

SOLUTIONS:Pg 1ne

$$\textcircled{\text{II}} \textcircled{6} .35 + .2 + y + .15 = 1$$

$$\Rightarrow .70 + y = 1$$

$$\Rightarrow y = \boxed{.30}$$

$$\textcircled{7} \mu = \sum x \cdot P(x)$$

$$= (-6)(.35) + (-4)(.2) + (3)(.30) + (5)(.15)$$

$$= (-2.1) + (-.8) + (.9) + (.75)$$

$$= \boxed{-1.25}$$

$$\textcircled{8} \sigma = \sqrt{\sum x^2 P(x) - \mu^2}$$

$$= \sqrt{(-6)^2(.35) + (-4)^2(.2) + (3)^2(.30) + (5)^2(.15) - (-1.25)^2}$$

$$= \sqrt{12.6 + 3.2 + 2.7 + 3.75 - 1.5625}$$

$$= \sqrt{22.25 - 1.5625}$$

$$= \sqrt{20.6875}$$

$$= \boxed{4.548}$$

III

$$\textcircled{9} P(X=5) = \boxed{.0250}$$

$$\textcircled{10} P(X > 11) = .1110 + .0476 + .0126 + .0014$$

$$= \boxed{.1726}$$

$$\textcircled{11} P(X < 12) = .0001 + .0007 + .0034 + .0131 + .0393 + .0917 + .1651 + .2252 = \boxed{.5386}$$

OR

$$= 1 - [.2252 + .1559 + .0668 + .0134] = 1 - [.4613] = \boxed{.5387}$$

$$\begin{aligned} \textcircled{12} P(X \geq 1) &= 1 - P(X=0) \\ &= 1 - .1678 \\ &= \boxed{.9322} \end{aligned}$$

$$\begin{aligned} \textcircled{13} P(X < 16) &= 1 - (.2428 + .2428 + .1629 + .0456) \\ &= 1 - [.6941] = \boxed{.0359} \end{aligned}$$

or

$$\begin{aligned} &= .0001 + .0007 + .0032 + .0122 + .0374 + .0907 + .1714 \\ &= \boxed{.0357} \end{aligned}$$

$$\begin{aligned} \textcircled{14} P(4 \leq X < 8) &= .0762 + .1489 + .2124 + .2225 \\ &= \boxed{.6600} \end{aligned}$$

III Binomial with $p = .90$ $n = 15$

$$\textcircled{15} P(X=15) = \boxed{.2059}$$

$$\begin{aligned} \textcircled{16} P(X < 12) &= .0003 + .0019 + .0105 + .0428 \\ &= \boxed{.0555} \end{aligned}$$

$$\begin{aligned} \textcircled{17} P(X \leq 10) &= .0003 + .0019 + .0105 \\ &= \boxed{.0127} \end{aligned}$$

$$\begin{aligned} \textcircled{18} P(10 \leq X \leq 14) &= .0105 + .0428 + .1285 + .2669 + .3432 \\ &= \boxed{.7919} \end{aligned}$$

(19) $E(X) = \mu = n \cdot p$ ← NOTE SPECIAL FORMULA FOR BINOMIAL

$$= (15)(.90)$$

$$= \boxed{13.5}$$

(20) $\sigma = \sqrt{n \cdot p \cdot q}$ $q = 1 - p$
 $q = 1 - .90$
 $= .10$

$$= \sqrt{(15)(.90)(.10)}$$

$$= \sqrt{1.35}$$

$$= \boxed{1.16249}$$

(V) Binomial with $p = .40$ $n = 18$

$P(X < 9)$ ← note: "half" of $18 = 9$

$$P(X < 9) = .0001 + .0012 + .0069 + .0246 + .0614 + .1146 +$$

$$+.1655 + .1892 + .1734$$

$$= \boxed{.7369}$$

(VI) $p = .20$ $n = 12$ (BINOMIAL)

(22) $P(X < 6)$ ← "half"
 $= .0687 + .2062 + .2835 + .2362 + .1329 + .0632$

$$= \boxed{.9907}$$

$$n=12 \quad p=.20$$

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$$\begin{aligned} \textcircled{23} \quad P(X > 2) &= 1 - [.0687 + .2062 + .2835] \\ &= 1 - [.5584] \\ &= \boxed{.4416} \end{aligned}$$

$$\begin{aligned} \textcircled{24} \quad P(3 \leq X \leq 6) &= .2362 + .1329 + .0530 + .0155 \\ &= \boxed{.4378} \end{aligned}$$

$$\begin{aligned} \textcircled{25} \quad P(X \geq 1) &= 1 - P(X=0) \\ &= 1 - .0687 \\ &= \boxed{.9313} \end{aligned}$$