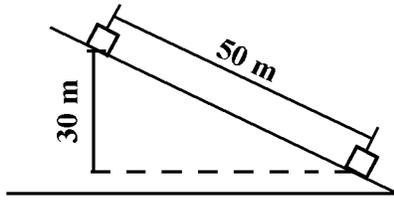


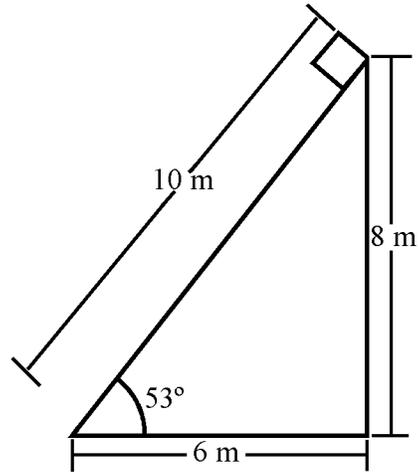
1. Base your answer to the following question on the picture below which shows a 3 kg block sliding 50 m down a frictionless inclined plane dropping a distance of 30 m.



What is the magnitude of the acceleration for the block?

- 1) 3 m/s^2
- 2) 4 m/s^2
- 3) 6 m/s^2
- 4) 8 m/s^2
- 5) 10 m/s^2

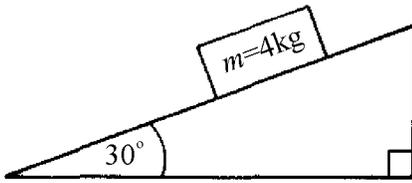
2. Base your answer to the following question on the picture below, which represents a plane 10 m in length with a coefficient of kinetic friction of 0.2, inclined at an angle of 53° . A block of weight 30 N is placed at the top of the plane and allowed to slide down.



The magnitude of the normal force exerted on the block by the plane is most nearly

- 1) 15 N
- 2) 18 N
- 3) 24 N
- 4) 30 N
- 5) 50 N

Base your answers to questions 3 through 5 on the following diagram, which shows a block sliding down a frictionless ramp. The block starts at the top of the ramp and takes 4 s to slide to the bottom of the ramp.



3. How high is the top of the ramp?

- 1) 5 m
- 2) 10 m
- 3) 20 m
- 4) 25 m
- 5) 40 m

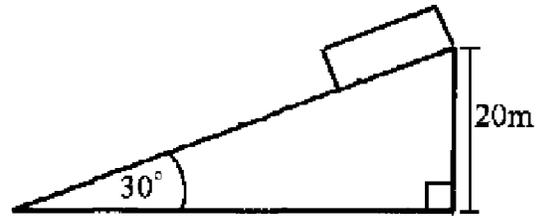
4. The speed of the block when it reaches the bottom of the ramp is most nearly

- 1) 4 m/s
- 2) 8 m/s
- 3) 14 m/s
- 4) 20 m/s
- 5) 40 m/s

5. If the coefficient of kinetic friction between the block and the incline is 0.4, the work that the normal force does on the block during the slide is

- 1) 0 J
- 2) 20 J
- 3) 240 J
- 4) 550 J
- 5) 700 J

Base your answers to questions 6 through 8 on the following diagram, which shows a block that starts at the top of a frictionless ramp and slides down.



6. How long does it take to block to slide to the bottom of the ramp?

- 1) 4 s
- 2) 8 s
- 3) 10 s
- 4) 16 s
- 5) There is insufficient information to answer the question.

7. With what speed will the block reach the bottom if it was released from rest at the top?

- 1) 10 m/s
- 2) 20 m/s
- 3) 25 m/s
- 4) 30 m/s
- 5) 40 m/s

8. If the mass of the block is 5 kg, how much work is done by gravity as the block slides down the full length of the incline?

- 1) 10 J
- 2) 100 J
- 3) 200 J
- 4) 1000 J
- 5) 2000 J

9. A greased pig starts at rest from the top of a frictionless slide a height 25 m above his mud pit. If the bottom section of the slide is 5 m above the pit and is parallel to the ground, at what distance from the bottom of the slide will the pig hit the mud?

1) 10 m

2) 15 m

3) 20 m

4) 28 m

5) 36 m

Answer Key
Second Law Horizontal & Vertical [Mar 28, 2011]

1. 3

2. 2

3. 3

4. 4

5. 4

6. 1

7. 2

8. 4

9. 3

Name _____

Class _____

Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____