Consider each scenario:

 a. A high-speed passenger train in Europe completes an 800 km trip in 3 hours. The train travels the first 600 km at an average speed that was 100 km/h faster than the last 200 km of the trip. If *x* represents the average speed of the train on the second part of the trip, then an equation to represent this situation is:



 Identify all restrictions on the variable *x* in this context.

 b. Kailey is making earrings to sell at a local market. She spends $80 on supplies and decides to keep 4 pairs of earrings to give to her friends. Kailey sells the rest of the earrings she made for $175, making a profit of $9 per pair of earrings.

 If *n* represents the number of pairs of earrings Kailey made, then an equation that represents this information is:



 Identify all restrictions on the variable *n* in this context.