Answer Sheet

1	0.111	15	0.092
2	0.178	16	0.205
3	0.889	17	0.257
4	0.711	18	0.544
5	0.489	19	0.108
6	0.911	20	0.918
7	2.4	21	0.544
8	2.0	22	0.393
9	1.4	23	9.18%
10	0.0008	24	99.01%
11	0.9992	25	0.38%
12	−5	26	98.63%
13	795	27	8.19%
14	−4.36	28	Solutions

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East Los Angeles College
Department of Mathematics
Math 227
Test 3

Let x represent the number of days an employee is absent per year in the workplace.

x	p(x)
0	0.111
1	0.178
2	0.222
3	0.267
4	0.133
5	0.089

What's the probability an employee misses:

1. No days?
2. One day?
3. At least one day?
4. At least two days?
5. More than two days?
6. No more than four days?
7. What's the expected number of days missed? **Approximate to the nearest tenths.**
8. What's the variance for this distribution? **Approximate to the nearest tenths.**
9. What's the standard deviation for this distribution? **Approximate to the nearest tenths.**

Husky Casino has a new game called the Two Red Aces Game for a chance to win a prize of $ 800. It cost's $ 5 to play this game and you win by selecting two different red aces.

10. What's the probability of winning this game? **Approximate to the nearest ten thousandths.**
11. What's the probability of losing this game? **Approximate to the nearest ten thousandths.**
12. How much do you lose if you do not draw two different aces?
13. What is the net of winning for this game?
14. What is the expected value for this game? **Approximate to the nearest hundredths.**

A computer salesman has a mean of 2.5 sales per week (5-day interval). In the next week, what's the probability the computer salesman sells:

15. No computers? **Approximate to the nearest thousandths.**
16. One computer? **Approximate to the nearest thousandths.**
17. Two computers? **Approximate to the nearest thousandths.**
18. Less than three computers? **Approximate to the nearest thousandths.**
19. More than four computers? **Approximate to the nearest thousandths.**
20. At least one computer? **Approximate to the nearest thousandths.**
21. No more than two computers? **Approximate to the nearest thousandths.**

22. in the next day, what's the probability the salesman will have at least one computer sale? **Approximate to the nearest thousandths.**

IQ Scores are normally distributed with a mean of 100 and a standard deviation of 15. What percent of the population has an IQ score of:

23. At least 120?
24. No more than 135?
25. Less than 60?
26. Between 60 and 135?
27. Between 120 and 135?
28. What is your name?

Math 227 Test 3

(1) No Days ; x = # of days absent

$x=0$ $\quad \boxed{P(0) = 0.111}$

(2) one day ; $x=1$

$\boxed{P(1) = 0.178}$

(3) at least one day ; $x \geq 1$

$P(x \geq 1) = P(1) + P(2) + P(3) + \ldots$

$= 1 - P(0)$

$= 1 - 0.111$

$= \boxed{0.889}$

(4) at least two days ; $x \geq 2$

$P(x \geq 2) = P(2) + P(3) + \ldots$

$= 1 - P(0) - P(1)$

$= 1 - 0.111 - 0.178$

$= \boxed{0.711}$

(5) more than 2 ; $x > 2$

$P(x > 2) =$

(5) more than 2 ; $x > 2$

$$P(x>2) = P(3) + P(4) + \cdots$$

$$= 1 - P(0) - P(1) - P(2)$$

$$= 1 - 0.111 - 0.178 - 0.222$$

$$= \boxed{0.489}$$

	x	p(x)	xp(x)	x^2p(x)
	0	0.111	0	0
	1	0.178	0.178	0.178
	2	0.222	0.444	0.888
	3	0.267	0.801	2.403
	4	0.133	0.532	2.128
	5	0.089	0.445	2.225
Sum			2.4	7.8

(6) No more than 4 days ; $x \leq 4$

$$P(x \leq 4) = P(0) + P(1) + P(2) + P(3) + P(4)$$

$$= 1 - P(5)$$

$$= 1 - 0.089$$

$$= \boxed{0.911}$$

(7) $\mu = \Sigma x p(x)$; $\boxed{\mu = 2.4}$ See Spread Sheet

(8) $\sigma^2 = \Sigma x^2 p(x) - \mu^2$

$$= 7.9 - 2.4^2$$

$$\boxed{\sigma^2 = 2.04} \; ; \boxed{\sigma^2 \approx 2.0}$$

(9) $\sigma = \sqrt{\Sigma x^2 p(x) - \mu^2}$; $\sigma = \sqrt{7.8 - 2.42}$

$$\boxed{\sigma \approx 1.4}$$

(10) $P(\text{1st Red A once 2nd Red A}) = P(\text{1st Red A}) \cdot P(\text{2nd Red A})$

$$= \frac{2}{52} \cdot \frac{1}{51}$$

$$\approx \boxed{0.0008}$$

(11) $P(L) = 1 - P(W)$

$$= 1 - 0.0008$$

$$\approx \boxed{0.9992}$$

(12) (-5) (13) 800 − 5 = 795

(14)

x	P(x)	xP(x)
outcome	Probability	
win 795	0.0008	795 · 0.0008
lose −5	0.9992	−5 · 0.9992

$$\mu = 795 \cdot 0.0008 - 5 \cdot 0.9992$$

$$\boxed{\mu = -4.36}$$

(15) x = # computer Sales (week 4 5-days) ; $\mu = 2.5$ (week; 5 days)

$$P(x) = \frac{\mu^x e^{-\mu}}{x!} \; ; \; P(x) = \frac{2.5^x e^{-2.5}}{x!}$$

$x = 0$;

$$P(0) = \frac{2.5^0 e^{-2.5}}{0!} \; ; \; P(0) = e^{-2.5}$$

$$P(0) \approx \boxed{0.082}$$

(16) $x = 1$; $P(1) = \frac{2.5^1 e^{-2.5}}{1!}$

$$P(1) = 2.5 e^{-2.5} \; ; \; P(1) \approx \boxed{0.205}$$

(17) $x = 2$; $P(2) = \frac{2.5^2 e^{-2.5}}{2!}$

$$P(2) = \frac{2.5^2 e^{-2.5}}{2}$$

$$P(2) \approx \boxed{0.257}$$

(18) less than 3; $x < 3$

$$P(x<3) = P(0) + P(1) + P(2)$$

$$= 0.082 + 0.205 + 0.257$$

$$= \boxed{0.544}$$

(19) more than 4; $x > 4$

$$P(x>4) = P(5) + P(6) + P(7) + \dots$$

$$= 1 - P(0) - P(1) - P(2) - P(3) - P(4)$$

we need $P(3)$ and $P(4)$

$$P(3) = \frac{2.5^3 e^{-2.5}}{3!} \; ; \; P(3) = \frac{2.5^3 e^{-2.5}}{6}$$

$$P(3) \approx 0.214$$

$$P(4) = \frac{2.5^4 e^{-2.5}}{4!} \; ; \; P(4) = \frac{2.5^4 e^{-2.5}}{24}$$

$$P(4) \approx 0.134$$

$$P(x>4) = 1 - 0.082 - 0.205 - 0.257 - 0.214 - 0.134$$

$$\approx \boxed{0.108}$$

(20) at least one ; $x \geq 1$

$$P(x \geq 1) = P(1) + P(2) + \dots$$

$$= 1 - P(0)$$

$$= 1 - 0.082$$

$$\approx \boxed{0.918}$$

(21) No more than 2 ; $x \leq 2$

$$P(x \leq 2) = P(0) + P(1) + P(2)$$

$$= 0.082 + 0.205 + 0.257$$

$$= \boxed{0.544}$$

(22) $\mu = 2.5$ customer per 5 days

ie, $\frac{2.5}{5}$ customers / days ; $\frac{\text{new } \mu}{1 \text{ day}}$

$\frac{2.5}{5} = \frac{\mu}{1}$; $\mu = 0.5$ customers / day

$P(x) = \frac{0.5^x e^{-0.5}}{x!}$, at least one $x \geq 1$

$$P(x \geq 1) = P(1) + P(2) + \dots$$

$$= 1 - P(0)$$

$P(0) = \frac{0.5^0 e^{-0.5}}{0!}$; $P(0) = e^{-0.5}$

$P(0) \approx 0.607$

$P(x \geq 1) = 1 - 0.607$

$P(x \geq 1) = \boxed{0.393}$

(23) ~~x~~ x is Normally dist

x = IQ Score ;

$\mu = 100$; $\sigma = 15$

$z = \frac{x - 100}{15}$

at least 120 ; $x \geq 120$

50% − 40.82%

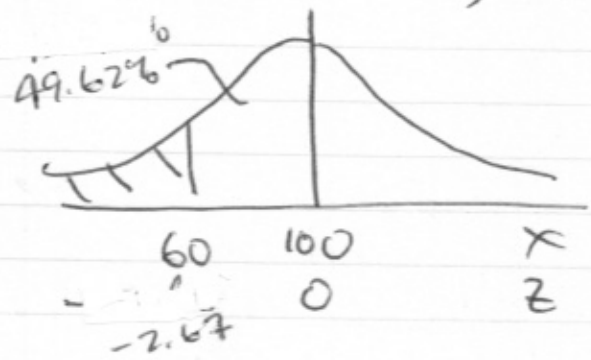
$\boxed{9.18\%}$

(24) No more than 135 ; $x \leq 135$

50% + 49.01%

$\boxed{99.01\%}$

(25) less than 60 ; $X < 60$

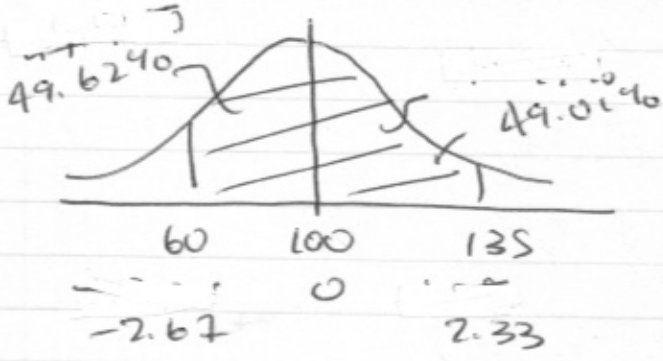


49.62%

50% -

0.38%

(26) Between 60 and 135

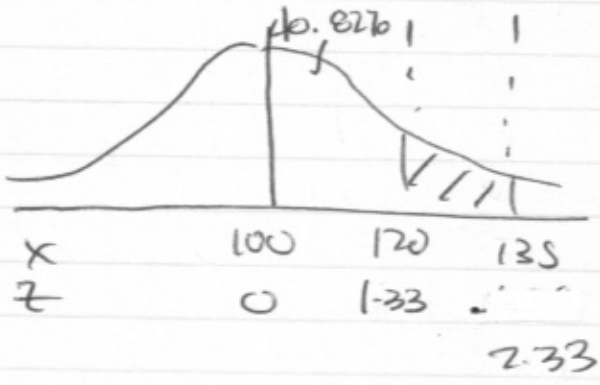


49.01%

47.72 +

98.63%

(27) Between 120 and 135



49.01%

- 40.82%

8.19%