Joe, the police officer has been asked to patrol an area of 3 block-by-6 blocks to ensure campus safety. Is it possible for him to cover all streets without going over the 8 already travelled streets. If not, then how many extra blocks (streets) does he need to cover.

Not possible to have an Euler circuit in the original graph since there are degree 3 vertices in it. To eulerize we add the dashed edges.
Sarah has 5 jeans and 15 shirts. How many pairs of shoes does she need to buy so that she is not seen in the same dress for a year.

She decides that 2 of her shirts do not go well with a particular jeans. How many ways does she have now?

(a) Let \( x \) be the number of shoes she should buy.

So \( 5 \times 15 \times x \geq 365 \)

\[ \Rightarrow x \geq 5 \]

i.e. she should buy 5 pairs of shoes.

(b) There \( \binom{1}{1} \times \binom{2}{1} \times \binom{5}{5} = 10 \) forbidden choices

Hence she still has \( 5 \times 15 \times 5 - 10 \)

\[ = 375 - 10 \]

\[ = 365 \text{ choices} \]