Complete the outline as you view Video Lecture 10.7. Pause the video as needed to fill in the blanks. Then press Play to continue. Also, circle your answer to each numbered exercise.

**Objective 1** Use Segment and Area Models to Find the Probabilities of Events

### When the possible outcomes are equally likely, the theoretical probability of an event is

\[ P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}. \]

### In _______ ________, use points on a segment or points in an area of a figure to represent the outcomes.

### The _______ probability is a ratio of geometric measures such as length or area.

### Probability and Length

Point \( S \) on \( \overline{AB} \) is chosen at random. The probability that \( S \) is on \( \overline{MN} \) is the ratio of the length of \( \overline{MN} \) to the length of \( \overline{AB} \).

\[ P(S \text{ on } \overline{MN}) = \frac{\text{length of } \overline{MN}}{\text{length of } \overline{AB}} \]

### Work Video Exercise 1 with me.

1. Point \( T \) on \( \overline{AD} \) is chosen at random. What is the probability that \( T \) lies on the given segment?

   \[ \overline{AB} \]

<table>
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<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
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<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<td></td>
</tr>
</tbody>
</table>

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Section 10.7 Geometric Probability

**Pause and work Video Exercise 2.**

2. A point on $\overline{AK}$ is chosen at random. Find the probability that the point lies on the given segment.

\[ DJ \]

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**Probability and Area**

Point $S$ in region $R$ is chosen at random. The probability that $S$ is in region $N$ is the ratio of the area of region $N$ to the area of region $R$.

\[
P(S \text{ in region } N) = \frac{\text{area of region } N}{\text{area of region } R} = \text{favorable region} \leftarrow \text{entire region}
\]

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**Work Video Exercise 3 with me.**

3. Find the probability of the spinner landing on region 2. The sectors in the spinner have equal areas.
4. A point in the figure is chosen at random. Find the probability that the point lies in the shaded region.

Pause and work Video Exercise 4.

5. A target with a diameter of 14 cm has 4 scoring zones formed by concentric circles. The diameter of the center circle is 2 cm. The width of each ring is 2 cm. A dart hits the target at a random point. Find the probability that it will hit a point in the shaded region.

Pause and work Video Exercise 5.

Play and check.