19953520.23913 14800829.670213 31552283384 10715092842 54123017.08 13447945.742268 130241913426 5509076768 2850534750 30333517452 2671604490 2252213.5666667 21401768906 78065434128 97508780982 23236045.533333 22837948709 36930479.52 2550157535 4169152338 2376262500 106746618.33333 1086617838 47214629391 20213086264 27680661.015873 74976778296 16736736.028571 67273970520 34671826812 15367739.837209

Head on collision activity 3 answer key pdf answers key

Name: _____ Date: _____
Miss Charney Physical Science

Motion & Forces Review Sheet

Practice Math Problems:

1. If you walked 20m, took a book from a library table, turned around and walked back to your seat, what are the distance traveled and displacement?

Distance = 20m + 20m = 40 meters
Displacement = 0 (you ended up where you began)

2. Explain why a passenger who is not wearing a safety belt will likely hit the windshield in a head-on collision.
An object (the passenger) in motion will stay in motion, unless acted on by an unbalanced force (the windshield).

3. A satellite's speed is 10,000 m/s. After 1 min, it is 5,000 m/s. What is the satellite's acceleration?

v_i= 10,000m/s
v_f= 5,000m/s
t= 1 min = 60 s
a= ?

$a = \frac{v_f - v_i}{t}$
$a = \frac{5{,}000 - 10{,}000}{60}$
$a = \frac{-5{,}000}{60}$
$a = -83.3\ m/s^2$

4. Sound travels at a speed of 330 m/s. How long does it take for the sound of thunder to travel 1485 m?

t= ?
s= 330 m/s
d= 1,485m

$s = \frac{d}{t}$
$t = \frac{d}{s}$
$t = \frac{1485}{330}$
t = 4.5s

5. Find your mass if a scale on Earth reads 650 N when you stand on it.

m= ?
W= 650N
g= 9.8 m/s²

W = mg
$m = \frac{W}{g}$
$m = \frac{650}{9.8}$
$m = 66.3kg$

Part 1: Government and Cities

Under Maya, click on Government:

1. **What did each Mayan city-state have?**
   Own independent government
2. **About how many city-states where within the Mayan Civilization?**
   Hundreds
3. **What was each Mayan city-state ruled by?**
   A king
4. **What class were the council of leaders picked from?**
   Nobles
5. **Why were priests so powerful in the Mayan government?**
   Religion was very important to the Maya
6. **What was the punishment for most major crimes in Mayan society?**
   Death
7. **What did a shaven head represent in Mayan society?**
   Sign of shame
8. **Did the Mayans have women leaders?**
   Yes
9. **Besides paying taxes, what were Mayan men from the commoners class expected to do?**
   Serve as warriors

Under Maya, click on Sites and Cities

10. **What were the central buildings and complexes of Mayan cities aligned with?**
    Sun
11. **What types of buildings would be in the center of Mayan cities?**
    Palaces, pyramids, and temples
12. **What were Mayan cities generally located near?**
    Trade routes and good farmland
13. **About how many people lived in El Mirador at its peak?**

UNIT 3 Answer Key

CHAPTER 10

Prereading and Vocabulary 2

1. members could go home
   Sample definition: to end a meeting
2. asking how many people lived in each home
   Sample definition: a count of the population
3. believed in her truthfulness
   Sample definition: a person that others trust to act for them
4. e; Sample sentence: In a long session, the senators discussed the issues.
5. a; Sample sentence: The legislators voted on the hurricane relief bill.
6. b; Sample sentence: The senator was expelled for accepting bribes.
7. d; Sample sentence: When the Census Bureau reapportioned the seats in the House, my state lost three seats.
8. c; Sample sentence: A partisan can be counted on to vote in line with her party.

Chapter Outline 2

I. Section 1: The National Legislature
   A. The Bicameral Congress
      1. Senate, House of Representatives
      2. bicameral, powerful
   B. Terms and Sessions of Congress
      session, term
   C. Representation in Congress
      1. two
      2. population
II. Section 2: The House of Representatives
   A. Terms and Size
      1. 435, two
      2. representatives
   B. Reapportionment
      census
   C. Congressional Districts
      1. district
   D. Gerrymandering
      district lines (or congressional districts)
   E. Qualifications
      1. 25
      2. seven
III. Section 3: The Senate
   A. Size and Term
      1. 100
      2. six
   B. Qualifications
      1. 30, nine
      2. continuous body
IV. Section 4: The Members of Congress
   A. Backgrounds
      1. states
      2. experience
   B. The Job
      delegates, trustees, partisans, politicos
   C. Benefits
      benefits, franking privilege

CHAPTER 10 Section 1

Reading Comprehension 3

1. To make laws.
2. Historical: British Parliament had two houses and so did most of the colonies, so that's the system with which the Framers were familiar.
   Practical: The States could not all agree on either proportional or equal representation because the populations were so varied. The only way to get them to agree was to have two houses.
   Theoretical: The Framers thought it would be easy for Congress to become too powerful, so dividing it would ensure that each house checked the other.
3. Some States had much larger or smaller populations than others. The large States would not have agreed to a Congress with equal representation for each state, while the small States would not have agreed to a Congress with representation based on population.
4. a. term; b. session; c. session
5. A term is the period between noon on January 3 following an election and noon on January 3 following the next election.
6. A session is the period of time during which, each year, Congress assembles and conducts business.
7. The President may convene a special session in an emergency and dismiss Congress when the two houses cannot agree on a date for adjournment.
8. Before World War II, Congress met only for four or five months per year; today, they are in session for most of the year.

Reading Comprehension 2

1. Congress

Name _____ Date _____ Period _____

Worksheet: Conservation of Momentum
CHAPTER 8: Momentum

Directions: Answer the following questions concerning the conservation of momentum using the equations below. Show all of you work to receive credit.

$p = mv$ $Ft = \Delta(mv)$ $impulse = F\Delta t$

$P_{before} = P_{after}$ **net momentum before = net momentum after**

$(m_1v_1 + m_2v_2)_{before} = (m_1v_1 + m_2v_2)_{after}$

1. When these two freight cars of different mass collide and couple, what will be their resultant velocity?

2. A 2 kg blob of putty moving at 4 m/s slams into a 6 kg blob of putty at rest. What is the speed of the two stuck together blobs immediately after colliding?

3. A football player runs at 8 m/s and plows into a 80 kg referee standing on the field causing the referee to fly forward at 5.0 m/s. If this were a perfectly elastic collision, what would the mass of football player be?

2. What does Scout learn about Boo from Miss Maudie? How does this compare to what Scout already believes?
Scout learns that Boo is alive, he hasn't been wheeled out yet. His father was a foot-washing Baptist and very strict. His father believed the Bible to be word-for-word truth and he raised Boo in a very rigid and stern manner. The fact that Boo is alive confirms Scout's beliefs and she is more excited to know about him since he has been locked up for all these years.

3. Why does Atticus want the kids to stop playing the Boo Radley game? Do you agree or disagree with him?
Atticus says it's not respectful to Boo or the Radley's. Although it may seem strange to the kids, Boo's illegible make sense to him. I believe people should be allowed to live as they desire, and have the freedom to do so. (Opinions of students may vary.)

Chapter 6

1. What "spectacle" involving Mr. Avery do the children witness? (Read over it again carefully!)
Mr. Avery was passing from his front porch, chewing on a's of yellow liquid.

2. How does Jem lose his pants?
Jem sneaks over to the Radley place to peer into a window and Mr. Nathan comes out, so he runs away. Jem's pants snag on the fence and he leaves them there.

Chapter 7

1. When Jem gets his pants back from the Radleys' fence, there is something strange has happened to them. What had happened to the pants?
His pants were folded and patched up by someone who did not know how to sew very well.

2. List the treasures that Jem & Scout find in the knot-hole this year.
Jem and Scout find gum, 7 Indian head pennies, a ball of twine, 7 figures carved in soap, a spelling bee medal and a pocket watch.

3. What evidence can you find that tells the reader that Jem is beginning to understand more than Scout about Boo Radley?
Jem seems to want to tell Scout something, but he doesn't. He addresses the letter as "Your Sir," and he was crying when he found out the knot hole in the tree was filled.

Why do you think Jem is understanding more than Scout?
Jem is older; he may be connecting the dots a little bit more than Scout and is slowly figuring out what is going on with Boo and the Radley's.

4. When Jem and Scout try to leave a letter for the person who's putting things in the tree, they are stopped. What stops them?
Someone had filled the knot hole in the tree with cement.

5. At the very end of the chapter, Scout observes that Jem has been crying. Why is he upset?
Jem seems to understand something about the tree being filled. Mr. Radley had told the story is not dying. He has filled it in order to end the communication between the kids and Boo.

Chapter 8

If the truck was initially moving in the same direction as the car, the final velocity would be greater. Either equation for the x- or y-axis could have been used to solve for v′2, but the equation for the y-axis is easier because it has fewer terms. One complication with two-dimensional collisions is that the objects might rotate before or after their collision. 8.7 The components of the velocities along the y-axis have the form v sin θ θ . m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 . Momentum is conserved, but kinetic energy is not conserved. Figure 8.6 shows an elastic collision where momentum is conserved. Maximize the mass of ball 1 and initial speed of ball 1; minimize the mass of ball 2; and set elasticity

to 50 percent. In terms of masses and velocities, this equation is m 1 v 1x + m 2 v 2x = m 1 v ′ 1x + m 2 v ′ 2x . The first object’s momentum changes to 10 kg · m/s. We’ll use the conservation of momentum along the y-axis equation to solve for v′2. Therefore, v ′ 2 = 0.886 m/s. Use the removal tool in your kit or a pair of pliers to pop this ring off of the cylinder. Perfectly elastic collisions are not possible. Place checkmarks next to the momentum vectors and momenta diagram options. It’s what holds the locking pins on the top of the sleeve in place, and these pins can pop out if you don’t pull the cylinder out gently. You may or may not need a screwdriver, depending on what’s in your kit. Everything is known in these equations except v′2 and θ2, which we need to find. We can find two unknowns because we have two independent equations—the equations describing the conservation of momentum in the x and y directions. Solving for v′2 sin θ 2 θ 2 yields v ′ 2 sin θ 2 = (m 1 v 1 − m 1 v ′ 1 cos θ 1)(tan θ 2) m 2 . For conservation of momentum along y-axis, solving for v′2 sin θ 2 θ 2 yields v ′ 2 sin θ 2 = −(m 1 v ′ 1 sin θ 1) m 2 . List all items on the agenda with a short description to explain each item. In an elastic collision, the objects separate after impact and don’t lose any of their kinetic energy. Realizing that you don’t have to write down every word, you may be able to make a template that you can use every time you need to record minutes. Are perfectly elastic collisions possible? tan θ 2 = v ′ 1 sin θ 1 v ′ 1 cos θ 1 − v 1 . An animation of an elastic collision between balls can be seen by watching this video. The equation for conservation of momentum along the y-axis becomes 0 = m 1 v ′ 1 y+ m 2 v ′ 2 y . v ′ 2 sin θ 2 = (m 1 v 1 − m 1 v ′ 1 cos θ 1)(tan θ 2) m 2 . Perfectly elastic collisions are possible only when the objects stick together after impact. Entering known values into the previous equation gives tan θ 2 = (1.50)(0.707) (1.50)(0.707)−2.00 =−1.129. Momentum is conserved because the net external force on the puck-goalie system is zero. In one-dimensional collisions, the incoming and outgoing velocities are all along the same line. Cart 2 has a mass of 0.500 kg and an initial velocity of −0.500 m/s. m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 sin θ 2 tan θ 2 . If the truck was initially moving in either direction, the final velocity would be smaller. Solving for v′2 and substituting known values into the previous equation yields v ′ 2 = m 1 v 1 + m 2 v 2 − m 1 v ′ 1 m 2 = (0.350kg)(2.00m/s)+(0.500 kg)(−0.500 m/s)−(0.350kg)(−4.00m/s) 0.500kg = 3.70m/s. The only unknown in this equation is v′2. The magnitudes of \overrightarrow{\text{a}}, \overrightarrow{\text{b}}, and \overrightarrow{\text{r}} are A, B, and R, respectively. 10 kg · m/s 20 kg · m/s 35 kg · m/s 50 kg · m/s 12. If the truck was initially moving in the opposite direction of the car, the final velocity would be greater. The student is expected to: (C) calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system; (D) demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension. MORE FROM QUESTIONSANSWERED.NET A corporation is legally required to adhere to record-keeping requirements, explains RocketLawyer. Substituting the definition of momentum p = mv for each initial and final momentum, we get m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 , m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 , where the primes (') indicate values after the collision; In some texts, you may see i for initial (before collision) and f for final (after collision). tan θ 2 = (1.50)(0.707) (1.50)(0.707)−2.00 =−1.129. To avoid rotation, we consider only the scattering of point masses—that is, structureless particles that cannot rotate or spin. v ′ =(m 1 m 1 + m 2) v 1 . Along the x-axis, the equation for conservation of momentum is p 1x + p 2x = p ′ 1x + p ′ 2x . (m 1 v 1 − m 1 v ′ 1 cos θ 1)(tan θ 2) m 2 = −(m 1 v ′ 1 sin θ 1) m 2 . Find the recoil velocity of a 70 kg ice hockey goalie who catches a 0.150-kg hockey puck slapped at him at a velocity of 35 m/s. If students are struggling with a specific objective, the assessment will help identify which objective is causing the problem and direct students to the relevant content. m 1 v 1 = (m 1 + m 2) v ′ . Perfectly elastic collisions can happen only with subatomic particles. Figure 8.11 The incoming object of mass m1 is scattered by an initially stationary object. If the truck was initially moving in either direction, the final velocity would be greater. Solving this equation for tan θ 2 θ 2 , we get tan θ 2 = v ′ 1 sin θ 1 v ′ 1 cos θ 1 − v 1 . This video covers an elastic collision problem in which we find the recoil velocity of an ice skater who throws a ball straight forward. This simplifies the equation to m 1 v 1 = (m 1 + m 2) v ′ . The final velocity of cart 2 is large and positive, meaning that it is moving to the right after the collision. Keeping detailed and accurate corporate minutes helps you maintain your corporation’s legal status and may even help limit liability in some situations.The Task of Keeping Corporate MinutesAny time your corporation has meetings between owners, managers, partners or shareholders, you should record the minutes of these conferences.Weekly meetings could involve decisions about how your corporation is operated such as hiring and firing, daily functions or marketing campaigns.Annual shareholder meetings will cover topics such as mergers, acquisitions, conversions, new appointments, resignations, profits and more.Board of director meetings include corporation management issues, company policies, employee performance and product performance.Information to IncludeCorporate minutes need not be exhaustive, but they do need to fully document all important information discussed as well as decisions made during the meeting, explains SmallBizTrends.Make sure your meeting minutes include the location, date and time of the meeting as well as who attended. Two objects that have equal masses head toward each other at equal speeds and then stick together. v ′ 2 = m 1 v 1 + m 2 v 2 − m 1 v ′ 1 m 2 = (0.350kg)(2.00m/s)+(0.500 kg)(−0.500 m/s)−(0.350kg)(−4.00m/s) 0.500kg = 3.70m/s. Calling a locksmith can be costly, but fortunately, re-keying a door lock is a quick DIY project to complete yourself.Purchase a Re-Keying KitRe-keying kits come with everything you need to make your door lock compatible with a new key. In the case shown in this figure, the combined objects stop; This is not true for all inelastic collisions. This gives us m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 sin θ 2 tan θ 2 . Now, to solve problems involving one-dimensional elastic collisions between two objects, we can use the equation for conservation of momentum. Which of the following is true? (a) Two objects of equal mass initially head directly toward each other at the same speed. Figure 8.9 An ice hockey goalie catches a hockey puck and recoils backward in an inelastic collision. Figure 8.7 shows an example of an inelastic collision. v ′ = (0.150kg 70.0kg+0.150kg)(35m/s) = 7.48× 10 −2 m/s. Now, we will take the conservation of momentum equation, p1 + p2 = p′1 + p′2 and break it into its x and y components. What is an elastic collision? Calculate the magnitude and direction of the velocity (v′2 and θ 2 θ 2) of the 0.400 kg object after the collision. Was the collision elastic or inelastic? Find the small hole on the neck of the doorknob. What is the final velocity of cart 2? What is the equation for conservation of momentum for two objects in a one-dimensional collision? p 1x + p 2x = p ′ 1x + p ′ 2x . An elastic collision is one in which the objects after impact do not lose any of their internal kinetic energy. If anyone abstained, note this too. For an inelastic collision, conservation of momentum is m 1 v 1 + m 2 v 2 = (m 1 + m 2) v ′ , m 1 v 1 + m 2 v 2 = (m 1 + m 2) v ′ , where v′ is the velocity of both the goalie and the puck after impact. Once you become familiar with standard corporate minutes, you probably won’t find this task difficult.A sample will probably show an outline with all of the basic points of the minutes listed. In an elastic collision, an object with momentum 25 kg · m/s collides with another that has a momentum 35 kg · m/s. The speed of the 0.250 kg object is originally 2 m/s and is 1.50 m/s after the collision. By measuring the angle and speed at which the object of mass m1 emerges from the room, it is possible to calculate the magnitude and direction of the initially stationary object’s velocity after the collision. This recoil velocity is small and in the same direction as the puck’s original velocity. Since the two objects stick together after colliding, they move together at the same speed. Kinetic energy is the energy of motion and is covered in detail elsewhere. Assume that the goalie is at rest before catching the puck, and friction between the ice and the puck-goalie system is negligible (see Figure 8.9). A_x + A_y = \overrightarrow{\text{A}} Now, let us turn to the second type of collision. Because particle 1 initially moves along the x-axis, we find v1x = v1. The resultant vector of the addition of vectors \overrightarrow{\text{a}} and \overrightarrow{\text{b}} is \overrightarrow{\text{r}}. Some of the energy of motion gets converted to thermal energy, or heat. p1 + p1′ = p2 + p2′ p1 + p2 = p1′ + p2′ p1 − p2 = p1′ − p2′ p1 + p2 + p1′ + p2′ = 0 Use the Check Your Understanding questions to assess whether students master the learning objectives of this section. Explain the speeds and directions of the ice cubes using momentum. Say that in the problems of this section, all objects are assumed to be point masses. If the truck was initially moving in the opposite direction of the car, the final velocity would be smaller. 10. As before, the equation for conservation of momentum for a one-dimensional elastic collision in a two-object system is m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 . Maximize the mass of ball 1 and initial speed of ball 1; minimize the mass of ball 2; and set elasticity to 100 percent. Next, experiment with changing the elasticity of the collision. Note that the initial velocity of the goalie is zero and that the final velocity of the puck and goalie are the same. How would the final velocity of the car-plus-truck system change if the truck had some initial velocity moving in the same direction as the car? An elastic collision is one in which the objects after impact become stuck together and move with a common velocity. We chose the coordinate system so that the initial velocity is parallel to the x-axis, and conservation of momentum along the x- and y-axes applies. θ 2 = tan −1 (−1.129)= 312 0 . After the collision, both objects are still moving to the right, but the first object’s momentum changes to 10 \,\text{kg} \cdot \text{m/s}. 0 = m 1 v ′ 1 y+ m 2 v ′ 2 y . Your new lock is then ready to use with the included keys. How does this affect the momentum of each ball? End the minutes with the time the meeting adjourned.Information to ExcludeDon’t think of your corporate minutes as a full transcript of the meeting, cautions KSNLaw. With the chosen coordinate system, py is initially zero and px is the momentum of the incoming particle. v ′ 2 sin θ 2 = −(m 1 v ′ 1 sin θ 1) m 2 . In this simulation, you will investigate collisions on an air hockey table. (b) The objects stick together, creating a perfectly inelastic collision. First, we’ll solve both conservation of momentum equations (m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 cos θ 2 m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 cos θ 2 and 0= m 1 v ′ 1 sin θ 1 + m 2 v ′ 2 sin θ 2 0= m 1 v ′ 1 sin θ 1 + m 2 v ′ 2 sin θ 2) for v′2 sin θ 2 θ 2 . 13. Figure 8.6 The diagram shows a one-dimensional elastic collision between two objects. Place the ice cubes on the surface several centimeters away from each other. An elastic collision is one in which the objects after impact lose some of their internal kinetic energy. You can add any discussions or votes your meeting included with the results of these actions.Pattern your own corporate minutes after the sample minutes or use various features of a sample that fit your needs. Since angles are defined as positive in the counterclockwise direction, m2 is scattered to the right. Because particle 2 is initially at rest, v2y is also zero. What is the final momentum of the second object? Momentum is conserved because the surface is frictionless. For conservation of momentum along x-axis, let’s substitute sin θ 2 θ 2 /tan θ 2 θ 2 for cos θ 2 θ 2 so that terms may cancel out later on. Take care when removing the cylinder, too. 8.6 But v1y is zero, because particle 1 initially moves along the x-axis. In an elastic collision, an object with momentum 25\,\text{kg} \cdot \text{m/s} collides with another object moving to the right that has a momentum 35\,\text{kg} \cdot \text{m/s}. When discussions occur, you don’t need to record the conversation verbatim. 14. Perfectly elastic collisions are possible only with subatomic particles. Therefore, conservation of momentum along the y-axis gives the following equation: 0= m 1 v ′ 1 sin θ 1 + m 2 v ′ 2 sin θ 2 0= m 1 v ′ 1 sin θ 1 + m 2 v ′ 2 sin θ 2 Review conservation of momentum and the equations derived in the previous sections of this chapter. If some do happen to fall out, you can replace them with tweezers.Add New PinsRemove any old pins from the cylinder plug — but not from its outer sleeve. Several ice cubes (The ice must be in the form of cubes.) A smooth surface Find a few ice cubes that are about the same size and a smooth kitchen tabletop or a table with a glass top. elastic collision inelastic collision point masses recoil When objects collide, they can either stick together or bounce off one another, remaining separate. v ′ 2 = 0.886 m/s. Since the track is frictionless, Fnet = 0 and we can use conservation of momentum to find the final velocity of cart 2. Everyday observable examples of perfectly elastic collisions don’t exist—some kinetic energy is always lost, as it is converted into heat transfer due to friction. v ′ 2 =− (0.250) (0.400) (1.50)(0.7071 −0.7485) . An object of mass 0.250 kg (m1) is slid on a frictionless surface into a dark room, where it strikes an initially stationary object of mass 0.400 kg (m2). Explain point masses. Click to view content If you wanted to maximize the velocity of ball 2 after impact, how would you change the settings for the masses of the balls, the initial speed of ball 1, and the elasticity setting? However, collisions between everyday objects are almost perfectly elastic when they occur with objects and surfaces that are nearly frictionless, such as with two steel blocks on ice. 8.3 But because particle 2 is initially at rest, this equation becomes m 1 v 1x = m 1 v ′ 1x + m 2 v ′ 2x . The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. Therefore, we can use conservation of momentum to find the final velocity of the puck and goalie system. Since both equations equal v′2 sin θ 2 θ 2 , we can set them equal to one another, yielding (m 1 v 1 − m 1 v ′ 1 cos θ 1)(tan θ 2) m 2 = −(m 1 v ′ 1 sin θ 1) m 2 . In this activity, you will observe an elastic collision by sliding an ice cube into another ice cube on a smooth surface, so that a negligible amount of energy is converted to heat. Therefore, θ 2 = tan −1 (−1.129)= 312 0 . An elastic collision is one in which the objects after impact are deformed permanently. The concepts of energy are discussed more thoroughly elsewhere. An inelastic collision is one in which objects stick together after impact, and kinetic energy is not conserved. Experiment with changing the masses of the balls and the initial speed of ball 1. What about the total momentum? This lack of conservation means that the forces between colliding objects may convert kinetic energy to other forms of energy, such as potential energy or thermal energy. This comes from rearranging the definition of the trigonometric identity tan θ θ = sin θ θ /cos θ θ . Figure 8.7 A one-dimensional inelastic collision between two objects. Ask students what they understand by the words elastic and inelastic.[AL] Start a discussion about collisions. Only the stationary object’s mass m2 is known. For inelastic collisions, kinetic energy may be lost in the form of heat. Be careful during this process; if your kit doesn’t come with a replacement retainer ring, you’ll need to reinstall the old one, so you don’t want it to get damaged.Remove the Cylinder PlugNow that the retainer ring is gone, you can pull the lock cylinder plug out of the sleeve it’s in. The direction in which the truck was initially moving would not matter. Because the goalie is initially at rest, we know v2 = 0. We will not consider such rotation until later, and so for now, we arrange things so that no rotation is possible. This video reviews the definitions of momentum and impulse. These are two-dimensional collisions, and just as we did with two-dimensional forces, we will solve these problems by first choosing a coordinate system and separating the motion into its x and y components. The pins may be color coded to ensure you add them in the correct order. The template could include blanks that you fill in, such as basic details about the meeting, who was in attendance, agenda items, voting actions and adjournment time.Use a Sample of Corporate MinutesPeruse a few samples of corporate minutes to get an idea of the format to use for your corporate minutes. Then, insert new pins into the cylinder in the order described in the instructions that come with your re-keying kit. This lets us simplify the conservation of momentum equation from m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 m 1 v 1 + m 2 v 2 = m 1 v ′ 1 + m 2 v ′ 2 to m 1 v 1 + m 2 v 2 = (m 1 + m 2) v ′ m 1 v 1 + m 2 v 2 = (m 1 + m 2) v ′ for inelastic collisions, where v′ is the final velocity for both objects as they are stuck together, either in motion or at rest. To clarify, Sal is using the equation m ball V ball + m skater V skater = m ball v ′ ball + m skater v ′ skater m ball V ball + m skater V skater = m ball v ′ ball + m skater v ′ skater . It also covers an example of using conservation of momentum to solve a problem involving an inelastic collision between a car with constant velocity and a stationary truck. Note that Sal accidentally gives the unit for impulse as Joules; it is actually N · s or k · gm/s. Entering known values in this equation, we get v ′ = (0.150kg 70.0kg+0.150kg) (35m/s) = 7.48× 10 −2 m/s. You will notice that collisions have varying degrees of elasticity, ranging from perfectly elastic to perfectly inelastic. The equation assumes that the mass of each object does not change during the collision. In this section, we’ll cover these two different types of collisions, first in one dimension and then in two dimensions. The law of conservation of momentum is very useful here, and it can be used whenever the net external force on a system is zero. First, the equation for conservation of momentum for two objects in a one-dimensional collision is p 1 + p 2 = p ′ 1 + p ′ 2 (F net =0) . Instead, you could mention the topic that was discussed.Omit any information that would be considered privileged advice of counsel unless you intend to waive this privilege in the future. Try to avoid edge-on collisions and collisions with rotating ice cubes. Figure 8.8 A two-dimensional collision with the coordinate system chosen so that m2 is initially at rest and v1 is parallel to the x-axis. m 1 v 1x + m 2 v 2x = m 1 v ′ 1x + m 2 v ′ 2x . With the door unlocked, push a screwdriver or the long pin included in the re-keying kit into the hole. Pull off the knob and the lock cylinder inside it.Remove the Retainer RingYou’ll see a small ring around the lock cylinder on the side opposite from the key slot. The simplest collision is one in which one of the particles is initially at rest. Purchase a re-keying kit from the brand that made your current door lock; the supplies from different brands usually aren’t interchangeable.Remove the KnobUnpack everything in your re-keying kit and remove the doorknob to get started. 10\,\text{kg} \cdot \text{m/s} 20\,\text{kg} \cdot \text{m/s} 35\,\text{kg} \cdot \text{m/s} 50\,\text{kg} \cdot \text{m/s} 11. Here’s a trick for remembering which collisions are elastic and which are inelastic: Elastic is a bouncy material, so when objects bounce off one another in the collision and separate, it is an elastic collision. If voting occurred, detail the vote and include how each person at the meeting voted. After the collision, cart 1 recoils with a velocity of −4 m/s. When they don’t, the collision is inelastic. Ask students to give examples of elastic and inelastic collisions. The best choice for a coordinate system is one with an axis parallel to the velocity of the incoming particle, as shown in Figure 8.8. Because momentum is conserved, the components of momentum along the x- and y-axes, displayed as px and py, will also be conserved. p 1 + p 2 = p ′ 1 + p ′ 2 (F net =0) . The two objects come to rest after sticking together, conserving momentum but not kinetic energy after they collide. The Khan Academy videos referenced in this section show examples of elastic and inelastic collisions in one dimension. 8.4 The components of the velocities along the x-axis have the form v cos θ . m 1 v 1y + m 2 v 2y = m 1 v ′ 1y + m 2 v ′ 2y . MORE FROM QUESTIONSANSWERED.NET By the end of this section, you will be able to do the following: Distinguish between elastic and inelastic collisions Solve collision problems by applying the law of conservation of momentum The learning objectives in this section will help your students master the following standards: (6) Science concepts. Two hard, steel carts collide head-on and then ricochet off each other in opposite directions on a frictionless surface (see Figure 8.10). Conservation of momentum along the x-axis gives the equation m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 cos θ 2 , m 1 v 1 = m 1 v ′ 1 cos θ 1 + m 2 v ′ 2 cos θ 2 , where θ 1 θ 1 and θ 2 θ 2 are as shown in Figure 8.8. Along the y-axis, the equation for conservation of momentum is p 1y + p 2y = p ′ 1y + p ′ 2y , p 1y + p 2y = p ′ 1y + p ′ 2y , 8.5 or m 1 v 1y + m 2 v 2y = m 1 v ′ 1y + m 2 v ′ 2y . What if the truck were moving in the opposite direction of the car initially? If the truck was initially moving in the same direction as the car, the final velocity would be smaller. Whether you’re moving into a new home or you’ve lost your house keys again, it may be a good idea — or a necessity — to change your door locks. [BL][OL] Review the concept of internal energy. Figure 8.10 Two carts collide with each other in an elastic collision. If your kit didn’t come with a special tool for this process, use tweezers to set the new pins into the cylinder.Once the new pins are in, reassemble the lock by following the steps above in reverse order. Why? Suppose the following experiment is performed (Figure 8.11). Flick one ice cube toward a stationary ice cube and observe the path and velocities of the ice cubes after the collision. v ′ 2 =− m 1 m 2 v ′ 1 sin θ 1 sin θ 2 v ′ 2 =− m 1 m 2 v ′ 1 sin θ 1 sin θ 2 Entering known values into this equation gives v ′ 2 =− (0.250) (0.400) (1.50)(0.7071 −0.7485) . We start by assuming that Fnet = 0, so that momentum p is conserved. It replicates the elastic collisions between balls of varying masses. Maximize the mass of ball 2 and initial speed of ball 1; minimize the mass of ball 1; and set elasticity to 100 percent. Solving for v′ yields v ′ =(m 1 m 1 + m 2) v 1 . But what about collisions, such as those between billiard balls, in which objects scatter to the side? m 1 v 1x = m 1 v ′ 1x + m 2 v ′ 2x . For example, if two ice skaters hook arms as they pass each other, they will spin in circles. Perfectly elastic collisions are possible if the objects and surfaces are nearly frictionless. The 0.250 kg object emerges from the room at an angle of 45º with its incoming direction. Cart 1 has a mass of 0.350 kg and an initial velocity of 2 m/s. Maximize the mass of ball 2 and initial speed of ball 1; minimize the mass of ball 1; and set elasticity to 50 percent. Hint—Placing a checkmark next to the velocity vectors and removing the momentum vectors will help you visualize the velocity of ball 2, and pressing the More Data button will let you take readings. These supplies typically include new precut keys, pins for the lock’s tumbler that match the precut keys and specialty tools or accessories you might need to install or use to make the process easier. Including this information could open a corporation to future liability.Corporate Minutes FormatSimplicity is the key to effective corporate minutes.

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