Question 0:

For 1 hit it's 16 as so

Assume P is shot missed

$P = 0.9$ Prob $\geq 80\%$

$$P = \binom{k}{n} \, p^k \, (1-p)^{n-k}$$

If $k=0$, you missed all chances
$P = 0$

$$\binom{0}{n} \; 0.1^0 \; 0.9^n$$

$n=5$ $p=0.59$ $\Rightarrow$ $1-p = 0.41$ ✗

$n=15$ $p=0.21$ $\Rightarrow$ $1-p \approx 0.79$ ✗

$n=16$ $p=0.19$ $\Rightarrow$ $1-p \approx 0.81$ ✓

      You will need to Shoot 16 Times
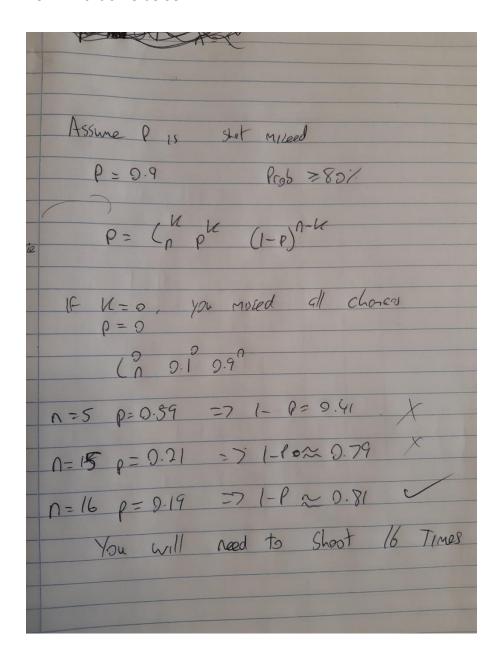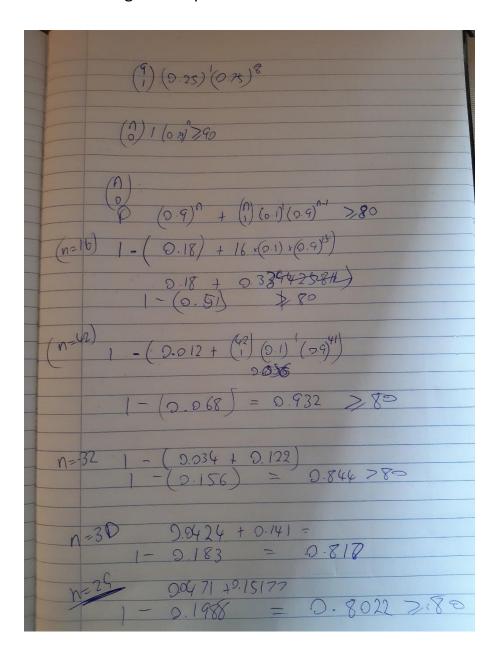
For 2 hits you need to check for the scenario of all missing as well as the scenario where you have 1 miss, so I add the probability of them both and made sure together 1-p >= 80

$$\binom{9}{1}(0.25)^1(0.75)^8$$

$$\binom{1}{0} 1 (0.75)^0 \geq 90$$

$$\binom{n}{0}$$
$$\binom{n}{0}(0.9)^n + \binom{n}{1}(0.1)^1(0.9)^{n-1} \geq 80$$

$(n=16)$ $1-\left(0.18 + 16 \times (0.1) \times (0.9)^{15}\right)$

$$0.18 + 0.3344258\text{H}$$
$$1-(0.51) \qquad \geq 80$$

$(n=42)$ $1-\left(0.012 + \binom{42}{1}(0.1)^1(0.9)^{41}\right)$

$$0.056$$

$$1-(0.068) = 0.932 \geq 80$$

$n=32$ $1-\left(\dfrac{0.034 + 0.122}{1-(0.156)}\right) = 0.844 \geq 80$

$n=30$ $\dfrac{0.0424 + 0.141 =}{1-0.183} = 0.818$

$n=29$ $\dfrac{0.0471 + 0.15177}{1-0.1988} = 0.8022 \geq 80$

Answer: Player need to shoot 29 times to be 80% sure that it will score you will hit the monster 2 times. $(0.9)^{29} + 29C1 \times (0.1)^1 \times (0.9)^{28} = 0.1988$
$1 – 0.1988 = 0.8022 = 80.02\% > 80\%$

Question 1:

10.1.5.65:
10: 0000 1010
1: 0000 0001
5: 0000 0101
65: 0100 0001

e0 -> 10.1.1.2	e1 -> 10.1.2.2	s0 -> 10.1.3.3	s1 -> 10.1.4.4
10.1.5.0/24:	**10.1.5.64/28:**	**10.1.5.64/29:**	**10.1.5.64/27:**
10: 0000 1010	10: 0000 1010	10: 0000 1010	10: 0000 1010
1: 0000 0001	1: 0000 0001	1: 0000 0001	1: 0000 0001
5: 0000 0101	5: 0000 0101	5: 0000 0101	5: 0000 0101
0: 0000 0000	64: 0100 0000	64: 0100 0000	64: 0100 0000

Answer: The Packet will be sent to **s0** -> 10.1.3.3 because it has the best match

Question 2:

131.23.151.76:
131: 1000 0011
23: 0001 0111
151: 1001 0111
76: 0100 1100

OII: 3	OII: 5	OII: 2	OII: 1
131.16.0.0/12:	**131.28.0.0/14:**	**131.19.0.0/16**	**131.22.0.0/15**
131: 1000 0011	131: 1000 0011	131: 1000 0011	131: 1000 0011
16: 0001 0000	28: 0001 1100	19: 0001 0011	22: 0001 0110
12 match	13 match	Not perfect match	15 match (More exact)

Answer: The Identifier for 131.23.151.76 is: 1

Question 3:

192.24.6.0:
192: 1100 0000
24: 0001 1000
6: 0000 0110
0: 0000 0000

D   B
192.24.0.0/18:   **192.24.12.0/22:**
192: 1100 0000   192: 1100 0000
24: 0001 1000   24: 0001 1000
0: 0000 0000   12: 0000 1100
0: 0000 0000   0: 0000 0000

Answer: D, not a perfect match for B

192.24.14.32:
192: 1100 0000
24: 0001 1000
14: 0000 1110
32: 0010 0000

D   B
192.24.0.0/18:   **192.24.12.0/22:**
192: 1100 0000   192: 1100 0000
24: 0001 1000   24: 0001 1000
0: 0000 0000   12: 0000 1100
0: 0000 0000   0: 0000 0000

Answer: B, it has a 22 places perfect match

192.24.54.0:
192: 1100 0000
24: 0001 1000
54: 0011 0110
0: 0000 0000

D   B
192.24.0.0/18:   **192.24.12.0/22:**
192: 1100 0000   192: 1100 0000
24: 0001 1000   24: 0001 1000
0: 0000 0000   12: 0000 1100
0: 0000 0000   0: 0000 0000

Answer: D