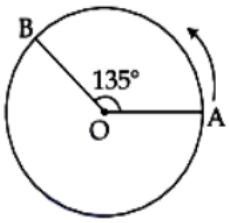
दस कदम

KINEMATICS-1

1	A person moved from A to B on a circular path as shown in figure. If the distance travelled by him is 60 m, then the magnitude of displacement would be  (a) 47 m (b) 42 m (c) 40 m (d) 19 m
2	A car covers a distance in three equal parts. The first part is covered at velocity v_1 m/s, second part at v_2 m/s and the last part at v_3 m/s. If $v_3 = 3\ v_1$, $v_2 = 2v_1$ and $v_1 = 11$ m/s then the average velocity of the car is (a) 22 m/s (b) 20 m/s (c) 18 m/s (d) 26 m/s
3	An engine of a train, moving with uniform acceleration, passes a signal-post with velocity u and the last compartment with velocity v. The velocity with which middle point of the train passes the signal post is $(a)\ \frac{u+v}{2}$ $(b)\ \sqrt{\frac{v^2-u^2}{2}}$ $(c)\ \sqrt{\frac{v^2+u^2}{2}}$ $(d)\ \frac{v-u}{2}$
4	The velocity of the bullet becomes one third after it penetrates 8 cm in a wooden block. Assuming that bullet is facing a constant resistance during its motion in the block. The bullet stops completely after travelling (8 + x) cm inside the block. The value of x is (a) 2.0 (b) 1.0 (c) 0.5 (d) 1.5
5	A car is moving with speed of 150 km/h and after applying the brakes it moves 27m before coming to total rest. If the same car is moving with one third of its original speed, on applying brakes, it will stop after travelling (a) 9 m (b) 3 m (c) 1m (d) 18 m
6	A ball of mass 3 kg is dropped from the height of 15 m. The height, at which the magnitude of velocity becomes equal to the magnitude of acceleration due to gravity (in SI units), (Use g = 10 m/s ^{2}) (a) 5 m (b) 15 m (c) 10 m (d) 0 m
7	A ball is dropped into a lake from a height 4.9 m above the water level. The ball hits water with a velocity v and then sinks to the bottom of the lake with constant velocity. It touches the bottom of the lake 4 s after it was dropped. The depth of

	the lake is (a) 19.6 m (b) 29.4 m (c) 39.2 m (d) 49.5 m
8	A parade is going at a uniform speed of 9 km/h under a mango tree on which a monkey is sitting at a height of 19.6 m. At any instant, the monkey drops a mango. A person will receive the mango whose distance from the tree at time of drop is (a) 5 m (b) 10 m (c) 19.8 m (d) 18 m
9	A ball is dropped from the top of a 100 m high tower on a planet. In the last half second of its journey before hitting the ground, it covers a distance of 19 m. Acceleration due to gravity (in ms^{-2}) near the surface on that planet is (a) 19 m /s^2 (b) 9.5 m /s^2 (c) 9.8 m /s^2 (d) 8 m /s^2
10	A ball is released from a height h. If t_1 and t_2 be the time required to complete first half and second half of the distance respectively. Then, choose the correct relation between t_1 and t_2 (a) $t_1 = (\sqrt{2})\ t_2$ (b) $t_1 = (\sqrt{2} - 1)\ t_2$ (c) $t_2 = (\sqrt{2} + 1)\ t_1$ (d) $t_2 = (\sqrt{2} - 1)\ t_1$