5.4 Worksheet – Geometric Probability Distributions

MDM4U
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1) To start her old lawn mower, Rita has to pull a cord and hope for some luck. On any particular pull, the mower has a 20% chance of starting.

- **a)** Find the probability that it takes her exactly 3 pulls to start the mower.
- **b)** Find the probability that it takes her 10 or fewer pulls to start the mower.

2) Marti decides to keep placing a $1 bet on number 15 in consecutive spins of a roulette wheel until she wins. On any spin, there's a 1---in---38 chance that the ball will land in the 15 slot.

- **a)** How many spins do you expect it to take until Marti wins? Justify your answer.
- **b)** What is the probability that it takes 5 spins before Marti wins?
- **c)** What is the probability that it will take Marti more than 50 spins to win?

3) To finish a board game, Sarah needs to land on the last square by rolling a sum of 2 with two dice.

- **a)** What is the probability that it takes her 8 tries before she wins?
- **b)** What is the probability that she wins in under 5 tries?
- **c)** How many rolls would you expect it to take until she wins?

4) Suppose that 1 out of 50 cards in a scratch---and---win promotion gives a prize.

- **a)** What is the probability of you not winning until your fourth try?
- **b)** What is the probability that of winning in 10 tries or less?
- **c)** What is the expected number of scratch---and---win cards you need to play to get your first win?

5) A top NHL hockey player scores on 93% of his shots in a shooting competition.

- **a)** What is the probability that the player will not miss the goal until his 20^{th} try?
- **b)** What is the probability that he takes more than 20 shots before missing?
- **c)** What is the expected number of shots taken until he gets his first miss?