

Seat belts and air bags save lives by reducing the forces exerted on the driver and passengers in an automobile collision. Cars are designed with a "crumple zone" in the front of the car. In the event of an impact, the passenger compartment decelerates over a distance of about 1 m as the front of the car crumples. An occupant restrained by seat belts and air bags decelerates with the car. By contrast, an unrestrained occupant keeps moving forward with no loss of speed (Newton's first law!) until hitting the dashboard or windshield. These are unyielding surfaces, and the unfortunate occupant then decelerates over a distance of only about 5 mm .

Part A Part complete A 60 kg person is in a head-on collision. The car's speed at impact is 15 m/s . Estimate the net force on the person if he or she is wearing a seat belt and if the air bag deploys.

Answer:

The net force is 1350 kN

Solution:

As per the question:

Mass of man, $m = 60$ kg

Initial speed of the car, $v = 15 \text{ m/s}$

Final speed of the car, $v' = 0 \text{ m/s}$

Distance covered by the person before coming to rest, $d = 5 \text{ mm} =$

By using the third eqn of motion:

Thus the force on the person can be given by:

$F = ma =$

Which of the following is correct with regard to HIV infection? A The host cell receptor is GP120 which the viral spike protein CD4 will bind to. B The host cell receptor is CD4 which the viral spike protein GP120 will bind to. C The host cell receptor is CCR5 which the viral spike protein GP41 will bind to. D The host cell receptor GP41 will bind to the viral spike protein CCR5.

Why is Gallbladder something that you shouldn't play about.

What do poets use to give the words they've written more than one meaning? A. Free verse B. Parallel structure C. Denotative language D. Figurative language
Piaget observed that children in the preoperational stage of development often are quite certain that they know the answer to something and are not bothered by the fact that they have not arrived at the answer through logical reasoning but through reliance on previous experiences and guessing. He called this _____.

she bought 7 daffodils and 6 tulips on Friday and paid \$8.50. She bought more bulbs on Saturday, 20 tulips and 7 daffodils and cost \$14.45. How much does a daffodil bulb cost?

A girl is helping her brother slide their dog $m = 25\text{kg}$ along an icy frictionless sidewalk. The boy is pulling a rope $T = 10\text{N}$ tied to the dog's collar and the girl is pushing with 7N of force. What is the Net force on the dog and its acceleration?

Complementary and alternative medicine (CAM) is a euphemistic label for practices of which most are unsubstantiated and lack a scientifically plausible rationale

Which is the correct translation for the following: I know Spain. Question 23 options:

Yo conozco España.

Yo sé España.

Yo conozco a España.

Yo sé a España.

A woman says the following illogical sentences: "The eagle takes flight at three o'clock and flies here from General Electric. I get my check from the eagle; he goes from the mailbox to make a payment. He is a secret spy for my husband and makes a shotgun sound." Based on what she says, this woman is most likely experiencing _____ and is displaying a _____ symptom.

What is the best definition of a resident alien

Johan is studying the effects of access to social programs on different races. Because he wants to make sure he has a representative sample from each of the racial groups, he will most likely use a

How do you put $(x+5)(x-3)[x-(4-i)][x-(4+i)]$ into standard form

Starting from rest, a 75.0-kg snowboarder slides straight down a 115-m slope in 6.6 s. If the slope is a 35° incline, find the following:

(a) The acceleration of the snowboarder.

Does any one know how to solve $2^3((15-7) \cdot (4/2))$?

Select the correct answer. A circle is described by the equation $x^2 + y^2 + 14x + 2y + 14 = 0$. What are the coordinates for the center of the circle and the length of the

A.

(-7, -1). 36 units

'B.

c.

D.

(7.1). 36 units

(7.1), 6 units

(-7, -1), 6 units

Next

What is a scientific theory ?

An aqueous solution of carbohydrates, proteins, lipids, nucleic acids, and inorganic salts surrounded by a cell membrane is called

If an object has more mass it has more

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