(a) No. What is a success/fail? To use binomial or geometric we need 2 possible outcomes ONLY.

(b) Yes. → 2 outcomes - Type A or Not Type A
   → People are independent (regarding blood type)
   → Set sample size n=120; less than 10% of pop
   → p=.43 is the same for each trial (assuming people are chosen randomly)

(c) No. There is no replacement so the trials are not independent.

(d) Yes? → 2 outcomes - Favor or Oppose budget
   → People are independent (opinions), BUT...
   → Set sample size n=500
   → Out of 3000 people this is going to affect probability, making it not independent. (Think no replacement)

So \[\text{NO}\]

(e) Maybe. → 2 outcomes - Sealed or Not Sealed
   → Set sample size n=24
   → Are packages sealed in the same area by the same device? Do they go into a case independently or not?
     If independent: YES
     If not (affected by something): NO
7. \( p = .80 \)
   
a) Geometric! \[ P(Y = 5) = (\cdot .80)^4 (\cdot .20) = .0819 \]

b) Geom! \[ P(Y = 4) = (\cdot .2)^3 (\cdot .8) = .0064 \]

c) Geom! \[ P(Y \leq 3) = (.8) + (\cdot .2)(\cdot .8) + (\cdot .2)^3 (\cdot .8) = .992 \]
   \[ \text{geom cdf}(.8, 3) = .992 \]

\( p = .02 \)

8. a) Geom! \[ P(Y = 5) = (.98)^4 (.02) = .0184 \]

b) Geom! \[ P(Y \leq 10) = \text{geom cdf}(.02, 10) = .1829 \]
   
   "A" bad one in the first 10 (when)

9. \( M_y = \frac{1}{p} = \) (until he misses; \( q \)) \[ \frac{1}{q} = \frac{1}{\cdot .2} = 5 \text{ shots} \]

10. \( M_y = \frac{1}{p} = \frac{1}{.02} = 50 \text{ chips} \)

11. \( p = .04 \)
   
a) Geom a) \[ M_y = \frac{1}{p} = \frac{1}{.04} = 25 \text{ people} \]

   Geom b) \[ P(Y \leq 5) = \text{geom cdf}(.04, 5) = .1846 \]

   Geom c) \[ P(Y \leq 6) = \text{geom cdf}(.04, 6) = .2172 \]

   Geom d) \[ P(Y \geq 10) = 1 - P(Y \leq 9) = 1 - \text{geom cdf}(.04, 9) = .06925 \]
\( p = .13 \), \( n = 5 \)

a) Geom! \( P(Y = 5) = (.87)^4(.13) = .0745 \)

b) Binom! "Some" = at least one
\[
P(X \geq 1) = 1 - P(X = 0) = 1 - (.87)^5 = \boxed{.5016}
\]

c) Geom! \( P(2 \leq Y \leq 3) = P(Y = 2) + P(Y = 3) \)
\[
( .87)(.13) + ( .87)^2(.13) = \boxed{.2115}
\]

d) Binom! \( P(X = 3) = \binom{5}{3}(.13)^3(.87)^2 = \text{binompdf}(5, .13, 3) = \boxed{.0166} \)

e) Binom! \( P(X \geq 3) = \binom{5}{3}(.13)^3(.87)^2 + \binom{5}{4}(.13)^4(.87) + \binom{5}{5}(.13)^5(.87)^0 \)
\[
\rightarrow (\frac{5}{3})(.13)^3(.87)^2 = \]
\[
\text{OR} \quad 1 - P(X \leq 2) = 1 - \text{binomcdf}(5, .13, 2) = \boxed{.0179}
\]

f) Binom! \( P(X \leq 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3) = \) \( \text{long way}\)
\[
= \text{binomcdf}(5, .13, 3) = \boxed{.9987}
\]

\( \boxed{15} \)

a) \( \mu_b = np = .13(5) = .65 \)

b) \( \sigma_b = \sqrt{npq} = \sqrt{5(.13)(.87)} = .75 \)

c) \( \mu_g = \frac{1}{p} = \frac{1}{.13} = \boxed{7.7 \text{ people}} \)
\( n = 12 \quad p = .13 \quad q = .87 \rightarrow \text{right handers} \)

a) \[ \mu_b = 12(.87) = 10.44 \]
\[ \sigma_b = \sqrt{12(.13)(.87)} = 1.16 \]

b) \[ P(\text{at least one lefty}) = P(X \geq 1) = 1 - P(X = 0) = 1 - \text{binompdf}(12, .13, 0) = 1 - (.87)^{12} = .812 \]

c) \[ P(\text{at least 2 lefties}) = P(X \geq 2) = 1 - P(X \leq 1) = 1 - \text{binomcdf}(12, .13, 1) = .4748 \]

d) \[ P(X = 6) = \binom{12}{6}(.13)^6(.87)^6 = \text{binompdf}(12, .13, 6) = .00193 \]

7 rt 5 left

e) \[ P(X \leq 5) = \text{binomcdf}(12, .13, 5) = .9978 \]