3.5 Constructing Parallel Lines

Objectives:

- **I CAN use methods for Constructing Parallel Lines**
- **I CAN investigate the relationships between the slopes of**
  - **Parallel Lines**
  - **Perpendicular Lines**

Sketch, Draw, Construct

When you _____ an equilateral triangle, you should use you geometry tools for accuracy. *You may use a protractor to measure angles and a ruler to measure the sides.*

draw

When you _____ an equilateral triangle, you freehand a triangle that looks like an equilateral triangle. *No geometry tools needed.*

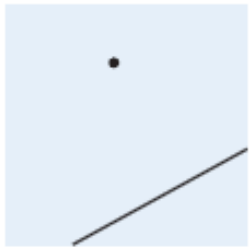
sketch

When you _____ an equilateral triangle with a compass and straightedge, you don't rely on measurements from a protractor or a ruler. *This guarantees that you triangle is equilateral.*

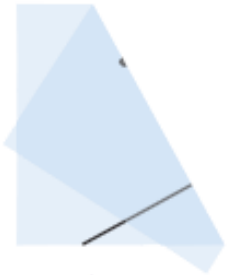
construct

Investigations: p. 161

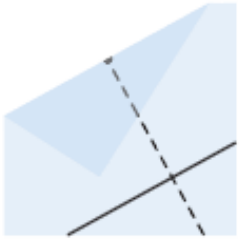
Constructing Parallel Lines by Folding



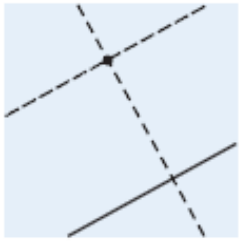
Step 1



Step 2



Step 3



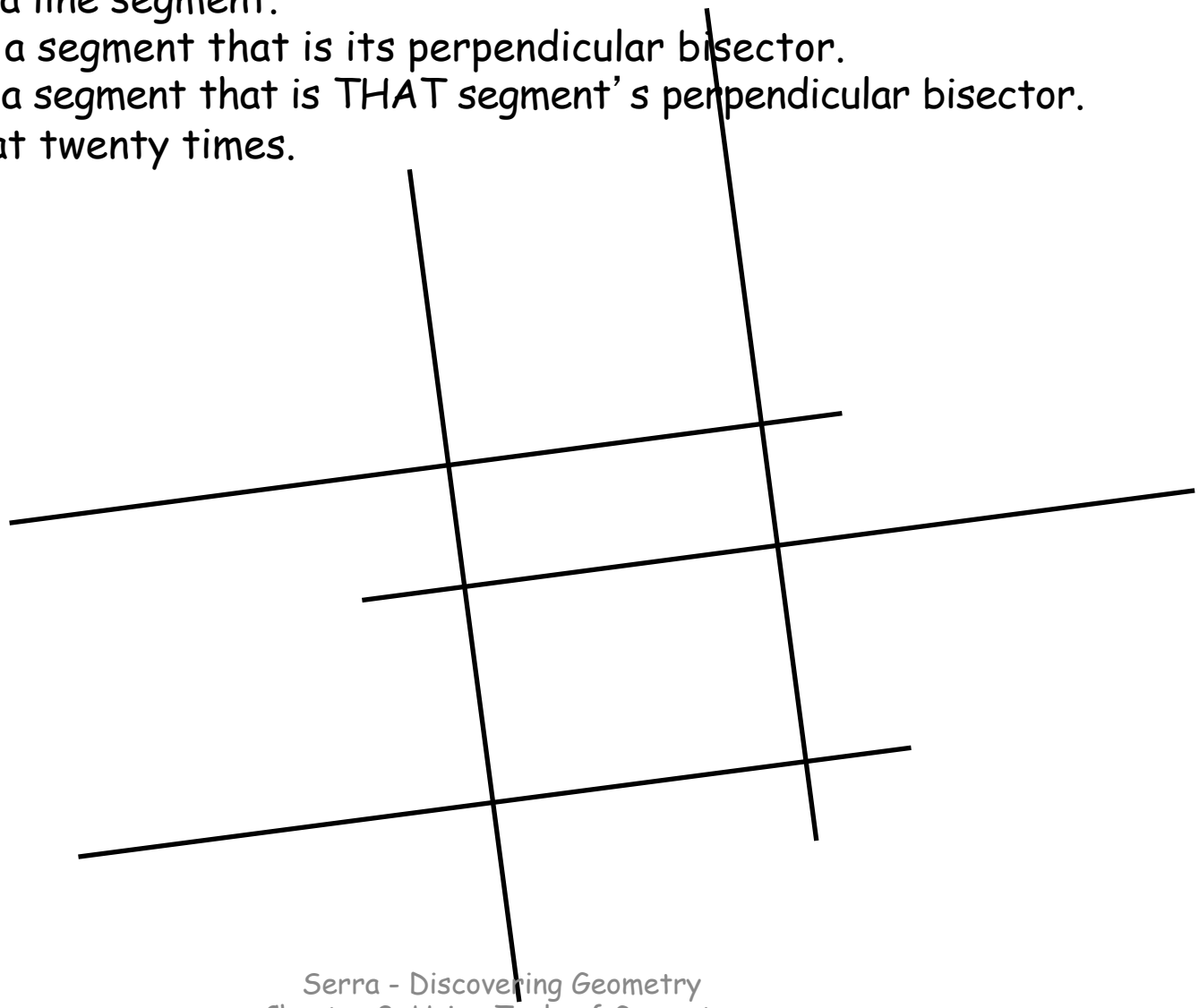
Step 4

Constructing Parallel Lines with Geometry Tools

Video

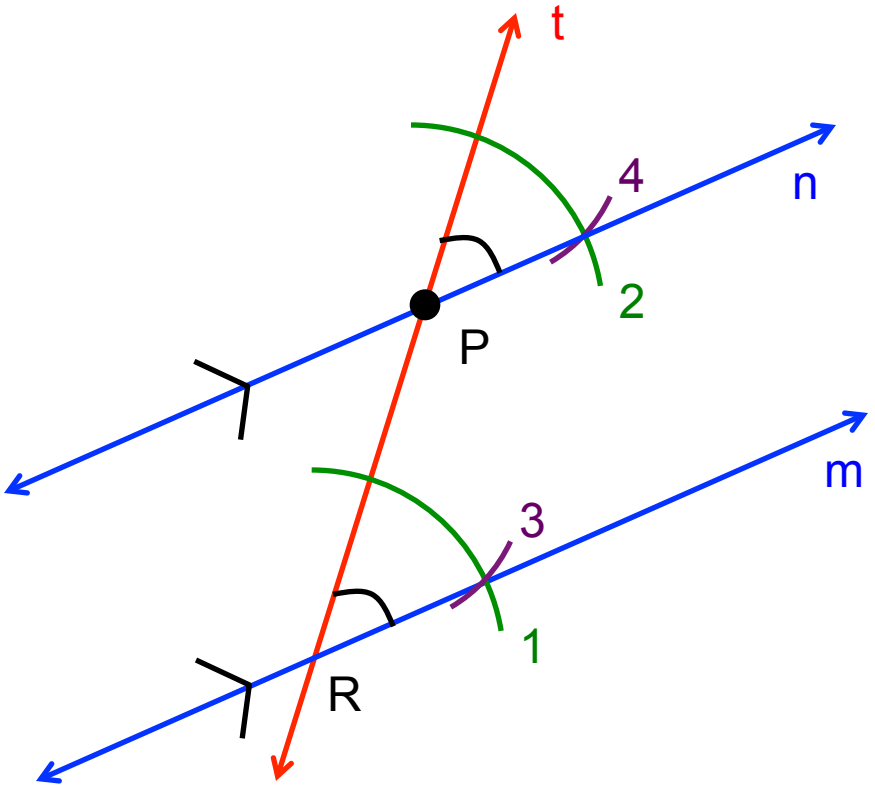
Classwork

Take a line segment.
Draw a segment that is its perpendicular bisector.
Draw a segment that is THAT segment's perpendicular bisector.
Repeat twenty times.



Construction 7: Parallel Lines

1. Draw lines m and t that intersect at R.
2. Put a point P on line t.
3. With the point on R, make an arc across the angle.
4. Without changing the compass, put the point on P and make the same arc across line t.
5. Use the compass to measure the distance between the points of intersection of the arc and the two lines.
6. Without changing the compass, put the point on the intersection of arc 2 and line t and make an arc that intersects arc 2.
7. Connect P with the X created from arcs 2 & 4. Label it line n.

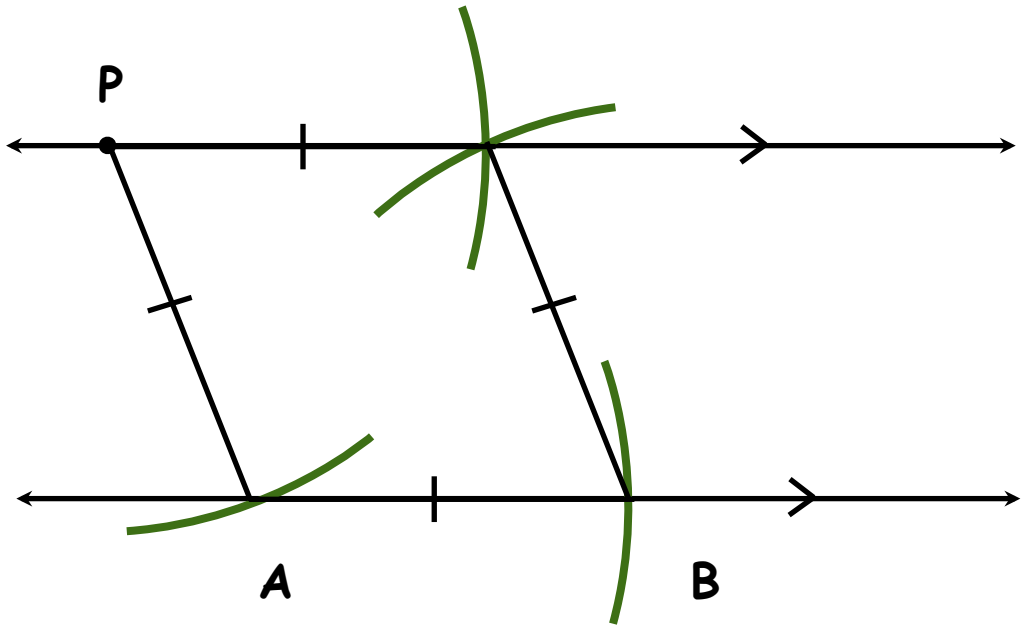


Corresponding Angles Conjecture Converse

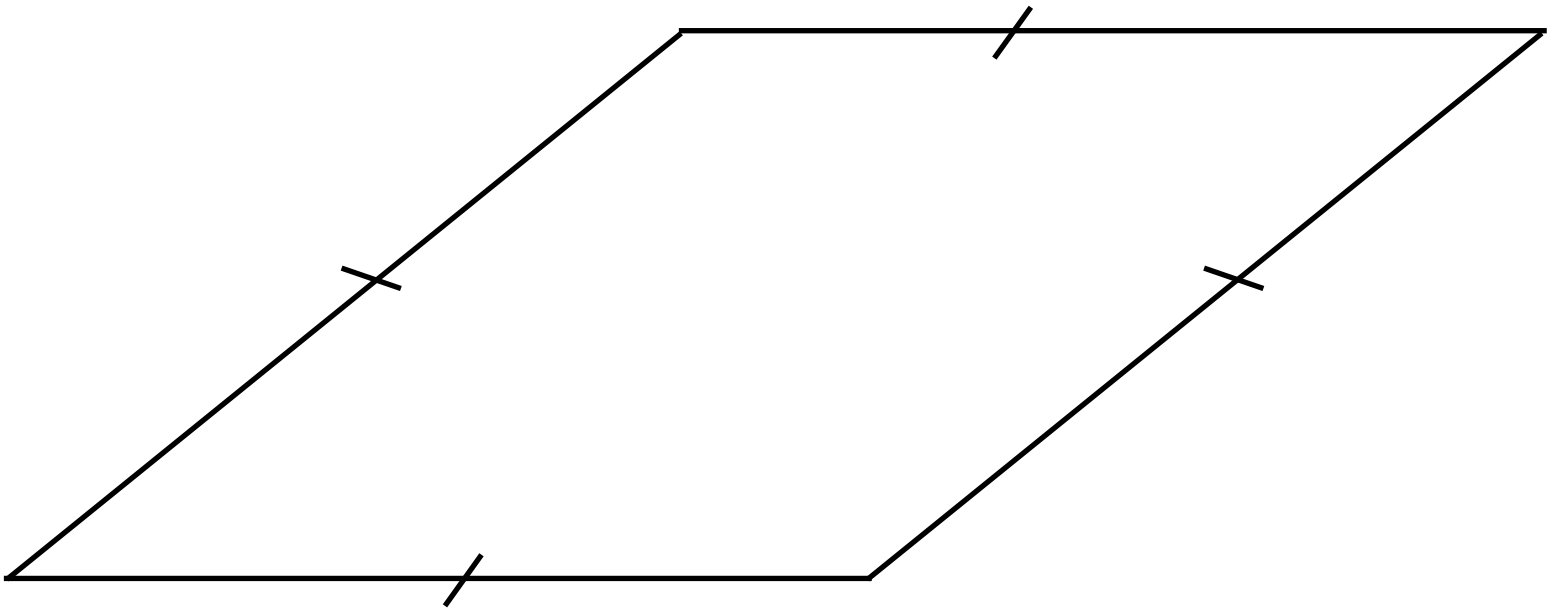
http://www.mathopenref.com/constparallel.html

Parallel Line Construction

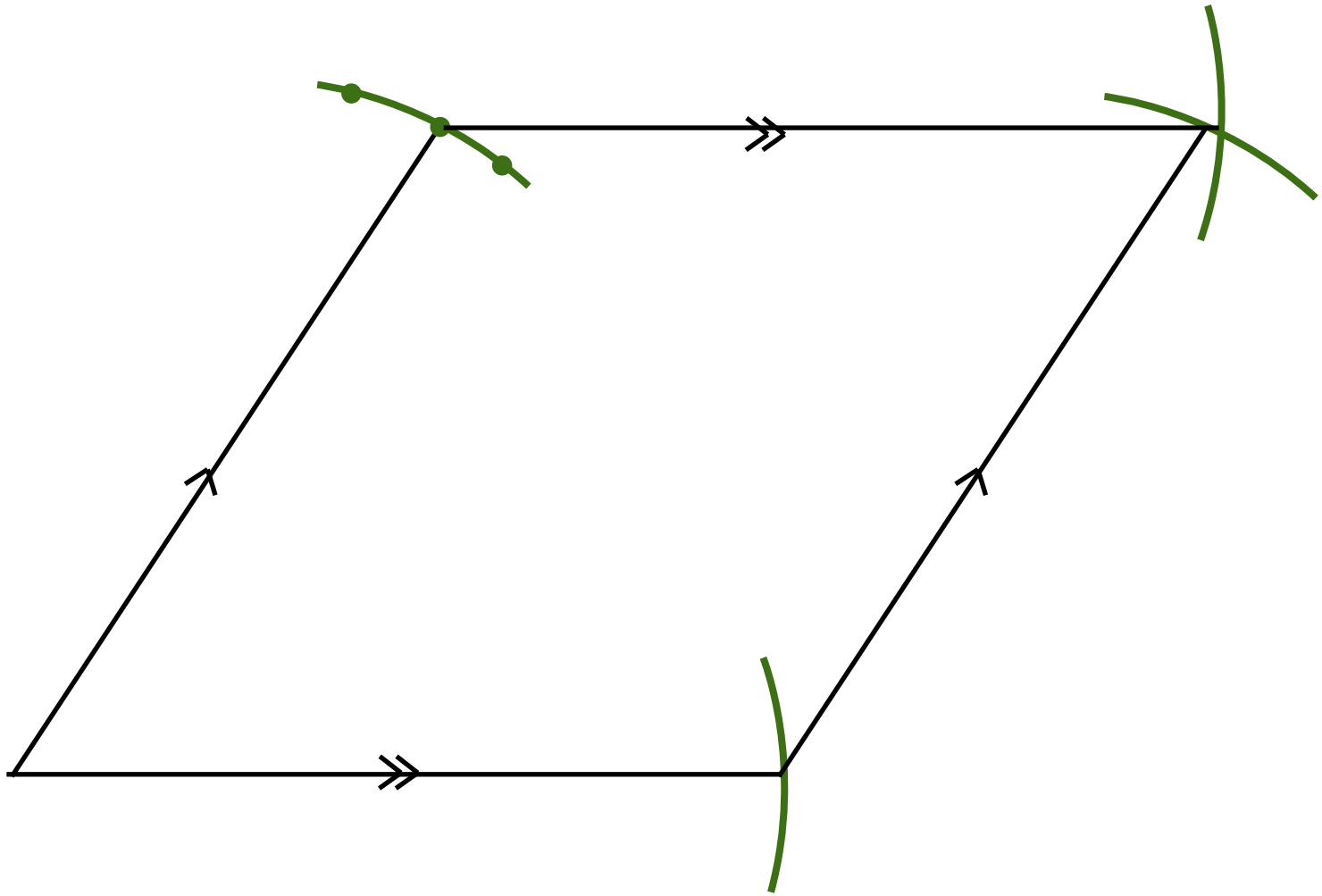
How many lines can you draw through point P that are parallel to AB? How do we construct it? Anybody get any ideas?



Make A Rhombus



Make A Rhombus



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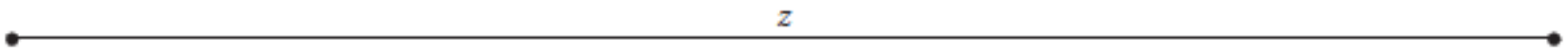
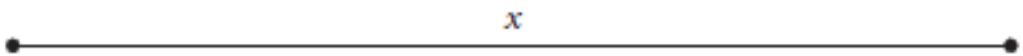
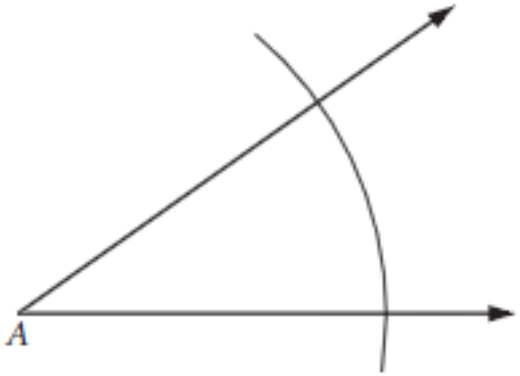
3. Construct a square with perimeter z. (h)

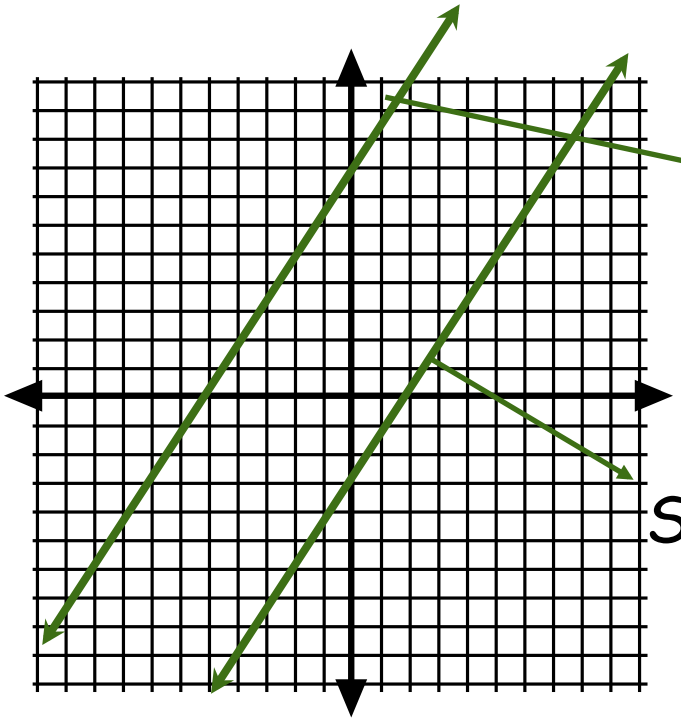


4. Construct a rhombus with x as the length of each side and $\angle A$ as one of the acute angles.





Parallel & Perpendicular Slopes



SLOPE = 1.5

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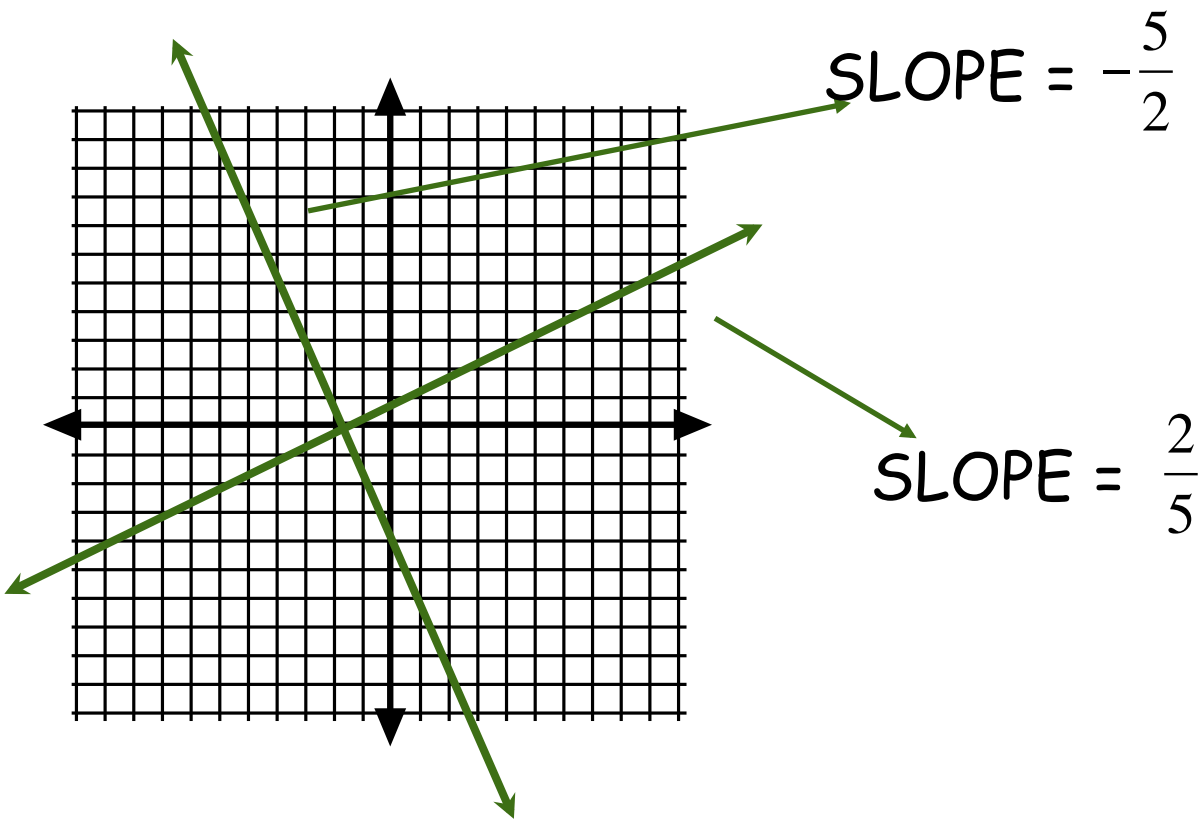
Parallel lines [redacted] equal slopes.

Parallel & Perpendicular Slopes



Perpendicular lines [redacted] reciprocal slopes.

Example Problem

Are these lines parallel or perpendicular or neither?

a) SLOPE a = 1/4 SLOPE b = 1/4

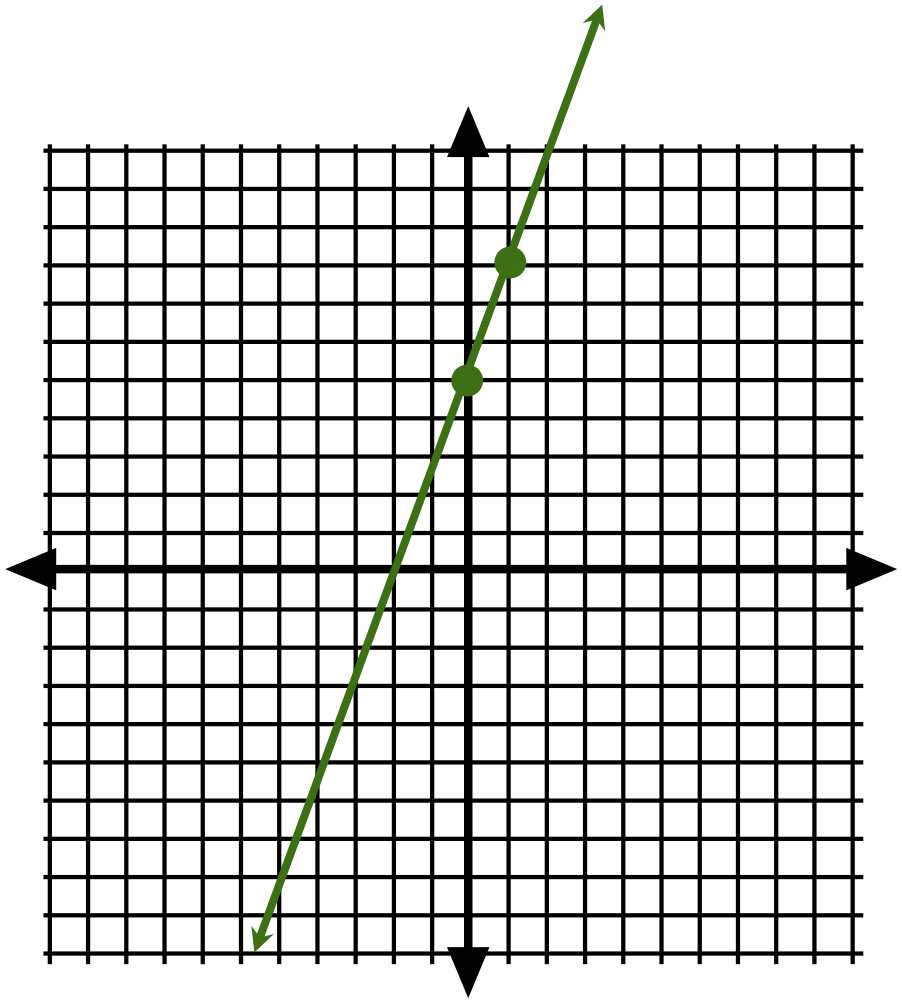
b) SLOPE a = -9/4 SLOPE b = 4/9

c) SLOPE a = .25 SLOPE b = -.25

d) SLOPE a = 1 SLOPE b = -1

e)The lines between (2, 3) to (5,12) and (-2, -3) to (-5, -2)

Algebra Review - Graphing Lines



Graph: $y = 3x + 5$

1. Plug in $x = 1$ and 0

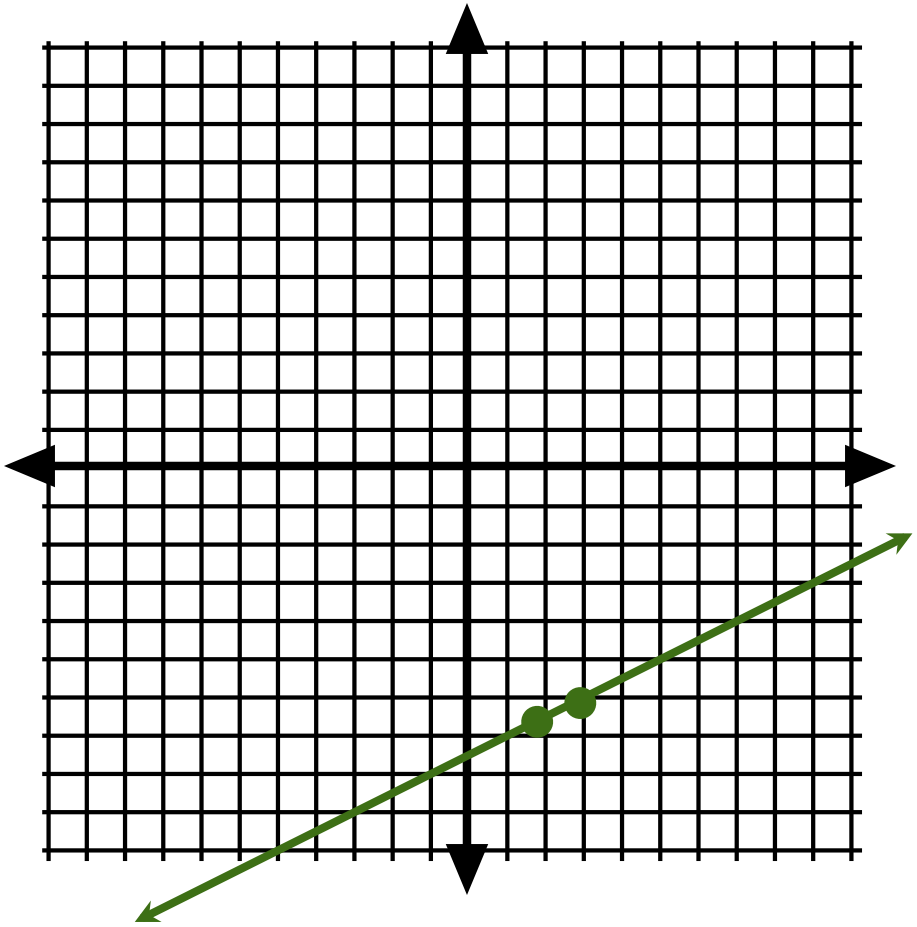
$y = 3(1) + 5 = 8$

(1, 8)

$y = 3(0) + 5 = 5$

(0, 5)

Algebra Review - Graphing Lines



Graph: $2x - 4y = 8$

1. Plug in $x = 1$

$2(1) - 4y = 8$
$2 - 4y = 8$
$-4y = 6$
$y = -1.5$

$(1, -1.5)$

2. Plug in $x=0$

$2(0) - 4y = 8$
$-4y = 8$
$y = -2$
$(0, -2)$

Algebra Review - Graphing Lines

EQUATION  GRAPH

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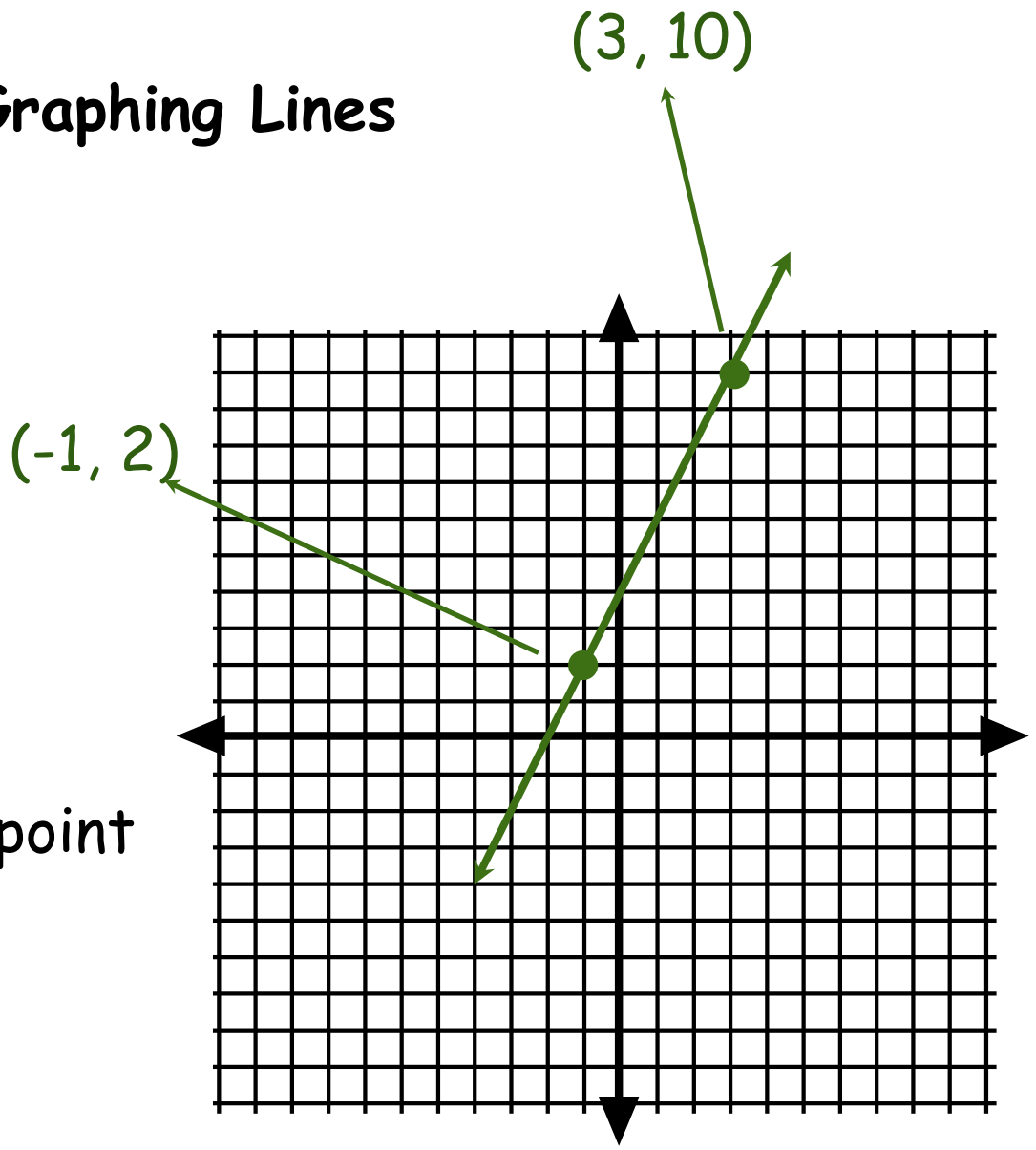
EQUATION  GRAPH

Algebra Review - Graphing Lines

$y = \boxed{2}x + \boxed{4}$



1. Find the slope

$$\frac{10 - 2}{3 - (-1)} = \frac{8}{4} = 2$$

2. Plug in EITHER point

$10 = 2(3) + B$
$10 = 6 + B$
$4 = B$