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QUESTION 1

Select the correct answers.

Which statements about the normal force between two surfaces are true?

- [ ] The normal force decreases as the mass of the object increases.
- [ ] The normal force is always larger than the applied force.
- [x] When the surface is horizontal, the normal force is equal to the weight of the object. ✓
- [x] The normal force is always at a right angle to the surface. ✓
- [ ] The normal force can be at any angle to a surface.
- [ ] The normal force is always equal to the weight of the object.

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QUESTION 2

Select the correct answers.

Which statements about friction are correct?

- [x] For two contacting surfaces, $\mu_k < \mu_s$. ✓

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- [ ] For two contacting surfaces, $\mu_k = \mu_s$.

- [ ] For two contacting surfaces, $\mu_k > \mu_s$.

- [ ] Once an object starts to move, the friction force increases.

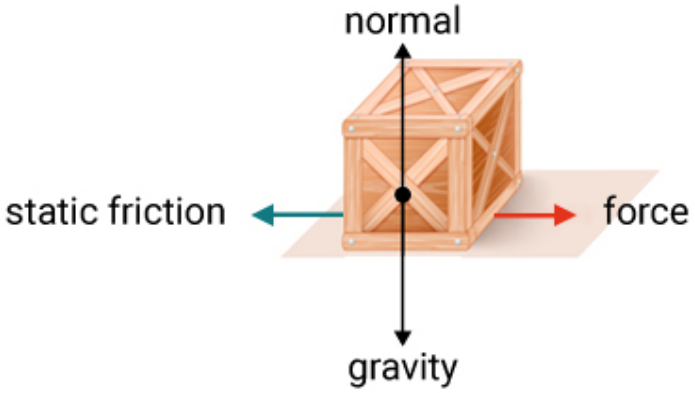
- [ ] Once an object starts to move, the friction force remains the same.

- [x] Once an object starts to move, the friction force decreases. ✓

QUESTION 3

Drag and drop the correct value to complete the sentence.

A crate sits on a horizontal surface. The mass of the crate is 18.4 kg. The coefficient of static friction between the two surfaces is 0.380. The maximum static friction force is 68.6 ✓ N.



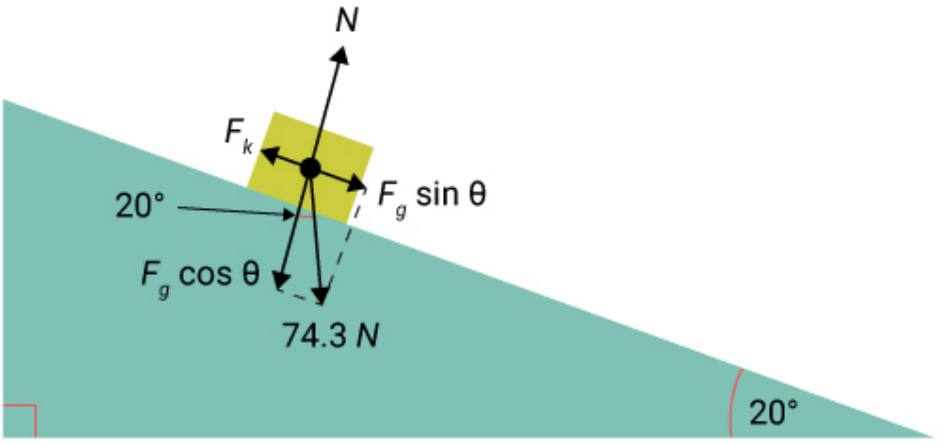
475 | 6.99 | 181

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QUESTION 4

Select the correct answer.

A ramp is inclined at $20°$ to the horizontal. A box weighing 74.3 N is sliding down the ramp. The coefficient of kinetic friction between the box and the ramp is 0.31. Which is the correct value of the net force that causes the box to accelerate?

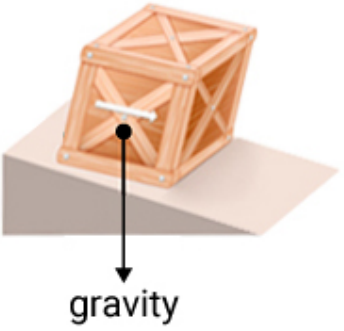


- 25.4 N
- 21.6 N
- 69.8 N
- 3.8 N ✓

QUESTION 5

Select the correct answer.

Which force is in a direction that is opposite the friction force?

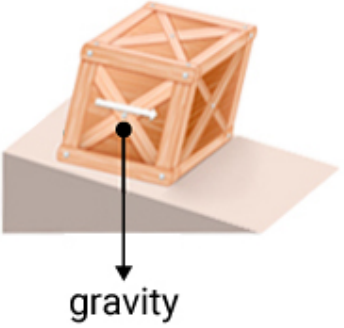


- ○ the perpendicular component of the force of gravity
- ◉ the parallel component of the force of gravity ✓
- ○ the force of gravity
- ○ the normal force

QUESTION 6

Select all the correct answers.

Which are the components of the force of gravity used for a crate sliding down a ramp?



- ☑ a component that is parallel to the ramp ✓
- ☑ a component that is perpendicular to the ramp ✓

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- [ ] a component that is opposite to the motion of the object
- [ ] a component that is towards the center of the Earth
- [ ] a component that is perpendicular to the horizontal
- [ ] a component that is parallel to the horizontal

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QUESTION 7

Enter your answer in the space provided, choosing from the list below:

smaller than, larger than, equal to, half

To get a stationary object to move, you must apply a force that is

larger than ✓ the maximum static friction force.

QUESTION 8

Select the correct answer.

A smooth surface is in contact with an object that also has a smooth surface. Which statement regarding the friction force is correct and most realistic?

- ○ Smooth surfaces can have extremely high amounts of friction.
- ○ The nature of the surfaces actually has no effect on the amount of friction.

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- [x] Even smooth surfaces have imperfections, so friction still exists. ✓

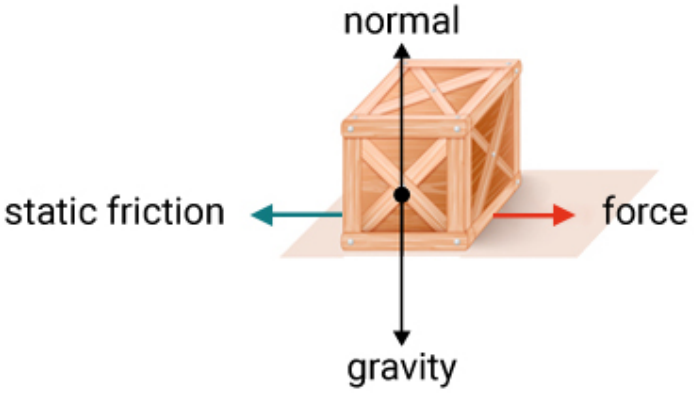
- [ ] Smooth surfaces can always be considered frictionless.

QUESTION 9

Select your answer from the drop-down menu.

The correct equation for the maximum static friction is

$f_s = \mu_s N$ ✓ .



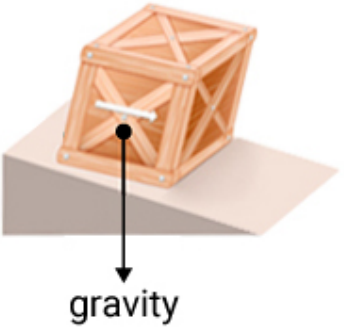
QUESTION 10

Enter your answer in the space provided, choosing a term from the list below:

parallel, perpendicular, downward, upward

An object is on a ramp. When its force of gravity is resolved into components, the normal force is the same as the component

perpendicular ✓ to the ramp.



QUESTION 11

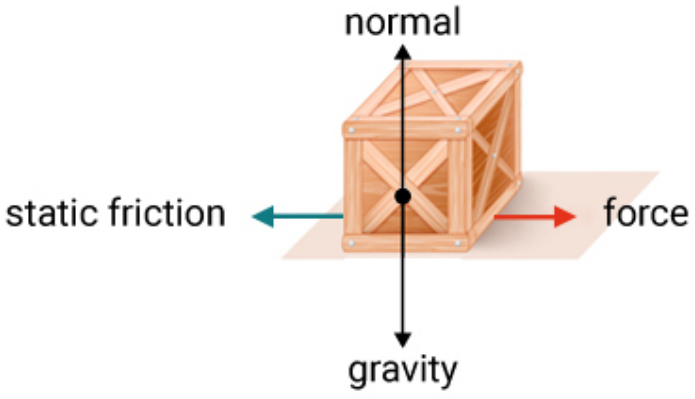
Select the correct option from the drop-down menu.

An object with a weight of 62 N is on a ramp that is inclined at $30°$ to the horizontal. The maximum friction force between the object and the ramp is 30 N. The object will be moving down the ramp ✓ .

QUESTION 12

Select the correct answer.

Which statement about the force of static friction is correct?



- It is a range of forces that could be applied to get the object to move.
- It is the minimum amount of force that must be applied to get the object to stop moving.
- It is the maximum amount of force that must be applied to get the object to move.
- ◉ It is the minimum amount of force that must be applied to get the object to move. ✓

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QUESTION 13

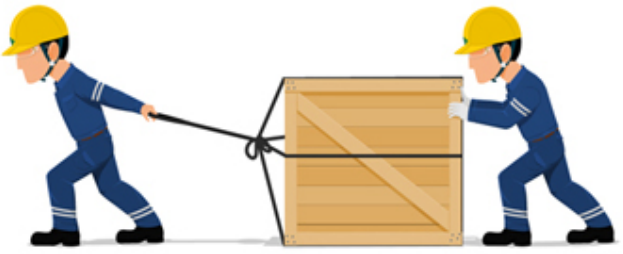
Drag and drop the correct answer to complete the sentence.

The coefficient of static friction for two surfaces is 0.54. The most likely coefficient of kinetic friction for the same two surfaces is 0.38 ✓ .

0.00 | 0.72 | 0.54

QUESTION 14

Drag and drop the term to correctly complete the sentence.



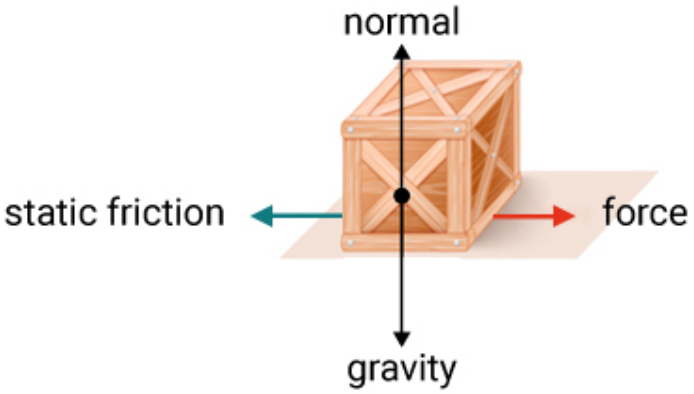
Two surfaces are in contact with each other. A force is being applied to get a heavy block to move. In order for the applied force to cause motion, it must exceed the static ✓ friction force.

potential | stationary | kinetic

QUESTION 15

Select the correct answer from the drop-down menu.

When calculating the maximum static force of friction between two surfaces, it is important to know the magnitude of the normal force acting on the object.



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