Question #25887 A coin is weighted so that $\mathsf{P}(H) = 2/5$ and $\mathsf{P}(T) = 1/8$ is tossed. If heads appear then a number is selected at random from the numbers 1 to 9; If tails appear then the numbers are selected at random from the numbers 1-5. Find the probability that the number is even.

Solution. The problem is not clear, since according to the values of probabilities, there can occur something except of appearing H or T $2/5 + 1/8 < 1$ and it is not stated what we do in this case.Assume that in this case we do not select a number. The law of total probability gives that $\mathsf{P}(\text{ number is even }) = \mathsf{P}(\text{ number is even}|H)\mathsf{P}(H) + \mathsf{P}(\text{ number is even}|T)\mathsf{P}(T) = 4/9 \cdot 2/5 + 2/5 \cdot 1/8 = 41/180$. **Answer** $41/180$