Name:

Quiz 4: §5.1-6.2

Complete the following problems to the best of your ability. **SHOW ALL OF YOUR WORK.** Unshown work will not be graded. You may use a calculator.

1. [50] We are a PokéMart trying to get started. At the moment, we have a supplier of Potions and PokéBalls to sell, and we're trying to figure out how to maximise our profits. Our seller deals in bulk, so we need to buy at least 50 PokéBalls and at least 20 potions. We only have so much inventory space, though, so the total number of PokéBalls and Potions we have in stock can't exceed 150.

   We can sell a PokéBall for $2, and a potion for $3. How many of each item should we sell to maximise our revenue, and what is the maximum revenue?

2. Let A be the set of possible outcomes of rolling an 8-sided die, and let B be the set of outcomes of rolling a 6-sided die.

(a) [10] Write out the sets A and B.

(b) [10] Write out the sets $A \cup B$ and $A \cap B$.

(c) [10] Circle which of the following statements are true.

$A \subseteq B$ $B \subseteq A$ B is a proper subset of A $A = B$

(d) [20] Give the cardinalities of the following sets:

i. $n(A \cup B)$

ii. $n(A \cap B)$

iii. $n(A \times B)$