We will use mesh current analysis to find the voltage across each resistor.

This circuit has one mesh current. Define it clockwise and call it I1. Write a KVL equation starting at the bottom left of the mesh. The voltage across the 15Ω resistor is I1 times the resistor's value. The voltage's polarity is indicated. The 3.3 V source gets a negative sign because its negative terminal is associated with the positive part of our defined polarity. The second resistor's voltage is 10*I1. The 6.6 V source's polarity matches our defined polarity, so it remains positive. The final resistor's voltage is 7.5*I1. Now that you've completely traveled the path, set the sum equal to zero.

Next, solve for I1. Collect the terms associated with I1 together. Then collect the constants on the right side. Divide both sides by 32.5. Solve for I1. You should get that I1 = -102 mA.

Now notice that -102 mA passes through each resistor. Write that next to each resistor along with I1's direction. Next to each resistor, draw the voltage that matches passive sign convention. That voltage is current * resistance by Ohm's law. This should give the correct answers for each resistor.

If the original mesh current had been defined in the opposite direction, the circuit still would have behaved the same. We would just get different signs and directions for the defined current I1.