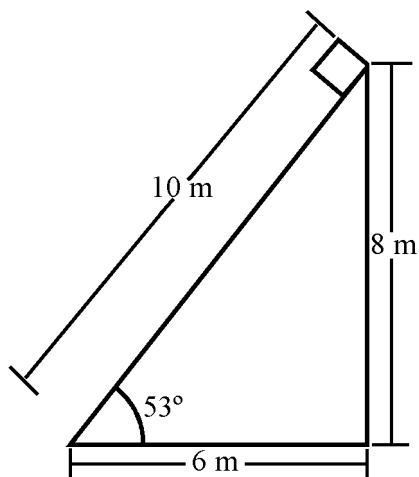1. A horizontal force of 15 N is used to push a 2 kg block along a table top that has a coefficient of friction of 0.15. What is the acceleration of the block?

    1) 3 m/s^2

    2) 6 m/s^2

    3) 7.5 m/s^2

    4) 8.5 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.
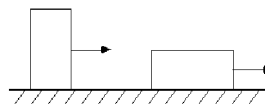

    The magnitude of the frictional force exerted on the block by the plane is

    1) 1.5 N

    2) 1.8 N

    3) 3.0 N

    4) 3.6 N

    5) 4.5 N

3. An object of mass 10 kg moving with a velocity of 30 m/s enters an area with friction. The coefficient of kinetic friction is 0.2. The time it will take for the object to stop moving is most nearly

    1) 6.00 s

    2) 7.5 s

    3) 15.3 s

    4) 22.5 s

    5) 30 s

4.

    Two blocks of the same material and equal mass are pulled by a force F on a rough surface. Which statement is false?

    1) The coefficient of kinetic friction is the same in each case.

    2) A force of the same magnitude is needed to keep each block moving.

    3) A force of the same magnitude was required to start each block moving.

    4) The magnitude of the force of kinetic friction is greater for the block on the right.

    5) The normal force exerted on the blocks by the surface is the same for both blocks.

5. A toboggan of mass 10 kg is pulled by a rope at an angle of 60° relative to the ground with a magnitude of 20N. The sled moves with constant velocity. What is the coefficient of kinetic friction between the toboggan and the ice?

    1) 0.10

    2) 0.20

    3) 0.25

    4) 0.30

    5) 0.35

6. An 40 kg object is being pushed along a surface at a constant velocity by a force of 80 N. What is the coefficient of kinetic friction between the object and the surface?

1) 0.1

2) 0.2

3) 0.25

4) 0.4

5) 0.5

7. A 30 N block is being pulled along a horizontal surface with an acceleration of 6 m/s^2 by a rope. The coefficient of kinetic friction between the block and the surface is 0.5. What is the force applied by the rope?

1) 3 N

2) 15 N

3) 30 N

4) 33 N

5) 66 N

8. An object is being pushed along a horizontal surface by a force of 60 N with an acceleration of 4 m/s^2. The coefficient of kinetic friction between the object and the surface is 0.1. The mass of the object is most nearly

1) 6 kg

2) 12 kg

3) 20 kg

4) 30 kg

5) 60 kg

9. An object of mass m is sliding on a horizontal surface at constant velocity v. If the coefficient of kinetic friction between the object and the surface is μ, which of the following best describes the force F being applied to the object?

1) of magnitude μmg, in the direction of v.

2) of magnitude μmg, in the direction opposite v.

3) of magnitude μmgv, normal to the surface.

4) of magnitude μmg, but the direction cannot be determined.

5) Not enough information is provided to determine the magnitude or direction.

10. What is the power necessary to push a box of mass m with constant velocity v across a horizontal floor, if the coefficient of friction between the box and the floor is μ?

1) μmv

2) mgv

3) $v/\mu mg$

4) μmgv

5) $\mu mg/v$

11. A car traveling at 25 m/s slams its brakes leaving skids marks along a distance 125 m as it comes to rest. The coefficient of friction between the tires and the road is

1) 5

2) 2.5

3) 1

4) 0.4

5) 0.25

12. A 125 kg woman pushes a 75 kg couch across a floor at a constant velocity. The coefficient of kinetic friction between the floor and the couch is 0.6. She is capable of produce 2250 W of power. The maximum possible velocity of the couch is most nearly

   1) 50 m/s

   2) 25 m/s

   3) 5 m/s

   4) 3 m/s

   5) the couch will not move

13. An object traveling at 16 m/s enters a frictional area. It comes to rest after a time of 4 s. The coefficient of friction of the frictional area is

   1) 0.3

   2) 0.4

   3) 0.5

   4) 0.9

   5) 1.6

14. It requires P power to move an object of mass m at a constant velocity v on a particular planet. The coefficient between the surface of the planet and the object is μ. What is the acceleration due to gravity on this planet?

   1) $P/mv\mu$

   2) m/Pv

   3) μ/mvP

   4) $P\mu/mv$

   5) $mv/\mu P$

15. A 3 kg sled is pulled across a horizontal surface with a force of 30 N. The coefficient of friction between the surface and the sled is 0.2. What is the sled's acceleration?

   1) 4 m/s^2

   2) 8 m/s^2

   3) 10 m/s^2

   4) 12 m/s^2

   5) 15 m/s^2

Answer Key
Static Friction Questions [Mar 28, 2011]

1.   2

2.   4

3.   3

4.   4

5.   1

6.   2

7.   4

8.   2

9.   1

10.   4

11.   5

12.   3

13.   2

14.   1

15.   2

1. _____

2. _____

3. _____

4. _____

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6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____