```vb
1  'Ben Wallace
2  'RCET0265
3  'Spring 2020
4  'Math Contest
5  'https://github.com/wallbenj93/BLW-VS-S20
6
7
8
9  Public Class MathContest
10     'declare variables here to make them universally available
11     Dim numOfProbs As Integer = 0 'confirm default value
12     Dim numProbsCorrect As Integer = 0
13     Dim studentAge As Integer
14     Dim studentGrade As Integer
15     Dim firstNum As Integer
16     Dim secondNum As Integer
17     Dim studAnswer As Integer
18     Dim actAnswer As Integer
19     Dim studentName As String = ""
20     Private Sub ExitButton_Click(sender As Object, e As EventArgs) Handles      ⇁
         ExitButton.Click
21         Me.Close()
22         'exit with close button
23     End Sub
24
25     Private Sub SubmitButton_Click(sender As Object, e As EventArgs) Handles    ⇁
         SubmitButton.Click
26         'depending on which one is chosen, do one of the following math        ⇁
             operations
27         Dim userMessage As String
28         If AddButton.Checked = True Then
29             actAnswer = firstNum + secondNum
30         ElseIf SubtractButton.Checked = True Then
31             actAnswer = firstNum - secondNum
32         ElseIf DivideButton.Checked = True Then
33             actAnswer = firstNum / secondNum
34         ElseIf MultiplyButton.Checked = True Then
35             actAnswer = firstNum * secondNum
36         End If
37
38         If studAnswer = actAnswer Then
39             'message to congradulate user
40             userMessage = "Good job, " & studentName & ", that is correct!"
41             numProbsCorrect += 1
42             'add one to the count of correct answers
43         Else
44             'sorry billy youre wrong
45             userMessage = "Sorry, " & studentName & ", that is not correct. The ⇁
                 correct " _
46                         & "answer was " & actAnswer & "."
47         End If
48         MsgBox(userMessage)
```

```vb
49          FirstNumTextBox.Text = "" 'clear number boxes after Each submission
50          SecondNumTextBox.Text = ""
51          StudentAnswerTextBox.Text = ""
52          SummaryButton.Enabled = True
53          numOfProbs += 1
54          'add one to the number of problems
55      End Sub
56
57      Private Sub ClearButton_Click(sender As Object, e As EventArgs) Handles      ⏎
          ClearButton.Click
58          'clear all text boxes and reset values
59          numOfProbs = 0
60          numProbsCorrect = 0
61          NameTextBox.Text = ""
62          GradeTextBox.Text = ""
63          AgeTextBox.Text = ""
64          StudentAnswerTextBox.Text = ""
65          FirstNumTextBox.Text = ""
66          SecondNumTextBox.Text = ""
67          ResetAllControls()
68      End Sub
69
70      Private Sub SummaryButton_Click(sender As Object, e As EventArgs) Handles      ⏎
          SummaryButton.Click
71          MsgBox("You got " & numProbsCorrect & " answers correct out of a possible ⏎
              " & numOfProbs)
72          'display a message box showing the results
73      End Sub
74
75      Private Sub MathContest_Load(sender As Object, e As EventArgs) Handles      ⏎
          Me.Load
76          'on startup, these are the defaults
77          ResetAllControls()
78      End Sub
79
80      Sub ResetAllControls()
81          'sub to reset values
82          AddButton.Enabled = False
83          SubtractButton.Enabled = False
84          MultiplyButton.Enabled = False
85          DivideButton.Enabled = False
86          SubmitButton.Enabled = False
87          SummaryButton.Enabled = False
88          FirstNumTextBox.Enabled = False
89          SecondNumTextBox.Enabled = False
90          StudentAnswerTextBox.Enabled = False
91          AddButton.Checked = True
92          NameTextBox.Enabled = True
93          AgeTextBox.Enabled = True
94          GradeTextBox.Enabled = True
95          ValidateButton.Enabled = True
96      End Sub
```

```vb
 97
 98      Private Sub ValidateClick(sender As Object, e As EventArgs) Handles      ⮡
            ValidateButton.Click
 99          Dim userMessage As String = ""
100          Dim AgeBad As Boolean = False
101          Dim GradeBad As Boolean = False
102          If NameTextBox.Text = "" Then
103              userMessage = "Please enter the students name." & vbNewLine
104          Else
105              studentName = NameTextBox.Text
106          End If
107
108          Try
109              'try to convert the entered age to integer. if it converts, check the ⮡
                    value
110              'with the required range
111              studentAge = CInt(AgeTextBox.Text)
112              If studentAge > 6 And studentAge < 12 Then
113                  'student can compete
114              Else
115                  userMessage &= "Sorry, only students that are between 7 and 11    ⮡
                        may compete" & vbNewLine
116              End If
117          Catch ex As Exception
118              userMessage &= "Please enter a valid age" & vbNewLine
119              AgeBad = True
120          End Try
121          Try
122              'try to convert the entered grade to integer. if it converts, check  ⮡
                    the value
123              'with the required range
124              studentGrade = CInt(GradeTextBox.Text)
125              If studentGrade > 0 And studentGrade < 5 Then
126                  'student can compete
127              Else
128                  userMessage &= "Sorry, only students that are in grades 1 through ⮡
                        4 may compete" & vbNewLine
129              End If
130          Catch ex As Exception
131              userMessage &= "Please enter a valid grade" & vbNewLine
132              GradeBad = True
133          End Try
134          If userMessage <> "" Then
135              MsgBox(userMessage)
136              'following 2 ifs clears bad data
137              If AgeBad = True Then
138                  AgeTextBox.Text = ""
139              End If
140              If GradeBad = True Then
141                  GradeTextBox.Text = ""
142              End If
143              'chooses which box to select to correct
```

```vbnet
144                If NameTextBox.Text = "" Then
145                    NameTextBox.Select()
146                ElseIf AgeBad = True Then
147                    AgeTextBox.Select()
148                ElseIf GradeBad = True Then
149                    GradeTextBox.Select()
150                End If
151            Else
152                'begin competition
153                AddButton.Enabled = True
154                SubtractButton.Enabled = True
155                MultiplyButton.Enabled = True
156                DivideButton.Enabled = True
157                FirstNumTextBox.Enabled = True
158                SecondNumTextBox.Enabled = True
159                StudentAnswerTextBox.Enabled = True
160                'dont allow name, age and grade to be changed once its verified
161                NameTextBox.Enabled = False
162                AgeTextBox.Enabled = False
163                GradeTextBox.Enabled = False
164                ValidateButton.Enabled = False
165            End If
166        End Sub
167
168        Private Sub AnyNumTextBox_TextChanged(sender As Object, e As EventArgs)      ⮐
            Handles FirstNumTextBox.TextChanged, SecondNumTextBox.TextChanged,          ⮐
            StudentAnswerTextBox.TextChanged
169            'try catch for each number entered with cint
170            Dim userMessage As String = ""
171            Dim firstNumGood As Boolean
172            Dim secNumGood As Boolean
173            Dim studAnsGood As Boolean
174            firstNumGood = False
175            secNumGood = False
176            studAnsGood = False
177
178            'if any number box value changed, check if its an integer(and not too      ⮐
              high)
179            If FirstNumTextBox.Text <> "" Then
180                Try
181                    firstNum = CInt(FirstNumTextBox.Text)
182                    If firstNum < 13 Then
183                        'num is ok
184                        firstNumGood = True
185                    Else
186                        userMessage &= "Please enter a number less than 13 in number   ⮐
                          1 box" & vbNewLine
187                    End If
188                Catch ex As Exception
189                    'if not valid, prompt user, then clear bad data
190                    MsgBox("Please enter a valid number in box 1")
191                    FirstNumTextBox.Text = ""
```

```vb
192                End Try
193            End If
194            If SecondNumTextBox.Text <> "" Then
195                Try
196                    secondNum = CInt(SecondNumTextBox.Text)
197                    If firstNum < 13 Then
198                        'num is ok
199                        secNumGood = True
200                    Else
201                        userMessage &= "Please enter a number less than 13 in number ⮡
                             2 box" & vbNewLine
202                    End If
203                Catch ex As Exception
204                    MsgBox("Please enter a valid number in box 2")
205                    SecondNumTextBox.Text = ""
206                End Try
207            End If
208
209            If StudentAnswerTextBox.Text <> "" Then
210                Try
211                    studAnswer = CInt(StudentAnswerTextBox.Text)
212                    studAnsGood = True
213                Catch ex As Exception
214                    MsgBox("Please enter a valid answer")
215                End Try
216            End If
217
218            If userMessage <> "" Then
219                MsgBox(userMessage)
220            Else
221                'SubmitButton.Enabled = True
222            End If
223            If firstNumGood = True And secNumGood = True And studAnsGood = True Then
224                SubmitButton.Enabled = True
225                'as long as each are sucessfully converted to int, enable submit        ⮡
                     button
226            Else
227                SubmitButton.Enabled = False
228                'this line added so that if each number was verified but then changed ⮡
                     to an
229                'invalid value, the submit button would disable again
230            End If
231        End Sub
232 End Class
233
```