PHYS101 Major-I (012)
Q1 Q0 Speed of sound is 340 m/s. Express this in millimeters
ch Q0 per nanosecond[1 ns = 10**(-9)s].
1. Q0
   A1 3.40* 10**(-4) mm/ns
   A2 3.40* 10**(-6) mm/ns
   A3 3.40* 10**(-3) mm/ns
   A4 3.40* 10**(+3) mm/ns
   A5 3.40* 10**(+6) mm/ns
   Q0
Q2 Q0 The position of an object moving along an X-axis is
ch Q0 given by x = 3 + 12*t - t**3, where x is in meters
2 Q0 and t is in seconds. At what time is the particle
   Q0 momentarily at rest?
   Q0
   A1 2 s
   A2 4 s
   A3 3 s
   A4 1 s
   A5 0 s
   Q0
Q3 Q0 A rock is dropped (Vo =0) from a 100-m high cliff. It
ch Q0 takes the rock 3.2 s to fall the first 50 m. How long
2 Q0 does it take to fall the second 50 m?
   Q0
   A1 1.3 s
   A2 1.6 s
   A3 4.8 s
   A4 3.2 s
   A5 0.0 s
   Q0
Q4 Q0 The position-time graph for an object is a straight line
Ch Q0 with a positive slope. The object has
2 Q0
   A1 a constant velocity
   A2 a decreasing acceleration
   A3 an increasing velocity
   A4 an increasing acceleration
   A5 a decreasing velocity
   Q0
Q5 Q0 A balloon is going up with a speed of 10 m/s and is
ch Q0 100 m above the ground when a package is dropped from
2 Q0 the balloon. How long does the package take to reach
   Q0 the ground?
   Q0
   A1 5.7 s
   A2 4.0 s
   A3 3.7 s
   A4 2.0 s
   A5 6.0 s
Q6 Q0
ch Q0 The two vectors A and B shown in Fig. 1 have equal
3 Q0 magnitudes of 10.0 m. Find the magnitude of the
   Q0 resultant, R, of these vectors and the angle theta
   Q0 it makes with the positive x-axis.
   Q0
   A1 R = 14.1 m, THETA = 75 degrees
   A2 R = 10.0 m, THETA = 90 degrees
   A3 R = 12.0 m, THETA = 60 degrees
   A4 R = 16.0 m, THETA = 30 degrees
   A5 R = 20.0 m, THETA = 45 degrees

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FIGURE 1

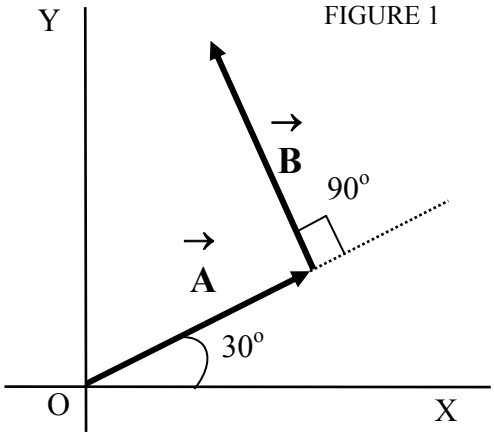


FIGURE 4

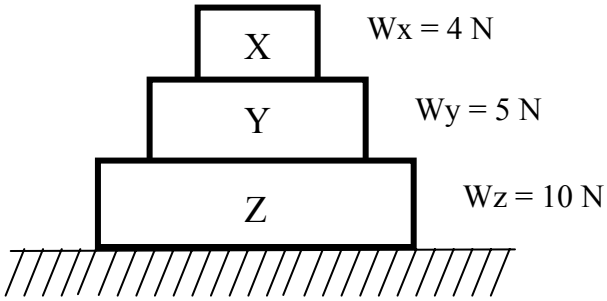


FIGURE 2

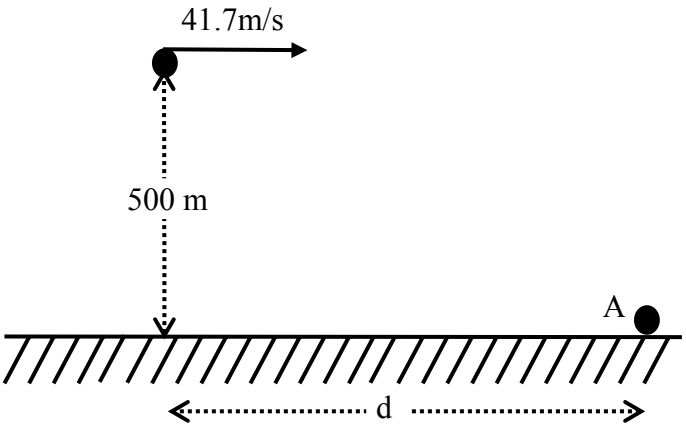


FIGURE 5

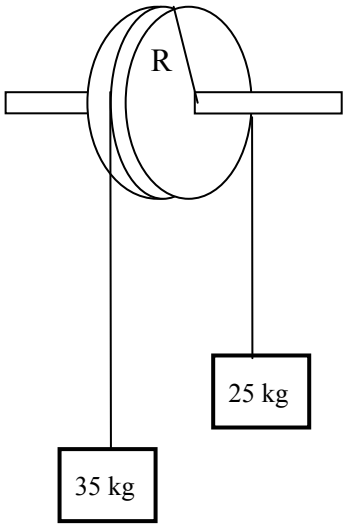


FIGURE 3

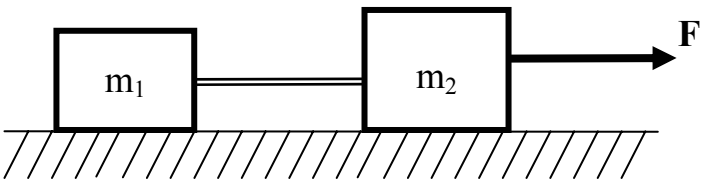
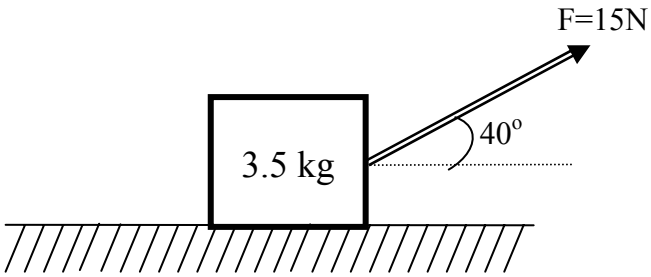


FIGURE 6



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   Q0
Q7 Q0 A vector in the xy-plane has a magnitude of 25.0 and
ch Q0 an x-component of 12.0. The angle that it makes with
   Q0 the positive x-axis is:
3  Q0
   A1 61.3 degrees
   A2 25.6 degrees
   A3 28.7 degrees
   A4 64.3 degrees
   A5 95.3 degrees
   Q0
Q8 Q0 The unit vectors in the positive directions of the x,
ch Q0 y, and z axes are labeled i, j, and k. The value of
3  Q0 [i.(j x k)] is:
   Q0
   A1 +1
   A2 -1
   A3  0
   A4 -i
   A5 +j
   Q0
Q9 Q0 Car A is moving with a speed of 30 km/h along the
ch Q0 positive x-axis and car B is moving with a speed of
4  Q0 40 km/h along the positive y-axis. What is the
   Q0 velocity of car B with respect to car A?
   Q0
   A1 (-30i + 40j) km/h
   A2 ( 30i + 40j) km/h
   A3 (-30i - 40j) km/h
   A4 ( 40i + 30j) km/h
   A5 ( 40i - 30j) km/h
   Q0
Q10Q0 A ball leaves the ground with a speed of 50 m/s at
ch Q0 an angle of 60 degrees with the horizontal. Find its
4  Q0 speed at its heighest point.
   Q0
   A1 25  m/s
   A2 50  m/s
   A3 0.0 m/s
   A4 43  m/s
   A5 10  m/s
   Q0
Q11Q0 A stone is thrown from the ground into the air with
ch Q0 an initial  velocity  V = (5.0i + 9.0j) m/s. To what
4  Q0 maximum height will the stone rise?
   Q0
   A1 4.1 m
   A2 1.3 m
   A3 9.0 m
   A4 5.0 m
   A5 7.0 m
   Q0
Q12Q0 The airplane shown in Fig. 2 is in level flight at an
ch Q0 altitude of 500 m and a speed of 41.7 m/s. At what
4  Q0 distance d should it release a bomb to hit the target
   q0  at point A?
   Q0
   A1  421 m
   A2  150 m
   A3  300 m
   A4  590 m
```

A5 832 m
Q0
Q13Q0 A constant force, F, acts on a 19-kg particle. The particle,
ch Q0 initially at rest, moves a distance of 22 m in 3.8 s. Find
5 Q0 the magnitude of the force F.
Q0
A1 58 N
A2 86 N
A3 50 N
A4 41 N
A5 12 N
Q0
Q14Q0 In Fig.3, m1 = 22 kg and m2 = 37 kg. The masses are connected
ch Q0 by a light, horizontal cord and are being pulled across a
5 Q0 smooth level surface by a horizontal force F = 46 N. Find the
Q0 tension in the cord.
Q0
A1 17 N
A2 29 N
A3 46 N
A4 31 N
A5 63 N
Q0
Q15Q0 Three books (X, Y, and Z) rest on a table as shown in Fig. 4.
ch Q0 The weight of each book is also indicated in the Figure. The
5 Q0 magnitude of the force of book Z on book Y is:
Q0
A1 9.0 N
A2 4.0 N
A3 5.0 N
A4 14 N
A5 19 N
Q0
Q16Q0 Two blocks weighing 25 kg and 35 kg respectively, are
Q0 connected by a string that passes over a massless pulley
Q0 as shown in Fig. 5. The tension in the string is:
Q0
A1 286 N
A2 210 N
A3 500 N
A4 350 N
A5 250 N
Q0
Q17Q0 A 90-kg man stands in an elevator that is moving up at
ch Q0 a constant speed of 5.0 m/s. The magnitude of the force
5 Q0 exerted by him on the floor is:
Q0
A1 882 N
A2 0 N
A3 94 N
A4 450 N
A5 49 N
Q0
Q18Q0 A 3.5-kg block is pulled at constant velocity along a
ch Q0 horizontal floor by a force F = 15 N that makes an angle
6 Q0 of 40 degrees with the horizontal (Fig.6). Find the
Q0 magnitude of the force of friction between the block and
Q0 the floor
Q0
A1 11 N
A2 15 N

A3 34 N
A4 0.0 N
A5 26 N
Q0
Q19Q0 Find the minimum coefficient of static friction between
ch Q0 the tyres of a car and a level road if the car is to make
6 Q0 a circular turn of radius 90 m at a speed of 60 km/h.
Q0
A1 0.315
A2 0.521
A3 0.423
A4 0.214
A5 0.125
Q0
Q20Q0 One end of a 1.0-m string is fixed, the other end is attached
ch Q0 to a 1.0-kg stone. The stone swings in a vertical circle,
6 Q0 and has a speed of 5.0 m/s at the top of the circle.
Q0 The tension in the string at this point is approximately:
Q0
A1 15 N
A2 11 N
A3 28 N
A4 31 N
A5 10 N