Chapter Review

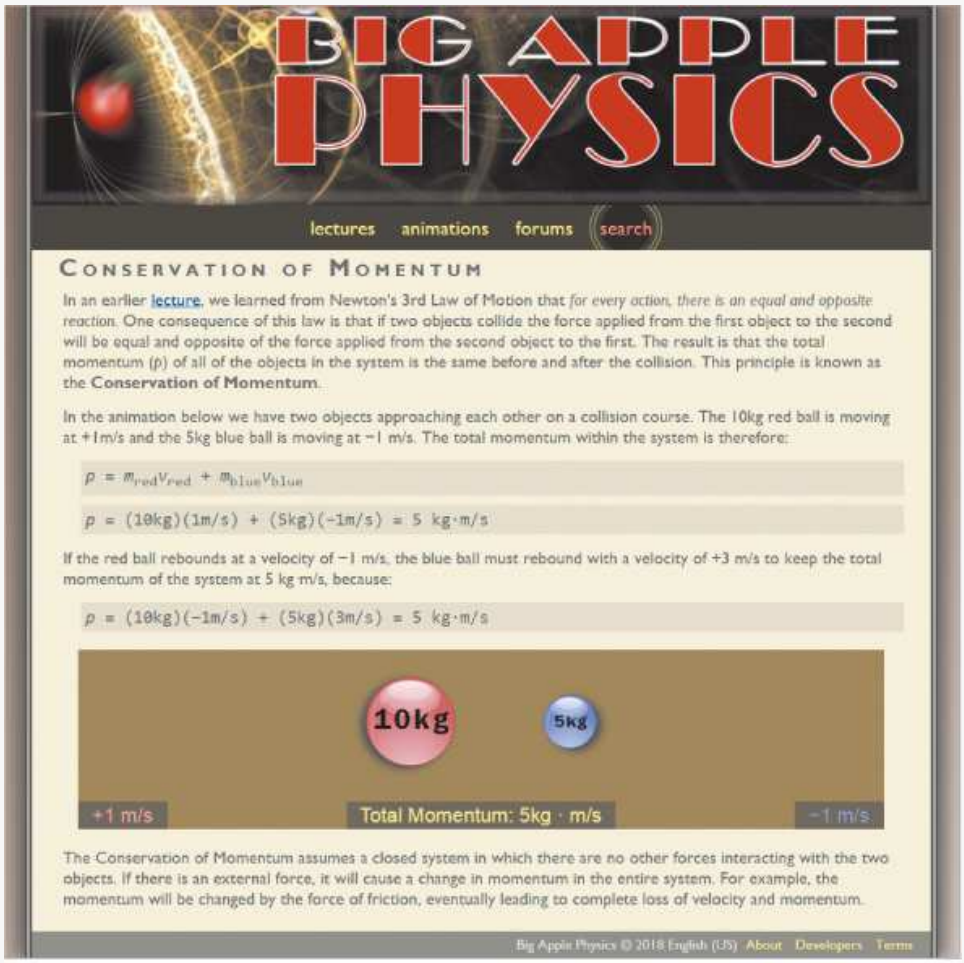
8-16c Apply: Case Problem 2

Data Files needed for this Case Problem: ba_physics_txt.html, ba_animate_txt.css, 2 CSS files, 4 PNG files

Big Apple Physics Jason Tompkins runs the online physics website *Big Apple Physics,* providing physics instruction and help for homeschoolers and independent learners. In order to teach physics concepts such as motion and mechanics better, he would like to supplement his written material with animated demos. He has come to you for help in creating an animated demo teaching the concepts of the Law of the Conservation of Momentum. A preview of the page you will create is shown in Figure 8-61.

Figure 8-61

Big Apple Physics page



Sources: Pixabay.com; openclipart.org

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Complete the following:

1

Using your editor, open the **ba_physcis_txt.html** and **ba_animate_txt.css** files from the html08 ► case2 folder. Enter ***your name*** and ***the date*** in the comment section of each file, and save them as **ba_physics.html** and **ba_animate.css** respectively.

2

Go to the **ba_physics.html** file in your editor. Add a link to the ba_animate.css style sheet file to the document head. Take some time to study the content of the file. Note that a `div` element with the name “animBox” will be used to store the animation you create. The animation box has two image files representing balls that will move across the screen and five `div` elements that will contain text describing the velocity and momentum of those moving objects.

3

Save your changes and go to the **ba_animate.css** file in your editor. Jason wants you to create a transition effect for the navigation list in which a semicircle grows behind each link when it is hovered over. Within the Transition Styles section, add a style rule for the `nav a` selector that: a) displays the background image file ba_target.png centered horizontal and vertically with no tiling, b) sets the size of the background image to 0%, c) sets the hypertext font color to rgb(253, 240, 133), and d) adds a transition that changes the background size over 0.3 seconds and the font color over 0.8 seconds.

4

Create a style rule for the `nav a:hover` selector to set the background size to 100% and the font color to rgb(244, 130, 130).

5

Next, you will animate the effect of two balls caroming off each other. You will start with the red ball, which moves from the left to the right across the animation box. Within the Animation Styles section, create the **moveRed** animation containing the following key frames:

> At 0% time, set the left position of the red ball to 0 pixels and add a drop shadow with a horizontal offset of –40 pixels, a vertical offset of 20 pixels, a blur radius of 25 pixels, and a color value of rgb(51, 51, 51). (*Hint*: Use the `filter` property with the `drop-shadow`.)
>
> Jason wants the balls to appear to squish as they collide. At 49% time, use the `transform` property with the `scaleX` function to set the horizontal scale of the red ball to 1.

At 50% time, set the left position of the red ball to 380 pixels. Set the drop shadow to an offset of 0 pixels in the horizontal and vertical direction with a blur of 0 pixels and a color of rgb(51, 51, 51). Set the value of `scaleX` function used with the `transform` property to 0.4.

At 51% time, set the value of `scaleX` function to 1.0.

At 100% time, set the left position of the red ball to 0 pixels. Set the offset of the drop shadow to –40 pixels in the horizontal direction and 20 pixels in the vertical direction with a blur of 25 pixels and a color of rgb (51, 51, 51).

6

Create an animation named **moveBlue** that moves the blue ball across the animation box. Add the following:

Copy the 0% to 51% key frames you used for the moveRed animation, changing the `left` property to `right`, so that all coordinates of the blue ball are measured from its right edge. Also change the horizontal offset of the drop shadow from –40 pixels to 40 pixels, so that the drop shadow appears to the right of the blue ball.

At 100% time, set the right position to –700 pixels, and set horizontal and vertical offsets of the drop shadow to 120 pixels and 20 pixels respectively.

7

In the animation, Jason wants to alternately hide and display information about the velocity of the moving balls. Create an animation named **showText** that sets the opacity to 0 at 0% and 49% time and sets the opacity to 1 at 51% and 100% time.

8

Create an animation named **hideText** that sets the opacity to 1 at 0% and 49% time and sets the opacity to 0 at 51% and 100% time.

9

Apply the moveRed animation to the redBall image over a 5-second interval with linear timing and infinite looping. Apply the moveBlue animation to the blueBall image over a 5-second interval also with linear timing and infinite looping. Apply the hideText animation to the redSpeed1 and blueSpeed1 `div` elements using the same timing parameters as the previous two animations. Finally, apply the showText animation to the redSpeed2 and blueSpeed2 `div` elements using the same timing parameters as with the other three animations.

10

Save your changes to the style sheet and then open **ba_physics.html** in your browser.

11

Test the hover transition by moving your mouse pointer over the navigation list links. Verify that the semicircle grows behind the hovered link and that the link color gradually changes from yellow to light red.

12

Verify that the animation demo shows two balls colliding, with the blue ball recoiling at the faster rate of speed off the screen. Further verify that drop shadows move behind the balls, disappearing at the moment of collision. Finally, verify that at the moment of collision, the two balls appear to squish together momentarily. (*Note*: If you are using Internet Explorer, you will not see any drop shadows.)