Function Homework – Homework: Graphing Lines*

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Abstract

This module provides practice problems designed to develop some concepts related to graphing lines.

Exercise 1

$2y + 7x + 3 = 0$ is the equation for a line.

a. Put this equation into the "slope-intercept" form $y = mx + b$
b. slope = _____
c. y-intercept = _____
d. x-intercept = _____
e. Graph it.

Exercise 2

The points $(5, 2)$ and $(7, 8)$ lie on a line.

a. Find the slope of this line
b. Find another point on this line

Exercise 3

When you're building a roof, you often talk about the "pitch" of the roof—which is a fancy word that means its slope. You are building a roof shaped like the following. The roof is perfectly symmetrical. The slope of the left-hand side is . In the drawing below, the roof is the two thick black lines—the ceiling of the house is the dotted line 60' long.

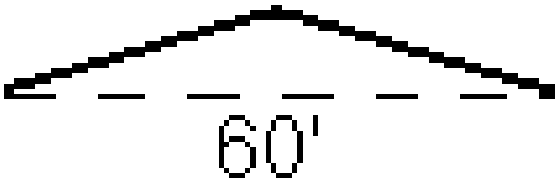

Figure 1

*Version 1.2: Apr 15, 2009 10:57 am -0500
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a. What is the slope of the right-hand side of the roof?
b. How high is the roof? That is, what is the distance from the ceiling of the house, straight up to the point at the top of the roof?
c. How long is the roof? That is, what is the combined length of the two thick black lines in the drawing above?

Exercise 4

In the equation $y = 3x$, explain why 3 is the slope. (Don't just say "because it's the m in $y = \mathrm{mx} + b$." Explain **why** $\frac{\Delta y}{\Delta x}$ will be 3 for any two points on this line, just like we explained in class **why** b is the y-intercept.)

Exercise 5

How do you measure the height of a very tall mountain? You can't just sink a ruler down from the top to the bottom of the mountain!

So here's one way you could do it. You stand behind a tree, and you move back until you can look straight over the top of the tree, to the top of the mountain. Then you measure the height of the tree, the distance from you to the mountain, and the distance from you to the tree. So you might get results like this.

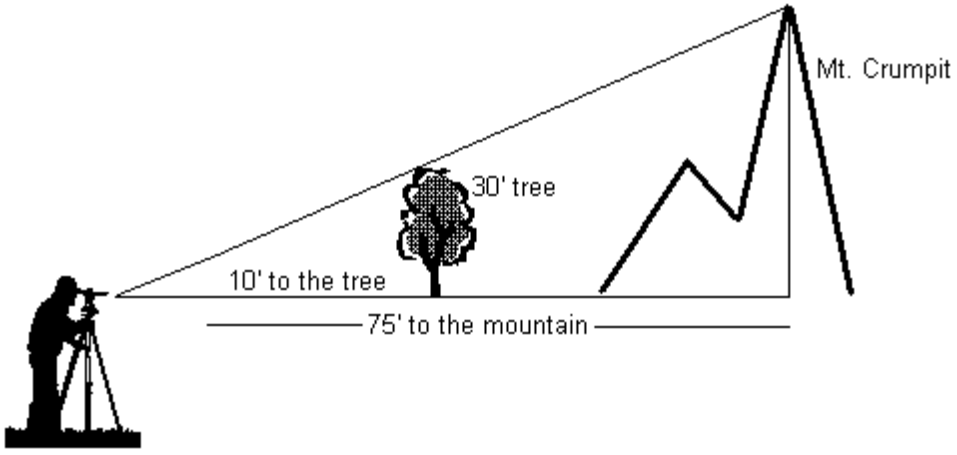

Figure 2

How high is the mountain?

Exercise 6

The following table (a "relation," remember those?) shows how much money Scrooge McDuck has been worth every year since 1999.

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Net Worth	\$3 Trillion	\$4.5 Trillion	\$6 Trillion	\$7.5 Trillion	\$9 Trillion	\$10.5 Trillion

Table 1

a. How much is a trillion, anyway?

b. Graph this relation.
c. What is the slope of the graph?
d. How much money can Mr. McDuck earn in 20 years at this rate?

Exercise 7
Make up and solve your own word problem using slope.