

Please write ***Your name:*** _____

Show all work. You should either write at a sentence explaining your reasoning, or annotate your math work with brief explanations. There is no need to simplify, and no calculators are needed.

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(1) Suppose there are 7 black pens and 5 red pens. How many ways can we choose 4 pens?

(2) Suppose there are 7 black pens and 5 red pens. How many ways can we choose 4 pens if we need two of each color?

- (3) Suppose there are 7 black pens and 5 red pens. How many ways can we choose 4 pens if we need at least one of each color?
- (4) If a student council contains 11 people, how many ways are there to elect a president, a vice president, and a 4 person committee?