

**STRAND 2: LINEAR FUNCTIONS****TOPIC 2.10: PROBABILITY****Topic Notes****Mathematical focus**

The focus of this task centers on integrating probability and algebra while providing multiple opportunities for algebraic skill practice

**Topic overview**

Students will be given various algebraic situations involving solving equations, slope, and equations of lines and asked to determine the probability of certain events.

This topic contains four tasks:

Task 2.10.1: What's the Chance? – Equations

Task 2.10.2: More Chances, More Numbers – Is There a Pattern?

Task 2.10.3: What's the Chance? – Slope

Task 2.10.4: What's the Chance? – Area

**TEXES standards focus**

**TEXES Standard II.005 Patterns and algebra.** The teacher understands attributes of functions, relations, and their graphs. The beginning teacher:

(B) Identifies the mathematical domain and range of functions and relations and determines reasonable domains for given situations.

**TEXES Standard II.006 Patterns and algebra.** The teacher understands linear and quadratic functions, analyzes their algebraic and graphical properties, and uses them to model and solve problems. The beginning teacher:

(B) Writes equations of lines given various characteristics (e.g., two points, a point and slope, slope and  $y$ -intercept).

**TEXES Standard IV.016 Probability and statistics.** The teacher understands concepts and applications of probability. The beginning teacher:

(A) Understands how to explore concepts of probability through sampling, experiments, and simulations, and generates and uses probability models to represent situations.

(B) Uses the concepts and principles of probability to describe the outcomes of simple and compound events.

(C) Determines probabilities by constructing sample spaces to model situations.

(D) Solves a variety of probability problems using combinations and permutations.

**TEKS/TAKS focus**

**TEKS A.6 Linear functions.** The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to:

(D) graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept.

**(8.11) Probability and statistics.** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to:

(A) Find the probabilities of compound events (dependent and independent)

(B) Use theoretical probabilities and experimental results to make predictions and decisions

High School TAKS Objective 3: The student will demonstrate an understanding of linear functions.

**Materials**

Task	2.10.1	2.10.2	2.10.3	2.10.4
Copies of task	x	x	x	x
Graphing calculator	x	x	x	x

**Procedure**

Allow students to work in groups and monitor student progress. When students complete the assignment, lead a class discussion and summary. Questions during the discussion should help students develop some big ideas about working with probability. Each task contains situations that allow students to list the complete sample space. During the discussion questions, help students discover generalities and patterns that can be used to solve these problems without creating a complete sample space.

**Summary**

Each of these tasks provides students an opportunity to find the probability of events in algebraic situations. Students practice algebraic algorithms while developing a deeper understanding of the algebraic processes.

**Assessment/Transition to the Classroom**

Participants should complete the Teacher's Journal, recording their responses and making any modifications necessary to make the tasks completely classroom-ready.