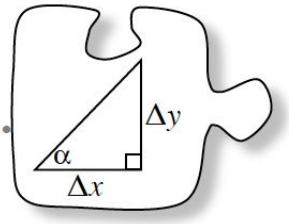
3.2.1 What patterns can I use?



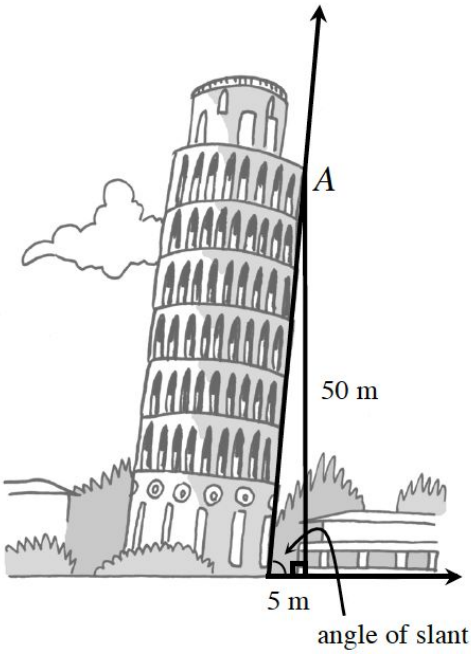
Constant Ratios in Right Triangles

3-67 Leaning Tower of Pisa

a) With the measurements provided, what can you determine?

b) Can you determine the angle at which the tower leans? Why or why not?

c) Can you come up with a way to determine the "lean" of the tower?



3-68 - Patterns in Slope Triangles

a) Draw three new slope triangles on the line. Each one should be a different size. Label each triangle with side lengths and as angle measures.

b) Explain why all of the slope triangles on this line must be similar.

c) Since the triangles are similar, what do you know about the slope ratios?

d) Confirm your conclusion by writing a slope ratio for each triangle as a fraction, such as $\frac{\Delta y}{\Delta x}$. (Note: Δy represents the vertical change or "rise", while Δx represents the horizontal change or "run".) Then change the slope ratio into decimal form and compare.

Triangles	**Slope Ratios as Fractions**	**Slope Ratios as Decimals**	**What do you notice about the slope ratios?**
1 (smallest)			
2			
3			
4 (largest)			

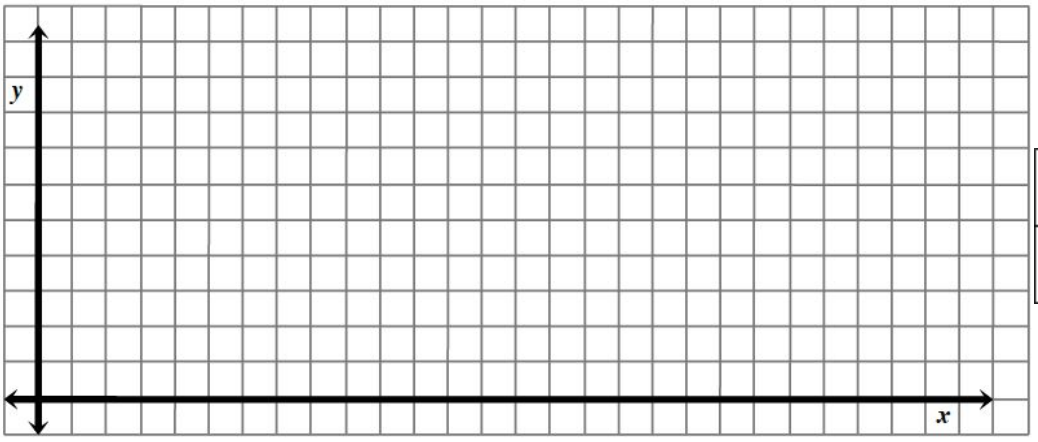
3-69

a) *What if I draw a slope triangle on this line with $\Delta y = 6$? What would be the Δx of my triangle?* Answer Tara's question and show your work.

b) *If Δx is 40, what is Δy?* Show your work.

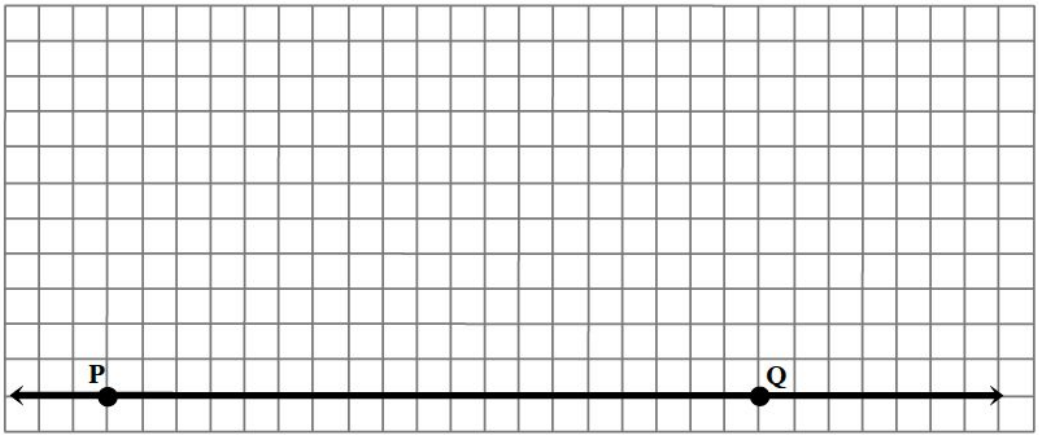
3-70 - Changing Lines

a) Graph line $y = \frac{2}{5}x$. What is the slope ratio for this line? Using your protractor, what is the slope angle?



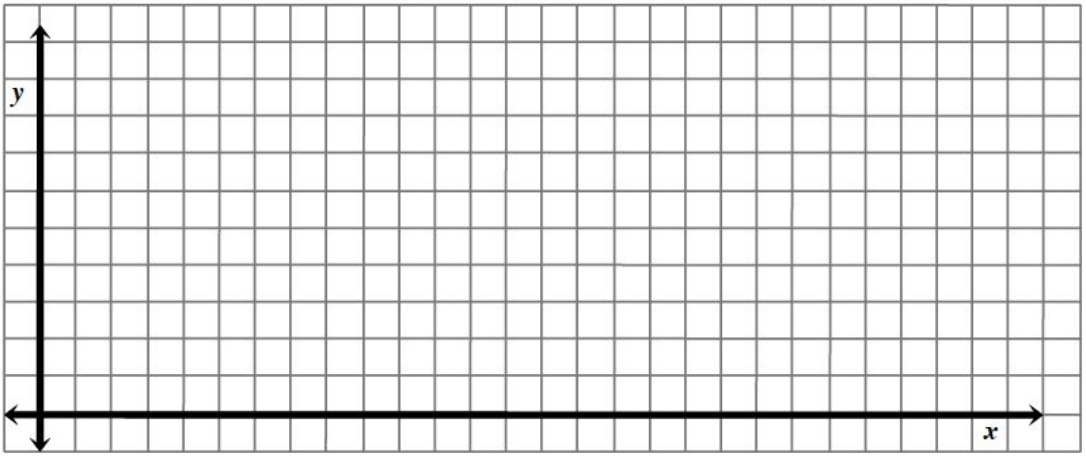
Slope ratio =
Slope angle =

b). Create <QPR so that it measures 18˚. To do this, place your protractor on point P as the vertex. Then, find 18˚ and mark and label new point R. Draw ray PR to form <QPR. What is the approximate slope ratio of this line?



Slope ratio =
Slope angle = 18˚

c) Graph the line $y = x + 4$. Draw a slope triangle and label its horizontal and vertical lengths. What is $\frac{\Delta y}{\Delta x}$ (the slope ratio)? What is the slope angle?



Slope ratio =
Slope angle =

3-71 - Testing Conjectures - True or False? Explain why!

a) All slope triangles have a ratio ⅛.

b) If the slope ratio is ⅛, then the slope angle is approximately 11˚.

c) If the line has an 11˚ slope angle, then the slope ratio is approximately ⅛.

d) Different lines will have different slope angles and different slope ratios.