

# Moving Straight Ahead Overview

## Investigation One - Walking Rates

**N.FL.07.03**

Calculate rates of change including speed

**N.FL.07.05a**

Solve proportion problems using such methods as unit rate, scaling, finding equivalent fractions and solving the

proportion equation  $\frac{a}{b} = \frac{c}{d}$

**N.FL.07.05b**

Know how to see patterns about proportional situations in tables

**A.PA.07.01c**

Recognize when information given in a graph suggests a linear relationship

**A.PA.07.06c**

Understand that linear functions have slope that is a constant rate of change

**A.PA.07.01a**

Recognize when information given in a table suggests a linear relationship

**A.PA.07.07b**

Graph linear functions in the form  $y = x + b$ ,

$y = mx$ , and  $y = mx + b$

**A.RP.07.02e**

Translate among representations of directly proportional and linear relationships

**A.PA.07.05c**

Understand that in a directly proportional relationship between two quantities one quantity is a constant multiple of the other quantity

**A.PA.07.03a**

Given a directly proportional or other linear situation, graph

**A.PA.07.06c**

Understand that linear functions have a slope that is a constant rate of change

**A.RP.07.02b/c/d**

Represent directly proportional linear relationships using tables, graphs, and formulas

**N.FL.07.05b**

Know how to see patterns about proportional situations in tables

**A.PA.07.05b**

Distinguish relationships of the form  $y = mx$  from linear relationships of the form  $y = mx + b$ ,  $b$  non-zero

**A.PA.07.01b/c**

Recognize when information given in a formula or graph suggests a proportional or linear relationship

**A.RP.07.02a**

Represent directly proportional and linear relationships using verbal descriptions

**A.PA.07.03 a/b/c**

*\*\*Given a directly proportional relationship or other linear situation, graph, interpret slope and intercept(s) in terms of the original situation and evaluate  $y = mx + b$  for specific  $x$  values, e.g., weight vs. volume of water, base cost plus cost per unit*

## Investigation Two - Exploring Linear Functions with Graphs and Tables

**A.RP.07.02b/c/d**

Represent linear relationships using graphs, tables, and formulas

**A.FP.07.13a/b/c**

From applied situations, generate, solve, and interpret linear equations of the form  $ax + b = c$

**A.PA.07.04**

For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volumes of a container with uniform cross-section; height of water in a tank being filled at a constant rate; degrees Celsius and degrees Fahrenheit; distance and time under constant speed

**A.PA.07.02e**

Translate among representations of linear relationships

**A.PA.07.06c**

Understand that linear functions have slope that is a constant rate of change

**A.PA.07.05a**

Recognize and use directly proportional relationships of the form  $y = mx$

**A.PA.07.05b**

*\*\*Distinguish relationships of the form  $y = mx$  from linear relationships of the form  $y = mx + b$ ,  $b$  non-zero*

**A.PA.07.01b**

Recognize when information given in a formula suggest a linear relationship

**A.FO.07.08a/ b**

*\*\*Find and interpret the  $x$  and/on  $y$  intercepts of a linear equation*

**A.PA.07.03b**

Given a directly proportional or other linear situation, interpret slope and intercept(s) in terms of the original situation

**A.PA.07.07c**

Interpret slope and  $y$ -intercept of linear functions in the form  $y = x + b$ ,  $y = mx$ , and  $y = mx + b$

**A.PA.07.03c**

Evaluate  $y = mx + b$  for specific  $x$ -values, e.g., weight vs. volume of water, base cost plus cost per unit

**A.PA.0707a**

Represent linear functions in the form  $y = x + b$ ,  $y = mx$ ,  $y = mx + b$

**A.PA.07.03b**

*Given a directly proportional or other linear situation, interpret slope and intercept(s) in terms of the original situation*

**A.RP.07.02a**

Represent linear relationships using verbal descriptions

**A.PA.0707b**

Graph linear functions in the form  $y = x + b$ ,  $y = mx$ , and  $y = mx + b$

**A.FO.07.08c**

Know that the solution to a linear equation of the form  $ax + b = 0$  corresponds to the point at which the graph of  $y = ax + b$  crosses the  $x$ -axis

## Investigation Three – Solving Equations

**A.PA.07.03c**

Evaluate  $y = mx + b$  for specific  $x$  values, e.g., weight vs. volume of water, base cost plus cost per unit

**A.FO.08.10**

Understand that to solve the equation  $f(x) = g(x)$  means to find all values of  $x$  for which the equation is true, e.g., determine whether a given value, or values from a given set, is a solution of an equation (0 is a solution of  $3x^2 + 2 = 4x + 2$ , but 1 is not a solution)

**A.FO.07.12a/b/c**

*Add, subtract, and multiply simple algebraic expressions of the first degree and justify using properties of real numbers, e.g.,  $(92x + 8y) - 5x + y$ ;  $x(x + 2)$*

**A.FO.07.13a/b/c**

From applied situations, generate, solve, and interpret linear equations of the form  $ax + b = c$  and  $x + b = cx + d$

## Investigation Four – Exploring Slope

**A.PA.07.06b**

Express the slope of a linear function as a fraction and a decimal

**A.PA.07.06a**

Calculate the slope from the graph of a linear function as the ratio of “rise/run” for a pair of points on the graph

**A.PA.07.03b**

Given a directly proportional or linear situation, interpret slope and intercept(s) in terms of the original situation

**A.PA.07.06b**

Express the slope of a linear function as a fraction and a decimal

**A.PA.07.07a**

Represent linear functions in the form  $y = x + b$ ,  $y = mx$ , and  $y = mx + b$

**A.PA.07.04**

For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volumes of a container with uniform cross-section; height of water in a tank being filled at a constant rate; degrees Celsius and degrees Fahrenheit; distance and time under constant speed

## Algebra Properties

**A.PA.07.11**

*Understand and use the basic properties of real numbers: additive and multiplicative identities, additive and multiplicative inverses, commutatively, associatively, and the distributive property of multiplication over addition*