

The contingency table given below classifies 100 business accounts by salesperson and cash/credit.

	Jane	Malcolm	Leah	
cash	20	10	30	60
credit	10	20	10	40
	30	30	40	100

SP7 200
 Exam 1
 9-23-09
 Verob

1. Refer to the table above. What fraction of all accounts are cash accounts?

- a) 60/100 b) 70/100 c) 20/50 d) 70/100 e) 20/30

2. Refer to the table above. What fraction of Jane's accounts are cash accounts?

- a) 60/100 b) 30/100 c) 20/50 d) 70/100 e) 20/30

3. Refer to the table above. What fraction of all accounts do Jane and Leah together account for?

- a) 60/100 b) 30/100 c) 20/50 d) 70/100 e) 20/30

$$(30 + 40) / 100$$

4. Refer to the table above. What name is given to $\{30/100, 30/100, 40/100\}$?

- a) marginal distribution of sales by salesperson
 b) conditional distribution of sales by salesperson, for cash accounts
 c) conditional distribution of sales by salesperson, for credit accounts

5. Refer to the table above. What name is given to $\{20/60, 10/60, 30/60\}$?

- a) marginal distribution of sales by salesperson
 → b) conditional distribution of sales by salesperson, for cash accounts
 c) conditional distribution of sales by salesperson, for credit accounts

6. Refer to the table above. What name is given to $\{10/40, 20/40, 10/40\}$?

- a) marginal distribution of sales by salesperson
 b) conditional distribution of sales by salesperson, for cash accounts
 → c) conditional distribution of sales by salesperson, for credit accounts

7. Ten cars fail a crash test and 20 cars pass the test. A bar graph for this information has height 10 above "fail." What is the height of the bar above "pass?"

- a) 10 b) 5 **c) 20** d) 25 e) 15

8. A graph of the fluctuations of the DOW has a vertical scale running from 5,000 up to 12,000. What principle of visual display is violated by this graph?

- a) rectangular display elements principle
 b) two for one principle
 c) principle of parsimony
 → d) area principle

9. A PROBABILITY histogram is prepared from counts of people's ages
 class intervals of age (0, 20], (20, 40], (40,50], (50, 60], (60, ∞)
 numbers of persons 20 25 5 30 20 total 100 persons

Give the height of the box (bar) above the class interval (50, 60].

- a) 30/100 b) **3/100** c) 15/100 d) 30/10 e) 30

$W = 60 - 50 = 10$
 $H = PR/W = (30/100)/10 = 3/100$

10. If sex is statistically unrelated to smoking (independent of smoking) what number of counts should appear in the blank cell of the table below?

	smoker	non-smoker
female	20	60
male	10	30

PROPORTIONALITY

- a) 60 b) 10 c) 20 **d) 30** e) 5

11. Determine the median of the list {6, 6, 3, 6, 7, 99, 120, 8}.

- a) 6 b) 8 c) **7** d) 6.5 e) 31.875

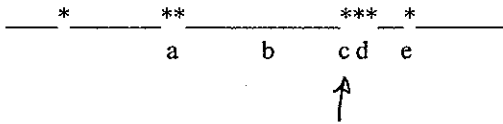
ORDER $n = 8$
 3 6 6 6 7 8 99 120
 ↓ ↓
 $\frac{6+7}{2} = 6.5$

12. Determine the mean of the list {0, 4, 4, 4}.

- a) 4 b) 2 c) 3.5 d) 3 e) 12

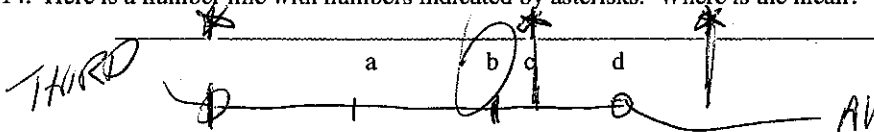
$$\frac{12}{4} = 3$$

13. Here is a number line with numbers indicated by asterisks. Where is the median?



$$n = 7$$

14. Here is a number line with numbers indicated by asterisks. Where is the mean?



AVG OF TWO

15. Determine the lower quartile for the data {5, 6, 6, 10, 50, 100, 200, 600}

- a) 6.5 b) 75 c) 7 d) 30 e) 6

$$n = 8$$

$$(n+1)p = 9(.25) = 2.25$$

16. Determine the *sample* standard deviation s for data {0, 4}.

- a) $\sqrt{\frac{8}{2}}$ b) $\sqrt{\frac{8}{2-1}}$ c) $\sqrt{\frac{4}{2}}$ d) $\sqrt{\frac{4}{2-1}}$

$$\bar{x} = 2 \quad (0-2)^2 + (4-2)^2 = 8$$

25% OF THE WAY BETWEEN 2ND AND 3RD
6 also 6

17. Determine the *sample* standard deviation s for data {0, 1, 5}.

- a) 1.84 b) 0.48 c) 2.32 d) 3.18 e) 2.65

$$\sqrt{\frac{(0-2)^2 + (1-2)^2 + (5-2)^2}{3-1}}, \quad \bar{x} = 2$$

18. A list has mean 6.2. If every number on this list is multiplied by two what will be the mean be changed to?

- a) 8.2 b) 12.4 c) 3.1 d) 5.1 e) none of the others

19. A list has *sample* standard deviation s equal to 8. What will s be changed to if each number on the list is increased by two (new list $x + 2$)?

- a) 10 b) 16 c) 8 d) 9

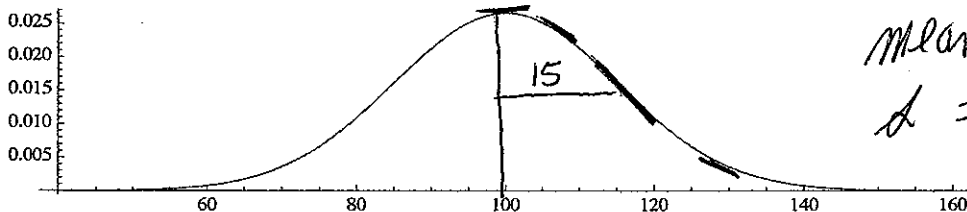
NC

20. A list has *sample* standard deviation S equal to 8. What will s be changed to if each number on the list is doubled and then each is increased by one (new list $2x + 1$)?

- a) 8 b) 10 c) 6 d) 17 e) 16

$$\sigma_{2x+1} = \sigma_{2x} = 2\sigma_x$$

↑ NC



mean = 100
 $\sigma = 15$

The sketch above is a normal probability density having mean 100 and standard deviation 15.

21. Determine the percentage of the population between the limits of 85 and 115 from the density above.

- a) 50% b) 30% c) 68% d) 95% e) 80%

MEAN \pm 1 SD IS 68% OF NORMAL

22. Which among the following **exhibit important aspects** of Simpson's "Paradox" as described in class and in your textbook in connection with the Berkeley graduate admissions data?

→ (22.1) Female applicants are admitted at a higher rate than male applicants to every division of a company and yet male applicants are admitted at a higher rate than female applicants for the company as a whole.

→ (22.2) Females apply in relatively greater numbers than do males to divisions that are harder for both sexes to get a job in.

X (22.3) Female applicants are admitted at a higher rate than male applicants to every division of a company and male applicants are admitted at a higher rate than female applicants for the company as a whole.

- (a) all b) only ~~22.1~~ c) only ~~22.3~~ d) only 22.2 and ~~22.3~~ e) only 22.1 and 22.2

typos

(a) or (e) CORRECT

↑ due to CAUSE OF TYPOS