Ans. : u = 9 m/s; h_A = 44 m

3. A stone is dropped into a well with zero initial velocity, and 4.5 seconds later the splash is heard. Then a second stone is thrown downwards with initial velocity 'u' into the well and the splash is heard after 4 seconds. It the velocity of sound is constant and equal to 330 m/sec, determine the initial velocity of the second stone.
    Ans : u = 5.33 m/s

4. Boy A throws a ball vertically up with a speed of 9m/s from the top of a shed 2.5 m high. Boy B on the ground throws a ball vertically up with a speed of 12 m/s. Determine the time at which the two balls will be at the same height above the ground. What is the height?
    Ans. : t = 0.833 sec; h = 6.524 m

5. In an Asian Games of 100 m event an athlete accelerates uniformly from the start to his maximum velocity in a distance of 4m and runs the remaining distance with that velocity. If the athlete finishes the race in 10.4 seconds, determine (i) his initial acceleration, (ii) his maximum velocity.
    Ans : a = 12.5 m/s^2,   v = 10 m/s