

## Advanced Algebra

## Unit 8: Probability Assignment #11

**ONE:**

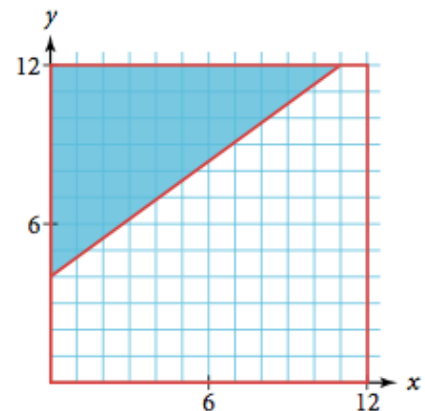
**Directions:** Read each of the scenarios below, and write down if the probability described is experimental or theoretical.

<p>Carlos observed that his coach chooses his hats randomly. After 15 days of practice, Carlos recorded the color of the hat his coach wore each day. On 6 of the days, his coach wore a teal hat. Carlos calculated the probability of his coach wearing a teal hat as 0.4.</p>	<p>Maren is choosing a name for her new puppy from a giant list of names. There are 3210 different boy's names in her list (her puppy is male). She will close her eyes and pick a name at random. She calculates her probability of choosing the name Michael as 0.000321.</p>
<p>Water covers 65% of the earth. Clarissa spins the globe and stops it with her finger. The probability that her finger lands on water is 0.65.</p>	<p>Clarissa spun the globe on her desk 30 times, each time stopping it with her finger. Of the 30 times she spun, her finger landed on water 22 times. She calculated the probability of her finger landing on water as about 0.73.</p>
<p>LeBron has shot 400 free throws this season, and has made 300 of them. He is shooting a free throw to win the game. His probability of making the free throw is 0.75.</p>	<p>Kelly bought a Toyota Prius 6 months ago. Toyota made 300000 models of her car, 60000 of which are known to have defective brake pedals. The probability of her car having a defective brake pedal is 0.2.</p>

**TWO:**

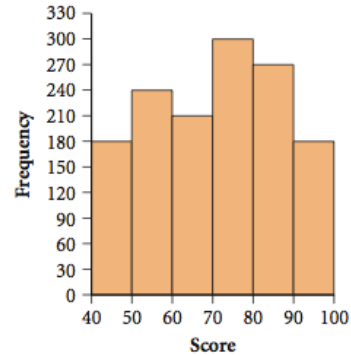
**11.** Consider the diagram at right.

- What is the total area of the square?
- What is the area of the shaded region?
- Suppose the horizontal and vertical coordinates are randomly chosen numbers between 0 and 12, inclusive. Over the long run, what ratio of these points will be in the shaded area?
- What is the probability that any randomly chosen point within the square will be in the shaded area?
- What is the probability that the randomly chosen point will *not* land in the shaded area?
- What is the probability that any point randomly selected within the square will land on a specific point? On a specific line?



THREE:

13. Use the histogram at right for 13a–d.
- Approximate the frequency of scores between 80 and 90.
  - Approximate the sum of all the frequencies.
  - Find  $P(\text{a score between 80 and 90})$ .
  - Find  $P(\text{a score that is not between 80 and 90})$ .



FOUR: You have a \$500 budget to pay Derrick, a plumber, and Lisa, an electrician, to fix a problem with the bathroom in your house. The problem cannot be fixed with just a plumber or just an electrician, so you will not hire one without hiring the other. Both Derrick and Lisa have been known to charge anything from 0 to \$600 for their services (they choose their prices independently, so Derrick could charge \$400 and Lisa \$600, etc.). Each person chooses his or her price based on how he/she feels that day, which is completely random.

<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">\$ to Lisa</div> </div>	<ol style="list-style-type: none"> <li>On the graph to the left, lightly shade in the region representing what Derrick and Lisa could charge. <i>HINT: The point (30, 540) would mean that Derrick charged \$30, and Lisa charged \$540.</i></li> <li>On the graph to the left, shade in the region representing what you can afford to pay. <i>HINT: The total amount you pay to Derrick and Lisa cannot exceed \$500.</i></li> <li>Find the probability that you can afford to hire both Lisa and Derrick.</li> <li>Find the probability that...             <ol style="list-style-type: none"> <li>You pay Derrick more than \$300.</li> <li>You pay Lisa less than \$400.</li> <li>You pay Derrick more than Lisa.</li> <li>You pay Lisa more than \$500.</li> </ol> </li> </ol>
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