

21/21

Name

KEY

Instructions: Show your work on each problem. Each problem is worth 3 points.

1. Suppose that two-thirds of participants in a particular study are college graduates. If two-fifths of the study participants who are college graduates are male, what percentage of the participants are male college graduates?

$$\frac{2}{3} \cdot \frac{2}{5} = \frac{4}{15} = 0.266\bar{6}$$

Answer  $\frac{4}{15}$  or  $0.27$  or  $27\%$   
or  $26.7\%$ ...

2. If  $x = 1.258$ ,  $y = -3.5$ ,  $z = 0.91$ .

Calculate  $75y - \frac{x\sqrt{y^2 - 9.4z + 15x}}{3z}$

$$\begin{aligned} -262.5 - \frac{1.258 \sqrt{12.25 - 8.554 + 18.87}}{2.73} &= -262.5 - \frac{1.258 \sqrt{22.566}}{2.73} \\ &= -262.5 - 2.19 = -264.69 \end{aligned}$$

Answer  $-264.69$  or  $-264.7$

3. Find the slope, and the x and y intercepts for the line  $3y - 4x = 15$ .

$$x = 0 \Rightarrow 3y = 15 \quad y = 5$$

$$y = 0 \Rightarrow -4x = 15 \Rightarrow x = -15/4$$

$$3y = 15 + 4x$$

$$y = \frac{4}{3}x + \frac{15}{3}$$

slope  $\frac{4}{3}$

x-intercept  $-\frac{15}{4} = -3.75$

y-intercept  $5$

4. The first number is 5 more than the second number. Find the numbers if their sum is 74.

$$\begin{cases} x = y + 5 \\ x + y = 74 \end{cases} \Rightarrow 2y + 5 = 74 \Rightarrow 2y = 69 \Rightarrow y = 69/2 \Rightarrow x = 79/2$$

Answer  $\frac{79}{2}, \frac{69}{2}$  or  $39.5, 34.5$

5. Determine whether the data are qualitative or quantitative:

- a) the numbers on the shirts of a girl's soccer team Qualitative  
b) number of milligrams of tar in 28 cigarettes Quantitative  
c) last name of students in a history class Qualitative

6. A card is selected at random from a standard deck. Find each probability.

a) Randomly selecting a queen or a five

4 Queens & 4 Fives

Answer  $\frac{8}{52} = 15.4\%$

b) Randomly selecting a diamond or a seven

13 diamonds & 4 sevens  
but  $7\heartsuit$  is in both sets

Answer  $\frac{16}{52} = 30.8\%$

c) Randomly selecting a ten or a red card

4 tens & 26 red cards  
but 2 tens are red cards

Answer  $\frac{28}{52} = 53.8\%$

7. The following stem-and leaf plot is given. Find the mean, median, mode, three quartiles ( $Q_1$ ,  $Q_2$  and  $Q_3$ ) and the interquartile range (IQR):

10	3 9 0	0 3 9
11		
12	5 6 2 9	2 5 6 9
13	2 7 8 8 5	2 5 7 8 8
14	4 0 6	0 4 6
15	8 1	1 8
16	2	2

$$\begin{aligned} \text{IQR} &= Q_3 - Q_1 \\ &= 144 - 125 = 19 \end{aligned}$$

mean 133.06 median 136 mode 138

quartiles ( $Q_1, Q_2, Q_3$ ) 125, 136, 144 interquartile range 19