**FST Midterm Review In Class 4**

1) Below is BHS wrestling team's statistical data.

| Statistical Measure | Weight (Pounds) | a. | b. |
|---|---|---|---|
| mean | 160.29 | 158.29 | $\frac{160.29}{2.2} = 72.86$ |
| standard deviation | 48.41 | 48.41 | $\frac{48.41}{2.2} = 22.00$ |
| median | 148.5 | 146.5 | $\frac{148.5}{2.2} = 67.5$ |
| range | 179 | 179 | $\frac{179}{2.2} = 81.36$ |
| variance | 2343.53 | 2343.53 | $\frac{2343.53}{2.2^2} = 484.20$ *** |
| Minimum | 106 | 104 | $\frac{106}{2.2} = 48.18$ |
| Maximum | 285 | 283 | $\frac{285}{2.2} = 129.55$ |

**Fill in any changes to the statistical measure given the following situations.**

a. At the wrestling meet the scale was not calibrated correctly. The starting weight was set at 2 pounds. Record the information in column a. (Subtract 2)

- Measures of Center Change
- Measures of Spread Stay the same

b. What would the wrestlers weight be in kilograms. 1 kg = 2.2 pounds (Use original weights). Record the information in column b.

- Divide by Scale factor
- Variance : Divide by (Scale factor)$^2$

2) Determine whether the function $f(x) = 3x^2 + x$ is odd, even, or neither. Prove it algebraically.

$f(-x) = 3(-x)^2 + (-x)$

$= 3x^2 - x \neq f(x)$ Not even

$\neq -f(x)$ Not odd

Neither

**FST Midterm Review In Class 5**

$4 \cdot 4 = 16$ total

1) A pair of fair 4-sided dice is tossed. Let A = {the sum is 4} and B = {3 appears on either die}

A: (1,3), (3,1), (2,2) — 3

B: (3,1), (3,2), (3,3), (3,4), (1,3), (2,3), (4,3) — 7

a) Find P(B|A) $= \dfrac{P(B \cap A)}{P(A)}$

$= \dfrac{\frac{2}{16} \cdot \frac{16}{3}}{\frac{3}{16}} = \boxed{\frac{2}{3}}$

b) Find P(A|B) $= \dfrac{P(A \cap B)}{P(B)}$

$= \dfrac{\frac{2}{16} \cdot \frac{16}{7}}{\frac{7}{16}} = \boxed{\frac{2}{7}}$

2) Use the following functions to answer the questions below:

$$f(x) = 7x + 2 \text{ and } g(x) = \frac{6}{x}$$

a) Write the expression for $g(f(x))$

$= g(7x+2)$

$= \boxed{\dfrac{6}{7x+2}}$

b) State the domain of $g \circ f$

D of $7x+2 \rightarrow \boxed{\{x \mid x \in \mathbb{R}\}}$

D of $\dfrac{6}{7x+2} \rightarrow 7x+2 \neq 0$

$-2 \quad -2$

$\dfrac{7x}{7} \neq \dfrac{-2}{7}$

$x \neq -2/7$

$\boxed{\{x \mid x \neq -\frac{2}{7}\}}$

3) Using the parent function $y = x^2$, write the equation for its image under the following transformations $T(x,y) \rightarrow (x+8, y-2)$

$\boxed{y+2 = (x-8)^2}$

-OR-

$\boxed{y = (x-8)^2 - 2}$

4) Using the parent function $y = |x|$, write the equation for its image under the following transformation. $S(x,y) \rightarrow \left(3x, \dfrac{y}{6}\right)$

$\boxed{6y = \left|\frac{x}{3}\right|}$

FST Midterm Review In Class 6

1) Calculate Tony's GPA. His high school weights his grade by the number of credit hours.

| Course | Credits | Letter | Grade Point |
|---|---|---|---|
| PE | 2 | A | 4.00 |
| AP English | 5 | B | 3.00 |
| Drawing | 1 | B- | 2.67 |
| Anatomy | 4 | B+ | 3.33 |
| Economics | 3 | A- | 3.67 |

$2(4) + 5(3) + 1(2.67) + 4(3.33) + 3(3.67)$

$\frac{50}{2+5+1+4+3} = \frac{50}{15} =$ **3.33 GPA**

2) Expand $(x+y)^3$

$3C_0 x^3 y^0 + 3C_1 x^2 y^1 + 3C_2 x^1 y^2 + 3C_3 x^0 y^3$

$1x^3 + 3x^2y + 3xy^2 + 1y^3$

3) There are 5 blue blocks and 7 red blocks. If there are 6 blocks picked, what is probability of picking exactly 2 blue blocks and 4 red blocks?

$\frac{5C_2 \cdot 7C_4}{12C_6} = \frac{350}{924} =$ **0.38 = 38%**

4) A test includes 8 multiple-choice questions each with 4 choices and 6 true/false questions. What is the probability that you guess correctly on all of the questions?

$\frac{1}{4^8 \cdot 2^6} = \frac{1}{4,194,304} =$ **$2.38 \times 10^{-7} = 2.38 \times 10^{-5}$ %**

5) A certain soccer team scores a goal from a corner kick 60% of all corner kicks they take. If this soccer team had 10 corner kicks during a game, what is the probability that exactly 4 goals were made from the corner kicks?

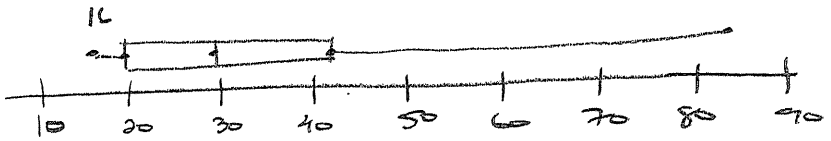
$10C_4 (.6)^4 (.4)^6 =$ **0.1115 = 11.15%**

6) These were the following ages in Sally's evening painting class:

16, 18, 25, 20, 33, 37, 19, 51, 83, 42

Calculate the mean age $\bar{x}$: 34.4 and standard deviation $S_x$: 20.67

Make a box plot min: 16 $Q_1$: 19 Med: 29 $Q_3$: 42 max: 83




Describe its shape, center and spread.

Shape: Skewed right

Center: median is 29, mean is 34.4

Spread: IQR: 42 - 19 = 23 Range: 83 - 16 = 67