Timothy is conducting an experiment where he flips a two-sided coin 5 times. How many different outcomes could Timothy's experiment have?

Answer: Let us assume, that when coin falls with side 1 up, this is an event *a* and when it falls with side 2 up it is event *b*. Then, we can write all the possible event combinations:

aaaaa	*bbaaa*	*abaab*	*bbaab*	*baabb*	*abbbb*
baaaa	*babaa*	*aabba*	*abbba*	*ababb*	*bbbbb*
abaaa	*baaba*	*aabab*	*abbab*	*bbbba*	
aabaa	*baaab*	*aaabb*	*aabbb*	*bbbab*	
aaaba	*abbaa*	*bbbaa*	*babba*	*bbabb*	
aaaab	*ababa*	*bbaba*	*babab*	*babbb*	

As you can see, together it is 32 combinations, we could calculate it, as the $2^5 = 32$.

Answer: experiment can have 32 different outcomes.