

TAKS Objective 4
TEK A.7A
Tutorial
(Grades 9, 10, and 11)

...analyze situations involving linear functions and formulate linear equations or inequalities to solve problems.

$$y = mx + b$$

is a linear relationship.

“m” is known as slope or rate of change.

“b” is known as the y-intercept or original amount.

Many problems on TAKS will include a rate of change and an original amount. If you can identify these, then you can plug them into the equation above.

Reminder: The independent quantity (or variable) goes in place of “x”.

KEY Words

“difference” implies “subtract”.

“less than” implies “subtract”.

“greater than” implies “add”.

“more than” implies “add”.

“is” implies “equal”.

“of” implies “multiply”.

KEY Words

“is less than” implies “ $<$ ”.

“is greater than” implies “ $>$ ”.

“at most” implies “ \leq ”.

“at least” implies “ \geq ”.

Hints

If the amount is decreasing, use a “-” for the rate of change.

If the amount is increasing, use a “+” for the rate of change.

Hints

When given a percent, change it to a decimal by moving the decimal two places to the left.

If the percent is an increase, add it to the previous percent. If the previous percent is not given, it is understood to be 100%.

If the percent is a decrease, subtract it from the previous percent. If the previous percent is not given, it is understood to be 100%.

Finding Linear Equations when Given Graphs – Step 1

Find the y -intercept of the given line.

The y -intercept is where the line crosses
the y -axis.

If the y -intercept is not shown, you will need to
problem solve to find it. Some options are:

- 1) Using the formula chart as a straight-edge,
extend the line until it crosses the y -axis.
- 2) Using rise and run, continue extending the line
until it crosses the y -axis.

Finding Linear Equations when Given Graphs – Step 2

Find the slope of the given line.

The slope is known as rise over run.

To find the slope, find two easy-to-use points and make a right triangle using horizontal and vertical segments.

- 1) Find the rise by counting the length of the vertical segment.
- 2) Find the run by counting the length of the horizontal segment.
- 3) Be careful of the signs.

Finding Linear Equations when Given Graphs – Step 3

Plug the slope and y -intercept into the equation $y = mx + b$.

A debit card has a prepaid amount of \$250 to use meals. The cafeteria charges \$3.50 per meal. Write an expression that can be used to represent the balance.

$$b = 250 - 3.50m$$

CD's are on sale for \$9.50 each and you have a gift card for \$125. Write an inequality that represents the number of CD's that can be purchased with the gift card.

$$9.50c \leq 125$$