(1) $X: 1, 6, 7, 10$

$\bar{x} = \frac{\Sigma x}{n}$ $\bar{x} = \frac{1+6+7+10}{4}$ $\bar{x} = \frac{24}{4} = \boxed{6}$

$\text{MIDRANGE} = \frac{\text{MAX} - \text{MIN}}{2} = \frac{10+1}{2} = \frac{11}{2} = \boxed{5.5}$

MEDIAN is middle value $1, 6, 7, 10$ $\boxed{6.5}$

$S = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$

x	$x-\bar{x}$	$(x-\bar{x})^2$
1	-5	25
6	0	0
7	1	1
10	4	16

$S = \sqrt{\frac{42}{3}} = \sqrt{14}$

$S \approx \boxed{3.7}$

ENTER: 1-VarStats L1, L2

(2)

L1 X	L2 $P(X)$	$X \cdot P(X)$	X^2	$P(X)$	$X^2 \cdot P(X)$
0	$1/8$	$0/8$	0	$1/8$	$0/8$
2	$2/8$	$4/8$	4	$2/8$	$8/8$
4	$3/8$	$12/8$	16	$3/8$	$48/8$
6	$\boxed{2/8}$	$12/8$	36	$2/8$	$72/8$
		$\Sigma = 28/8$			$128/8$

(a)

(b) $\mu = \Sigma x\, p(x) = 28/8 = \boxed{3.5}$

$$\sigma = \sqrt{\left[\Sigma x^2 p(x)\right] - \mu^2}$$

$$\sigma = \sqrt{128/8 - (28/8)^2} = \sqrt{64/4 - (7/2)^2}$$

$$= \sqrt{64/4 - 49/4}$$

$$= \sqrt{15/4} \approx \boxed{1.9}$$

(C) $E = \mu = \Sigma x \cdot p(x)$ $\quad E = \mu = \boxed{3.5}$

(d) $\mu - 2\sigma$ $\quad 3.5 - 2(\sigma) \approx \boxed{-.37}$ LOWER BOUND FOR UNUSUAL

SO, NO IT WOULD NOT BE. $\mu - 2\sigma \approx -.37$, IS LESS THAN ZERO.

(3) BINOMIAL

✓ F $n = 15$
✓ I
✓ T
✓ CONSTANT $p = .70$

(a) $P(x=8) = \text{binomialpdf}(15, .70, 8) \approx \boxed{0.081}$

(b) $\mu = np$ $\mu = 15(.7) = \boxed{10.5}$

$\sigma = \sqrt{npq}$ $\sigma = \sqrt{(15)(.7)(.3)} \approx \boxed{1.8}$

(c) $P(x \geq 10) = 1 - \text{binomcdf}(15, .70, 9) \approx \boxed{0.722}$

(d) $P(x < 7) = P(x \leq 6)$

$= \text{binomcdf}(15, .70, 6) \approx \boxed{0.015}$

Yes, this would be unusual since it is less than 5%.

(4)

	WOMEN	MEN	TOTAL
GRADUATE	12	8	20
NOT GRADUATE	14	16	30
TOTAL	26	24	$\boxed{50}$

(a) $P(\text{WOMAN}) = 26/50 = \boxed{0.52}$

(b) $P(\text{MAN OR GRAD}) = P(\text{MAN}) + P(\text{GRAD}) - P(\text{MAN and GRAD})$

$$= \frac{24}{50} + \frac{20}{50} - \frac{8}{50} = \frac{36}{50} = \boxed{0.72}$$

(c) $P(\text{MAN and MAN and MAN}) = \frac{24}{50} \cdot \frac{23}{49} \cdot \frac{22}{48} \approx \boxed{0.103}$

(d) $P(\text{MAN} \mid \text{GRAD}) = \frac{8}{20} = \boxed{0.4}$

$$= \frac{P(\text{GRAD AND MAN})}{P(\text{GRAD})} = \frac{\frac{8}{50}}{\frac{20}{50}} = \frac{8}{20}$$

(5)

(a) $\mu = \frac{1129}{16} \approx \boxed{70.6}$

MODE $= \boxed{68}$

$\sigma \approx \boxed{13.8}$

RANGE $= 96 - 42 = \boxed{54}$

(b) P_{60} $\quad \overset{\text{LOCATOR}}{L} = \frac{60}{100} \cdot 16 \quad L = 9.6$ ROUND UP to 10^{th}

SO P_{60} is 10^{th} Number $= \boxed{71}$

(c) $Z = \frac{x - \mu}{\sigma} \quad Z = \frac{76 - \mu}{\sigma} \quad Z \approx \boxed{0.39}$

(d)

STEM	LEAVES
4	2
5	1 9
6	3 5 7 8 8 9
7	1 3 6
8	0 6
9	5 6

(6)

LOWER BOUNDARY	LOWER LIMIT	UPPER LIMIT	UPPER BOUNDARY	L1 ↓ CLASS MIDPOINT	L2 ↓ freq.	REL. freq.	CUM freq.
20.5	21	35	35.5	28	2	2/44	2
35.5	36	50	50.5	43	5	5/44	7
50.5	51	65	65.5	58	8	8/44	15
65.5	66	80	80.5	73	12	12/44	27
80.5	81	95	95.5	88	11	11/44	38
95.5	96	110	110.5	103	6	6/44	44

(a) see table, CLASS WIDTH = $\boxed{15}$

(b) MID POINTS IN L1, freq^s in L2 the 1-Var Stats L1, L2

$\bar{x} \approx \boxed{72.7}$ $S \approx \boxed{20.6}$ for a sample

$\mu \approx \boxed{72.7}$ $\sigma \approx \boxed{20.3}$ for a population

(c) see table

(d) see table

(7) SACK of POTATOES: $\mu = 5.00$, $\sigma = 0.25$ lbs.

(a) $P(x > 4.90) = \text{normalcdf}(4.90, 1E99, 5.00, 0.25)$

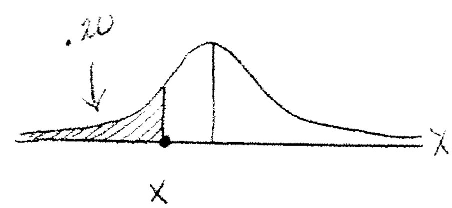
$\approx \boxed{0.655}$

(b) $P(\bar{x} < 4.90) = \text{normalcdf}\left(-1E99, 4.90, 5.00, \frac{.25}{\sqrt{10}}\right)$

$\approx \boxed{0.103}$

(c) $X = \text{invNorm}(.20, 5.00, .25)$

$\approx \boxed{4.79}$



(d) we want the sample size n for a 99% C.I.

$$n = \left[Z_{\frac{\alpha}{2}} \cdot \frac{\sigma}{E} \right]^2 \qquad n = \left[(2.576) \cdot \frac{0.25}{(.1)} \right]^2$$

≈ 41.47 round up

$\boxed{42}$

USE Program NMEAN also $\boxed{42}$

(8) (a)

x	$P(x)$
200	1/4
300	3/4

$E = \sum x\,p(x)$ $\quad E = (200)(\tfrac{1}{4}) + (300)(\tfrac{3}{4}) = \boxed{\$275}$

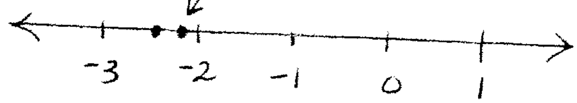
(b) $\frac{55}{100} \cdot \frac{54}{99} \cdot \frac{53}{98} \cdot \frac{52}{97} \cdot \frac{51}{96} \approx \boxed{0.046}$ YES, UNUSUAL. LESS THAN 5%.

(c) $P(x \geq 1) = 1 - P(\text{all do NOT live on campus})$

∅ live	at least 1 lives 1 or 2 or ... 6

$= 1 - (.55)^6 \approx \boxed{0.972}$

(d) $Z_H = \frac{3.21 - 3.86}{.21} \approx \boxed{-3.10}$ $\quad Z_M = \frac{.83 - 1.09}{.08} = -3.25$



HAMBURGER IS RELATIVE HIGHEST

(e) BINOMIAL $\mu = np$ $\quad \mu = (12)(.62) = \boxed{7.44}$

$\sigma = \sqrt{npq}$ $\quad \sigma = \sqrt{(12)(.62)(.38)} \approx \boxed{1.68}$

(f) $P(1^{st} \text{ AND } 2^{nd}) = (.4)(.3)$

$= \boxed{0.12}$