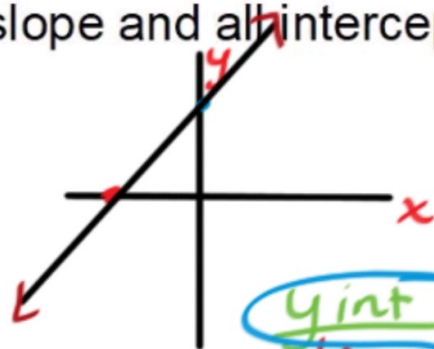


Good morning: do warm up in notebooks

Find the slope and all intercepts of the line  $-4x + 3y - 12 = 0$



$-4x + 3y = 12$  Standard Form

x-int  
 $\rightarrow y = 0$   
 $+4x = 12$   
 $\frac{+4x}{+4} = \frac{12}{+4} \Rightarrow \underline{\underline{x = -3}}$   
 $(-3, 0)$

y-int

$\rightarrow x = 0$

$3y = 12$   
 $y = 4$

$(0, 4)$

$-4x + 3y - 12 = 0$

$\frac{+4x}{+3} + \frac{+12}{+3} = \frac{-3y}{-3} \Rightarrow$

$\frac{4}{3}x + 4 = y$   
rise =  $\Delta y$   
run =  $\Delta x$

## Visibly Random Grouping

Lockhart writes in the reading from last night:

By concentrating on *what*, and leaving out *why*, mathematics is reduced to an empty shell. The art is not in the “truth” but in the explanation, the argument. It is the argument itself which gives the truth its context, and determines what is really being said and meant. Mathematics *is the art of explanation*. If you deny students the opportunity to engage in this activity— to pose their own problems, make their own conjectures and discoveries, to be wrong, to be creatively frustrated, to have an inspiration, and to cobble together their own explanations and proofs— you deny them mathematics itself.

How do you feel about the role of explanation in math? Do you like explaining patterns, phenomena, and techniques? Why or why not?

# What is geometry?

Quickwrite (write whatever comes to your mind in stream-of-consciousness)

(Will trade with a partner)

NOTES

Geometry is an attempt to answer the question, how do we know where we are?

From Greek:

**Geo** - earth;  
think geography, geology

**Metria** - measure



**Euclid** of Alexandria

lived around 300 BCE (23 centuries ago)

Wrote math text, *Elements*

Used around the world as the primary textbook for geometry well into the 1900s

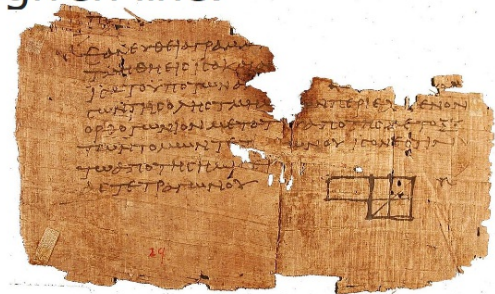
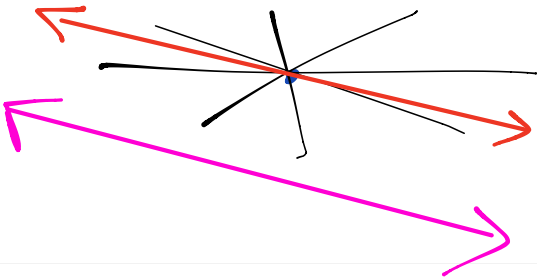


(Don't have to copy this page down)



## Five Axioms (basic assumptions) of Euclidean Geometry **(no need to copy )**

1. A straight segment can be drawn between any two points
2. A segment can be extended indefinitely into a line.
3. Given a segment, a circle can be drawn with the segment as radius
4. All right angles are congruent (the same).
- 5\*. Given a line and a point not on the line, only one line going through the point will be parallel to the given line.



## The Three "Undefined Terms" of Geometry

(DO need  
to copy )


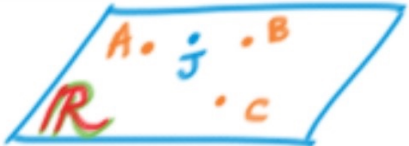
- 1, 2, 3: *Point, line, Plane*
- **these words have no definition in geometry  
because they can only be explained with descriptions**

*Plane:*

Flat infinite surface where geometry happens

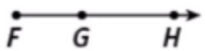
Defined by 3 points not in a line



	POINT	LINE	PLANE
MODEL	$P \cdot$		
DRAWN	a single dot with a unique label	2+ points on a line, with 2 arrowheads	Parallelogram with figures on it; shown in perspective
NAMED BY	Use letter label	* Exactly 2 points on the line	* Any 3 points Not on the same line • Script letter
FACTS	• No dimension • takes up no space	• 1 dimensional • extends forever	• 2 dimensions • goes on forever
WORDS / SYMBOLS	• Point "P"	* $\overleftrightarrow{AB}$ $\overleftrightarrow{AC}$ $\overleftrightarrow{BA}$ <del><math>\overleftrightarrow{ACB}</math></del>	$\square ABC$ $\cdot R$ $\square ACB$ <del><math>\square ASB</math></del> $\square CBA$

Turn to p. 3 in your textbook and complete #1-7: Describe each figure, and if you can, give a name/symbol for each

1 ? point;  $\mathcal{Q}$



ray  $\overrightarrow{FH}$   ~~$\overrightarrow{GH}$~~   
 $\overrightarrow{FG}$

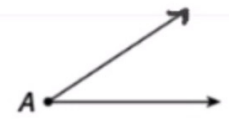
3 line  
 $\overleftrightarrow{XZ}$   $\overleftrightarrow{XY}$   $\overleftrightarrow{ZX}$   
 $\overleftrightarrow{ZY}$   $\overleftrightarrow{YX}$   $\overleftrightarrow{YZ}$



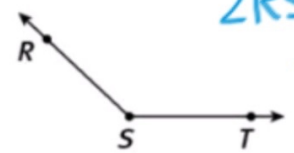
4 line segment  
 $\overline{DE}$   $\overline{ED}$



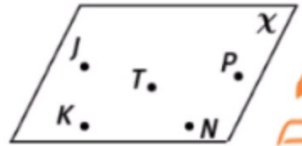
5 Angle  
 $\angle A$



6 Angle  
 $\angle RST$   $\angle TSR$   
 $\angle S$



7 plane  
 $\mathcal{X}$   
 $\square OKTP$   
 $\square ONTS$ ...



Homework:

p. 11 #1-4, 7, 9