

TRS 92: Writing Equations of Lines

Complete the table.

	Vertical Intercept	Slope	Equation
1.	(0, -5)	$\frac{4}{5}$	
2.	(0, 3.2)	-4.1	
3.			$y = 8 - 0.7x$
4.			$y = 237x - 62$
5.			$3x - 9y = 8$
6.	$(0, -\frac{5}{3})$	0	

	Horizontal Intercept	Slope	Equation
7.	(-5, 0)	undefined	
8.	(9.5, 0)	undefined	
9.			$x = 6.7$

10. What do all the vertical intercepts have in common?

11. What do all the horizontal intercepts have in common?

12. Identify if the following points lie on the vertical axis, the horizontal axis or neither.

Point	Vertical Axis?	Horizontal Axis?	Neither?
(0.5, 4)			
(-9, 0)			
(3.5, 6)			
(0, 10)			
$(-\frac{1}{9}, 0)$			
(0, 4)			

Slope and intercepts in context: Examples

A reservoir is steadily filling with water. The level of the water can be described by the function $h(t) = 30 + 0.5t$ where the dependent variable, h , is the height of the water in feet and the independent variable, t , is the time in weeks.

Interpret the slope – the slope is the rate of change so it is measuring some sort of change (increase or decrease). The units are a ratio of the dependent variable and independent variable.

The height of the reservoir is increasing at a rate of 0.5 feet per week.

Interpret the vertical intercept – the vertical intercept is a starting or initial value.

The water level was 30 feet before the reservoir began filling.

Data from the American Lung Association shows that the percentage US adults who smoked from 1965 to 2005 can be approximated by the function $P(t) = -0.6t + 42$ where the dependent variable, P , is the percentage and the independent variable, t , is the time in years since 1965.

Interpret the slope: The percentage of US adults who smoke decreased by 0.6 percentage points per year.

Interpret the vertical intercept: In 1965, 42% of US adults smoked.

13. The value of an investment is modeled by the equation $V(t) = 5600 + 300t$ where the dependent variable, V , is the value in dollars and the independent variable, t , is the time in years.

a. Interpret the slope in the context.

b. Interpret the vertical intercept in the context.

14. The global use of water has increased dramatically in the last century. According to data from the UN (http://hdr.undp.org/en/media/HDR2006_English_Summary.pdf), the amount of water used each year from 1900 to 2000 can be roughly modeled by the linear function $W(t) = 500 + 33.3t$ where the independent variable, t , is time in years since 1900 and the dependent variable, W , is the annual water use in cubic kilometers.

a. Interpret the slope in the context.

b. Interpret the vertical intercept in the context.

Thinking Back

15. Find the exact slope between the two points $(5, \frac{1}{3})$ and $(\frac{1}{6}, 7)$. [*Exact* means you cannot use decimal approximations for the fractions. You may want to refer back to *compound fractions* from #29-31 of your Day 2 Homework.]
16. According to *data360* (http://www.data360.org/dsg.aspx?Data_Set_Group_Id=757) indicates that the average amount of water used daily by one person in China is approximately 15% of the amount used by a person in the US. The average daily use in the US per person is 574 liters. What is the amount used per person in China?
17. Convert 574 liters to gallons.
1 gallon = 4 quarts
1 quart = 2 pints
1 pint = 16 fluid ounces
1 fluid ounce = 30 mL
1 liter = 1000 mL