Gaming Choices

Rory is a gaming enthusiast. His favourite game at the moment is *Power Worlds*, a game in which characters play online and try to move up through "worlds" by collecting items of "power". They earn these items by undertaking missions for other characters.

Rory has just started a new game of *Power Worlds*. He has to make some choices about which missions to undertake.

I want to choose missions that give me the greatest chance of success.

Give me 20 rabbit skins, and I'll make you a pair of leather boots.

Character 1

I'll give you leather boots if you can give me 2 wolf fangs.

Character 2

I'll teach you to make leather boots if you deliver this package for me.

Character 3

Probability is a number between 0 and 1 or a percentage between 0 and 100.

1. **Task 1 (for character 1)**

There are 250 rabbits. Rory can catch all the rabbits, and they all give up their skin when caught.
What is the probability that Rory will collect the 20 skins he needs?

2. Task 2 (for character 2)

There are 120 wolves. Rory is stronger than 90 of them. 100 of the wolves will give up their fangs when overpowered. 10 of the stronger wolves won't give up their fangs.

a. Complete the table:

Rory		Wolves		
		will give fangs	won't give fangs	Total
	is stronger than the wolf			90
	is weaker than the wolf		10	
	Total	100		120

b. How many wolves won't give up their fangs if Rory wins?

c. What is the probability that Rory will get the 2 fangs he needs from the wolf he challenges?

d. Which wolves give up their fangs more easily: those that are weaker than Rory or those that are stronger?

Make sure that the totals of each row and column are correct.

3. Task 3 (for character 3)

a. To succeed in this mission, Rory needs to deliver the package to the right person without breaking it. The probability that the package will get broken is 35 percent. The probability that Rory will deliver the package to the wrong person is 10 percent. Complete the table:

Rory		Package		
		doesn't get broken	gets broken	Total
	delivers to the right person			
	delivers to the wrong person		3.5%	10%
	Total		35%	100%

b. What is the probability that Rory will successfully deliver the package?

4. Based on the probability of success for each mission, which mission should Rory choose?

5. Rory wants to move through the levels as fast as possible. If he fails a mission, he can repeat it or do another. The rabbit mission would take three times as long as either of the other two missions. How might this affect his choice?

6. The wolf and package missions usually take the same amount of time. Which of these two should Rory choose? Explain why.

Focus   Using two-way tables in probability situations