1. A world-wide company has 58,000 employees. The company took a poll of 1500 employees and found that 1240 said that they are happy with their current position.

a. Find the sample proportion as a percent rounded to the nearest tenth.

b. Find the margin of error to the nearest tenth of a percent.

c. Find the range of values that most likely contains the actual population proportion for the percent of employees that claim they are happy with their current position.

d. Find the interval for the actual total number of employees that claim they are happy with their current position.

2. A poll of registered voters has a margin of error of ±2%. Find the sample size to the nearest whole number.

3. If a sample size is tripled by what percent does the margin of error decrease?

4. A survey was conducted to find out people's favorite color. Find each probability as a fraction.

	Red	Blue	Green	Orange	
Child	14	6	47	8	75
Adult	38	11	52	13	114
	52	17	99	21	189

a) P(Adult and Red) =

b) P(Child or Orange)=

c) P(Green | Adult)=

Bellwork   Alg 2B   Wednesday, May 2, 2018   ANSWERS

1. A world-wide company has 58,000 employees. The company took a poll of 1500 employees and found that 1240 said that they are happy with their current position.

a. Find the sample proportion as a percent rounded to the nearest tenth.

$$\frac{1240}{1500} \Rightarrow \boxed{82.7\%}$$

b. Find the margin of error to the nearest tenth of a percent.

$$\frac{1}{\sqrt{1500}} \Rightarrow \boxed{\pm 2.6\%}$$

c. Find the range of values that most likely contains the actual population proportion for the percent of employees that claim they are happy with their current position.

$$82.7\% \pm 2.6\% \Rightarrow \boxed{80.1\% \text{ TO } 85.3\%}$$

d. Find the interval for the actual total number of employees that claim they are happy with their current position.

$$(.801)(58,000) \text{ TO } (.853)(58,000)$$

$$\boxed{46,458 \text{ TO } 49,474 \text{ employees}}$$

2. A poll of registered voters has a margin of error of ±2%. Find the sample size to the nearest whole number.

$$\frac{1}{\sqrt{n}} = .02 \qquad n = \frac{1}{(.02)^2} = \boxed{2500}$$

3. If a sample size is tripled by what percent does the margin of error decrease?

$$\frac{1}{\sqrt{n}} \longrightarrow \frac{1}{\sqrt{3n}} = \frac{1}{\sqrt{3}\cdot\sqrt{n}} = \frac{1}{\sqrt{3}}\cdot\frac{1}{\sqrt{n}} = (.58)\left(\frac{1}{\sqrt{n}}\right) = \frac{58\% \text{ of}}{\text{original}}$$

$$\boxed{\text{New margin of error is } 42\% \text{ less than original}}$$

4. A survey was conducted to find out people's favorite color. Find each probability as a fraction.

	Red	Blue	Green	Orange	
Child	14	6	47	8	75
Adult	38	11	52	13	114
	52	17	99	21	189

a) P(Adult and Red) = $\boxed{\dfrac{38}{189}}$

b) P(Child or Orange)=

c) P(Green | Adult)= $\boxed{\dfrac{52}{114}}$

$$P(child) + P(orange) - P(child \text{ & } orange)$$

$$= \frac{75}{189} + \frac{21}{189} - \frac{8}{189} = \boxed{\frac{88}{189}}$$

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