

$P(A) = \frac{1}{4}$, $P(B) = 60\%$, $P(C) = 0.20$ (A, B & C are independent events)

1) P(A and B)

$$P(A) \cdot P(B) = \frac{1}{4} \cdot \frac{60}{100} = \frac{1}{4} \cdot \frac{3}{5} = \boxed{\frac{3}{20}} \text{ or } 15\% \text{ or } .15$$

2) P(B or C) if Mutually Exclusive

$$P(B) + P(C) = .60 + .20 = \boxed{.80} \text{ or } 80\% \text{ or } \frac{4}{5}$$

3) P(A or C) if *not* Mutually Exclusive

$$P(A) + P(C) - P(A \text{ and } C) = \frac{1}{4} + \frac{1}{5} - \left(\frac{1}{4} \cdot \frac{1}{5}\right)$$
$$\frac{1}{4} + \frac{1}{5} - \frac{1}{20} = \frac{5}{20} + \frac{4}{20} - \frac{1}{20} =$$
$$\frac{8}{20} = \boxed{\frac{2}{5}} \text{ or } 40\% \text{ or } .40$$

5 Large Blue Marbles, 2 Large Green Marbles, 3 Small Blue, and 2 Small Green Marbles

4) P(Large or Blue)

$$P(\text{Large}) + P(\text{Blue}) - P(\text{Large Blue}) = \frac{7}{12} + \frac{8}{12} - \frac{5}{12} = \frac{10}{12} = \boxed{\frac{5}{6}}$$

5) With Replacement: P(a Blue then a Large)

$$P(\text{Blue}) \cdot P(\text{Large}) = \frac{8}{12} \cdot \frac{7}{6} = \frac{1}{3} \cdot \frac{7}{6} = \boxed{\frac{7}{18}}$$

6) Without Replacement: P(Two Green)

$$P(\text{Green}) \cdot P(\text{Green}) = \frac{4}{12} \cdot \frac{3}{11} = \frac{1}{3} \cdot \frac{1}{11} = \boxed{\frac{1}{11}}$$

7) Without Replacement: P(a Blue then a Green)

$$P(\text{Blue}) \cdot P(\text{Green}) = \frac{8}{12} \cdot \frac{4}{11} = \frac{2}{3} \cdot \frac{4}{11} = \boxed{\frac{8}{33}}$$

$P(B | A)$ = Probability of event B, given event A

	Male	Female
Freshmen	4	0
Sophomore	6	1
Juniors	1	5
Seniors	0	3

1) $P(\text{Female})$

$$\frac{9}{20}$$

2) $P(\text{Sophomore} | \text{Female})$

$$\frac{1}{9}$$

3) $P(\text{Female} | \text{Sophomore})$

$$\frac{1}{7}$$

4) $P(\text{Sophomore} | \text{Junior})$

$$\frac{0}{6} = 0$$

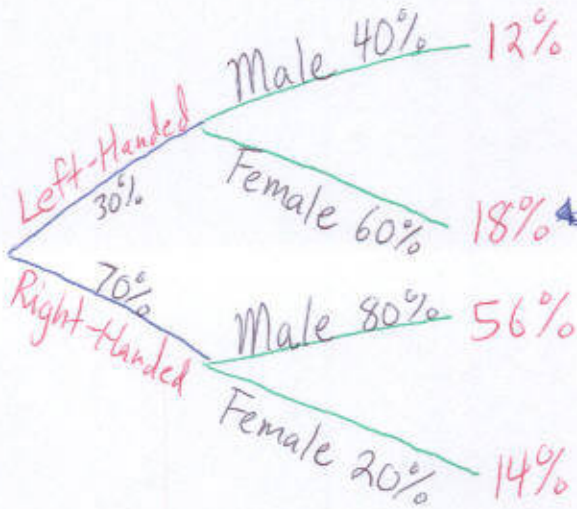
Survey: 30% of the people were left-handed, 40% of the left-handed people are males, and 20% of the right-handed people are females.

5) $P(\text{male} \mid \text{left-handed})$

40%

6) $P(\text{left-handed female})$

$$\frac{30}{100} \cdot \frac{60}{100} = \frac{18}{100} = 18\%$$



1. Standard Deviation: 6, 11, 10

$$\sigma = \sqrt{\frac{(6-9)^2 + (11-9)^2 + (10-9)^2}{3}}$$

$$\sigma = \sqrt{\frac{(-3)^2 + (2)^2 + (1)^2}{3}}$$

$$\sigma = \sqrt{\frac{9+4+1}{3}} = \sqrt{\frac{14}{3}}$$

$$\text{mean} = \frac{6+11+10}{3} = \frac{27}{3} = 9$$

2. Which of the following set of data will probably have the **largest** standard deviation and which will have the **smallest**?

a) 13, 25, 1, 5, 7, 12

b) 6, 1, 4, 3, 5, 1

c) 80, 75, 30, 41, 2, 1

d) 18, 20, 37, 31

Largest C

Smallest B

3. Variance: 8, 2, 7, 3

$$\text{mean} = \frac{8+2+7+3}{4} = \frac{20}{4} = 5$$

$$\begin{aligned} \text{Variance} &= \frac{(8-5)^2 + (2-5)^2 + (7-5)^2 + (3-5)^2}{4} \\ &= \frac{9+9+4+4}{4} = \frac{26}{4} = \boxed{\frac{13}{2}} \end{aligned}$$

$$\underline{3x^3} \cdot \underline{7x^6} = (3 \cdot 7) x^{3+6}$$
$$\boxed{21x^9}$$

$$(\underline{-x^8y})(\underline{2x^9y^7}) = (-1 \cdot 2) x^{8+9} y^{1+7}$$
$$\boxed{-2x^{17}y^8}$$

$$(x^6)^3 = x^{6 \cdot 3} = \boxed{x^{18}}$$

$$4x^{12}(x^5)^3 = \underline{4x^{12}} \cdot \underline{x^{15}}$$
$$\boxed{4x^{27}}$$

$$\frac{x^9}{x^3} = x^{9-3} = \boxed{x^6}$$

$$\frac{\underline{16x^6y^{11}}}{\underline{10x^5y^7}} = \frac{8}{5} x^{6-5} y^{11-7}$$
$$\frac{8x^1y^4}{5} = \boxed{\frac{8xy^4}{5}}$$
$$\frac{x^7}{x^9} = x^{7-9} = x^{-2} = \boxed{\frac{1}{x^2}}$$

$$8^{-2} = \frac{1}{8^2} = \boxed{\frac{1}{64}}$$

$$-7x^{-8}y^4 = \boxed{\frac{-7y^4}{x^8}}$$

$$(3x)^4 = (3)^4(x)^4 = \boxed{81x^4}$$

$$(2x^5y^{-7})^{-3} = (2)^{-3}(x^5)^{-3}(y^{-7})^{-3}$$
$$\frac{1}{8}x^{-15}y^{21} = \frac{y^{21}}{8x^{15}}$$

$$\left(\frac{2x}{3}\right)^3 = \frac{(2x)^3}{(3)^3} = \boxed{\frac{8x^3}{27}}$$

$$\left(\frac{x^8}{y^3}\right)^{-2} = \frac{x^{-16}}{y^{-6}} = \boxed{\frac{y^6}{x^{16}}}$$

$$\frac{x^{12}}{3x^{12}} = \frac{1}{3}x^{12-12} = \frac{1}{3}x^0 = \boxed{\frac{1}{3}}$$

$$-3xy^0 = \boxed{-3x}$$

$$(5xy^6)^0 = \boxed{1}$$

1. Simplify and rewrite in radical notation:

$$x^{10/16}$$

$$x^{5/8} = \boxed{\sqrt[8]{x^5}}$$

2. Simplify and rewrite in rational exponent notation:

$$\sqrt[6]{x^{14}}$$

$$x^{14/6} = \boxed{x^{7/3}}$$

3. Simplify: $16^{3/2}$

$$(2^4)^{3/2} = 2^{12/2} = 2^6$$

$$\boxed{64}$$

$$\text{Solve: } 3\sqrt{5-2x} - 4 = 11$$

$$+4 \quad +4$$

$$\frac{3\sqrt{5-2x}}{3} = \frac{15}{3}$$

$$(\sqrt{5-2x})^2 = (5)^2$$

$$\frac{5-2x}{-5} = \frac{25}{-5}$$

$$\frac{-2x}{-2} = \frac{20}{-2}$$

$$\boxed{X = -10}$$