1. The key here is
   \[ d = r \cdot t \]
   distance = rate \times time
   for the first trip:
   \[ d_1 = 2 \cdot t_1 \]
   \[ d_2 = 6 \cdot t_2 \]
   \[ d_3 = 3 \cdot t_3 \]
   for the second trip:
   \[ d_4 = 3 \cdot t_4 \]
   \[ d_5 = 2 \cdot t_5 \]
   \[ d_6 = 6 \cdot t_6 \]
   So \( t_1 + t_2 + t_3 + t_4 + t_5 + t_6 = 6 \) hours
   \[
   \frac{d_1}{2} + \frac{d_2}{3} + \frac{d_3}{3} + \frac{d_4}{2} + \frac{d_5}{6} = 6 \\
   \]
   \[
   \frac{2}{3} d_1 + \frac{2}{3} d_2 + \frac{2}{3} d_3 = 6 \\
   \]
   So \( d_1 + d_2 + d_3 = 6 \cdot \frac{3}{2} = 9 \)
   Elizabeth walks it twice, once for each trip, so the total distance is \( 9 \times 2 = 18 \) km.

2. First Position

   \[ \text{Second Position} \]

   \[ x = \text{bill} \]
   \[ b^2 + 7^2 = x^2 \]
   \[ (x-1)^2 + 7^2 = x^2 \]
   \[ x^2 - 2x + 1 + 7^2 = x^2 \]
   \[ 50 = 2x \]
   \[ x = 25 \]
5. \( A_i \) is Allie's Income  
\( A_e \) is Allie's expenses  
\( A_s \) is Allie's Savings  
\( B_i \) is Basil's Income  
\( B_e \) is Basil's Expenses  
\( B_s \) is Basil's Savings  
\[ A_i = A_e + A_s \]  
\[ B_i = B_e + B_s \]

Problem tells us  
\[ A_e = \frac{B_e}{2} \]  
\[ A_i = \frac{5}{6} B_i \]  
\[ A_s = \frac{4}{10} A_i = \frac{2}{5} A_i \]

So  
\[ A_i = A_e + \frac{2}{3} A_i \]

So  
\[ \frac{2}{3} A_i = A_e = \frac{B_e}{2} \]

So  
\[ A_i = \frac{5}{6} B_e \]

So  
\[ \frac{5}{6} B_e = \frac{5}{6} B_i \]

So  
\[ 5 B_e = 6 B_i \]

\[ B_e = \frac{6}{5} B_i \]  
So Basil's expenses are \( \frac{5}{6} = \frac{2}{4} \) of his income.  
So he only saves \( \frac{1}{4} \) of his income.
Having an average of 56% is like getting 56% on the 7 exams.

\[
\frac{56}{100} + \frac{56}{100} + \frac{56}{100} + \frac{56}{100} + \frac{56}{100} + \frac{56}{100} + \frac{I}{100} = \frac{60}{100}
\]

\[
\frac{7 \times 56}{100} + \frac{I}{100} = \frac{60.8}{100}
\]

\[T = 60.8 - 7.56\]
\[= 8(60 - 4.9)\]
\[= 8(11) = 88\]

So Flora needs an 88 to get a 60 overall.

4. 8 coins:

If she has 1 penny, she has to have 4 more. Then she has at most 5d + 75¢ = 80¢

So no pennies.

Let q be the number of quarters,
d the number of dimes and
n the number of nickels.

\[q + d + n = 8\]
\[25q + 10d + 5n = 145\]

So \(q = 8 - d - n\) and
\[25(q - d - n) + 10d + 5n = 145\]
\[200 - 25d - 25n + 10d + 5n = 145\]
\[200 - 15d - 20n = 145\]
\[15d + 20n = 55\]

If \(d = 1, n = 2\) get 55
If \(d = 2, n = 25\) Not Possible
If \(d = 3, n = \frac{1}{2}\) Not Possible

So \(d = 1, n = 2, q = 5\) and she probably lost a quarter.