A Call for Assistants

Athena and Rick's app is a huge hit, so they form a company: R App Inc. Some customers ask for a new service: math tutoring.

After estimating that it will cost $14,000 a year to hire tutors, the duo wonders what to do. "If no one buys the service, the additional cost might sink us," fretted Rick. Athena responded, "But if we do nothing, we could lose income that could help R App Inc. grow."

To make an informed decision, Athena suggests doing a market survey. The pair decides to survey 75 randomly selected users (out of 3,750 users) to find out how much additional revenue they can expect.

If no one buys the tutoring service, it could hurt our business.

On the other hand, we could make money to help us expand.

Let's conduct a market survey and then decide!

WORK THE MATH (Show your work on separate paper.)

Amount of Revenue	Probability
$1,000	10% or 1/10
$7,000	10% or 1/10
$14,000	10% or 1/10
$20,000	20% or 1/5
$30,000	25% or 1/4
$50,000	25% or 1/4

1. What percentage of the population is the sample? How sure are you that you can rely on the results of the sample to make this decision? Explain.

2. What is the probability that the new service will make money?

3. What is the probability that the new service will lose money?

4. Why don't your answers to questions 2 and 3 add up to 100%?

5. What do you think Athena and Rick should do? Explain your thinking.

NOW TRY THIS

Sampling their customer base gives Rick and Athena ideas for new math problems for the app:

The Limelights are negotiating with Lowest Common Denominator Cable to produce a reality show starring (you guessed it!) the Limelights. The cable company has 50,000 customers. To make sure there are enough viewers, the cable company surveyed 2,000 customers. Twelve customers said they would watch *Life With the Limelights*. When asked if they would watch a show featuring Iggy the iguana, the number spiked to 1,724 customers.

1. How many customers do you predict would watch *Life With the Limelights*?

2. How many customers do you predict would watch a show starring Iggy?

3. Do you think the cable company can rely on the opinions of 2,000 viewers to determine what all 50,000 viewers will watch?