

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, $m = 60 \text{ kg}$

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:

$F = ma =$

Wellness depends entirely on factors an individual cannot control

Which of the following is true about the Mayflower Compact? A. Laws would be established by majority rule. B. The colony would be set up as a royal charter. C. The colony would be based on Church of England beliefs. D. It created the Massachusetts Bay Colony.

Para entrar a Perú de Estados Unidos, tienes que pasar por A. La aduana B. la pantalla C. la agente

Why did WW1 began in Europe.

Which environment disaster took place near Niagara Falls?

In 10 or more sentences describe the terms of Indicator, carbohydrates size, osmosis and diffusion

What national legislation addressed child abuse and neglect in 1974?

You are in charge of designing a menu tree for navigating 1,250 books in a digital library. Present an argument of whether the menu should have larger depth (number of levels) or breadth (number of items per level).

Emily is entering a bicycle race for charity. Her mother pledges \$0.30 for every 0.75 mile she bikes. If Emily bikes 12 miles, how much will her mother donate?

The first major political issue faced by the US government after the ratification of the Constitution concerned the proposal of Alexander Hamilton to establish a

A) Post Office. B) National Bank. C) deep water navy. D) National University.

Two consecutive positive integers have a product of 56. What are the integers?

Separate the answers with a comma.

Enter the correct answer.

Simplify. $8^{-4} / 8^{-10}$

When I saw this, I asked the Governor to throw me a line so I could follow him, but he answered that it would be enough of a struggle for them to reach shore that night themselves. I asked him what I should do since it was almost impossible to follow him and carry out his orders. He told me that it was no longer necessary for any of us to give orders, that each of us should do what seemed best to save his life, since that is what he intended to do." "Saying this, he went farther away on his boat. Since I could not catch up with him, the other boat waited for me at sea until I reached it. When I approached it, I found that it was the one led by Captains Peñalosa and Téllez. We sailed in this manner together for four days, eating a daily ration of half a handful of raw corn."

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Which excerpt from the above passage serves to indicate the sequential order of events? A. “it would be enough of a struggle ...” B. “Saying this ...” C. “When I approached it ...” D. “each of us should do what seemed best ...”

Body language and words are similar in that both communicate a message

A JEWELRY STORE RECEIVED A PACKAGE OF RINGS THAT IS 16 INCHES LONG, 10 INCHES WIDE, 12 INCHES HIGH. THE PACKAGE CONTAINS 1-INCH CUBES THAT EACH HOLD ONE RING. HOW MANY RINGS DID THE JEWELRY STORE RECIEVE

Let x and y be independent each uniformly distributed on $\{1, 2, \dots, n\}$ find $p(x < y)$

1. You have two cards with a sum of (-12) in your hand.

a. What two cards could you have?

What are Ruby Bridges' children names?

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