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 APart 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, $v = 15$ m/s

Final speed of the car, $v' = 0$ m/s

Distance covered by the person before coming to rest, $d = 5$ mm =

By using the third eqn of motion:

Thus the force on the person can be given by:

$F = ma =$

In large urban areas, people know how to establish private zones of solitude even in crowds. erving goffman analyzes this as an instance of socialization called
What is a zither? PLEASE I NEED HELP LAST 10 QUESTIONS
Five added to twice Jeff's age is the same as 3 times his age minus 2. How old is Jeff
If z=4-3i write z squared + 17 in the form a+bi, a,b E R.. Hence solve k(z2+17)=|z|(1-i)
Find the most important variable in the problem. If a company hired an additional 12 employees, and every employee needed a phone, it would require 8 more phones. How many phone does the company have available now?

A. The number of phone available
B. The money required to purchase phones
C. The number of employees hired
How many times greater is the value of 5 in 2573 than the value of 5 in 6459?
If, in a perfectly competitive industry, the market price facing a firm is above its average total cost at the output where marginal revenue equals marginal cost, then existing firms will exit the industry. new firms are attracted to the industry. market supply will remain constant. firms are breaking even.
Two equipotential surfaces surround a +3.10 x 10-8-c point charge. how far is the 290-v surface from the 41.0-v surface?
-4m-7=17 solve for the variable m
Incensed is to passion as _____ is to indifference. Which word BEST completes the analogy?

A. inattentive
B. thoughtful
C. behavioral
D. apathetic
Makayla is a 10-week old infant who is extremely fussy at the moment. Makayla is being cared for by one of her mother's friends while her mother does some

grocery shopping. Her mother's friend has fed the baby, changed the baby's diaper, and has rocked the baby but nothing seems to calm Makayla. When Makayla's mother returns she sees how fussy the baby is, picks her up, and talks to the baby. Makayla immediately stops crying. Makayla has recognized her mother's _____, _____, and _____.

Which military first used bugle calls and signals to relay signals and communicate instructions?

rahim is constructing a proof to shoe that the opposite angles of a quadrilateral inscribed in a circle are supplementary. which step would be the third step in his proof, given the following information

I need help with a plate tectonics question!

How do the layers interact with each other?

Find the mode of the following data set: 1, 2, 1, 2, 1, 2, 1, 2

What is the average rate of change of d(t) between 2 seconds and 6 seconds, and what does it represent? 128 m/s; it represents the average speed of the object between 2 seconds and 6 seconds 80 m/s; it represents the average speed of the object between 2 seconds and 6 seconds 128 m/s; it represents the average distance traveled by the object between 2 seconds and 6 seconds 80 m/s; it represents the average distance traveled by the object between 2 seconds and 6 seconds

When 25 is added to a number the result is 59 less than 4 times the number. What is the number?

The earth-moon relationship is unique in many ways. It is the largest moon in the solar system relative to its host planet. The relative size of the earth and moon are so close, some refer to it as a _____ planet system. binary?

host?

lunar?