

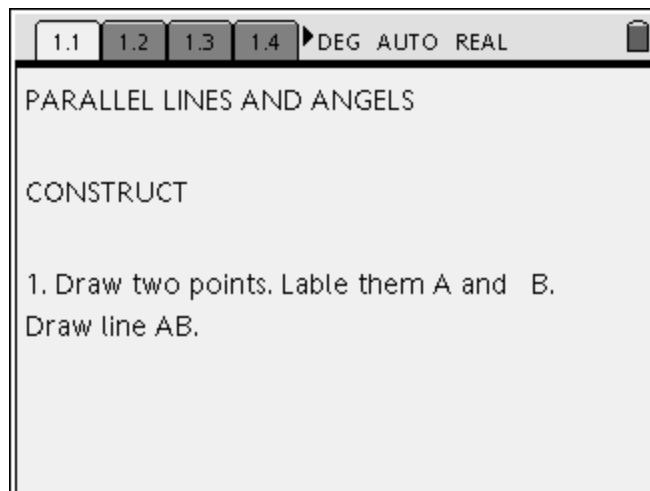
## Materials

- TI-Nspire Math and Science Learning Handheld
- Parallel Lines and Angles Worksheet

## Introduction

The following problem is related to Parallel lines and angles.

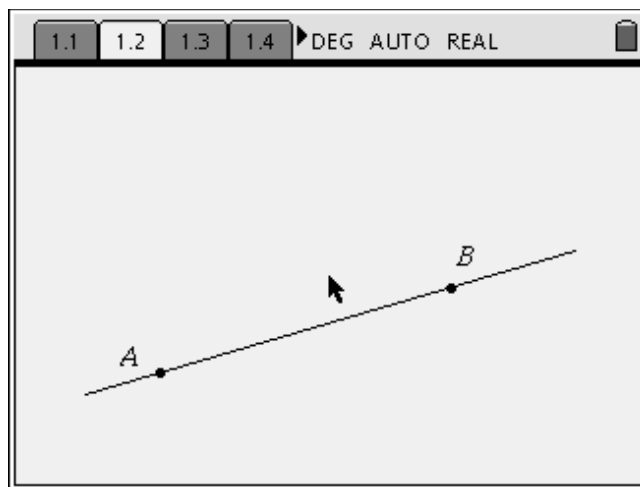
You can use TI-Nspire Handheld to explore the properties of parallel lines.



## CONSTRUCT

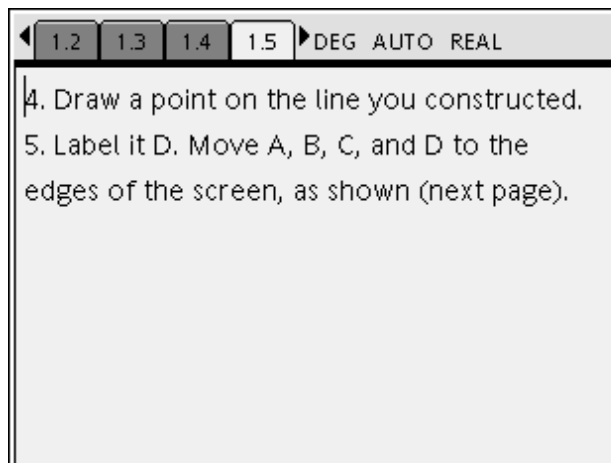
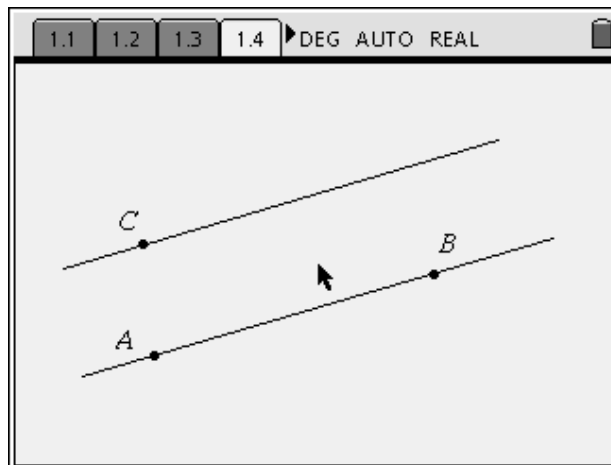
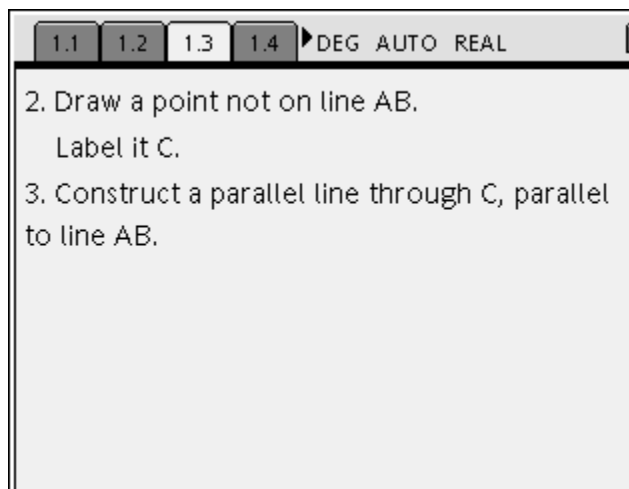
Construct line AB.

1. Choose the 2 for Home 2: Graphs and Geometry.
2. Press , choose 1: Tools ▶, 2: Hide/Show, followed by , choose 2: View ▶ 1: Hide Axes. Repeat , choose 2: View ▶ 3: Hide Entry Line (Ctrl G).
3. To draw points A and B; now press , choose 6: Points and Lines ▶ 2: Point
4. Draw line AB by joining the two points. Press , choose 6: Points and Lines ▶ 4: Line.
5. Note: Label the points immediately you make them



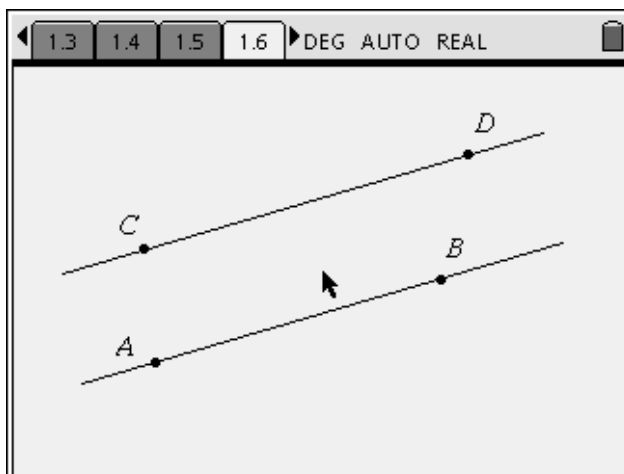
Draw a point not on line  $AB$ . Label it  $C$ .  
 Parallel line to line  $AB$  through point  $C$

1. Draw point  $C$ ; Press  $\text{\textcircled{menu}}$ , choose 6: Points and Lines  $\blacktriangleright$ , 1: Point
2. Label point  $C$  immediately you make it.
3. Press  $\text{\textcircled{menu}}$ , choose 9: Construction  $\blacktriangleright$  2: Parallel
4. Press  $\text{\textcircled{enter}}$  at point  $C$  followed by moving the cursor to line  $AB$  and pressing  $\text{\textcircled{enter}}$ .



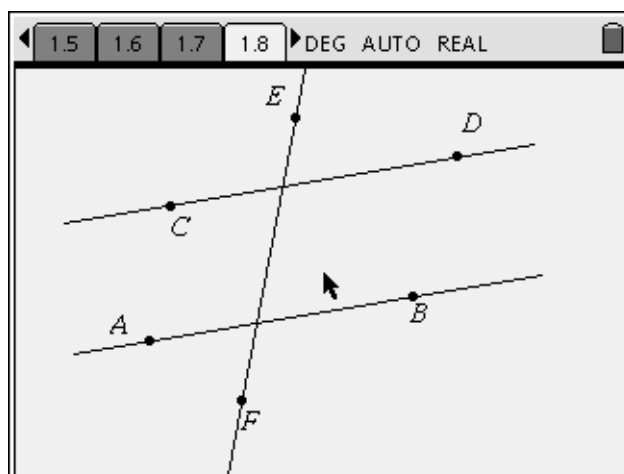
Draw a point on the line you constructed.  
Label it  $D$ .

Move  $A$ ,  $B$ ,  $C$ , and  $D$  to the edges of the screen, as shown.

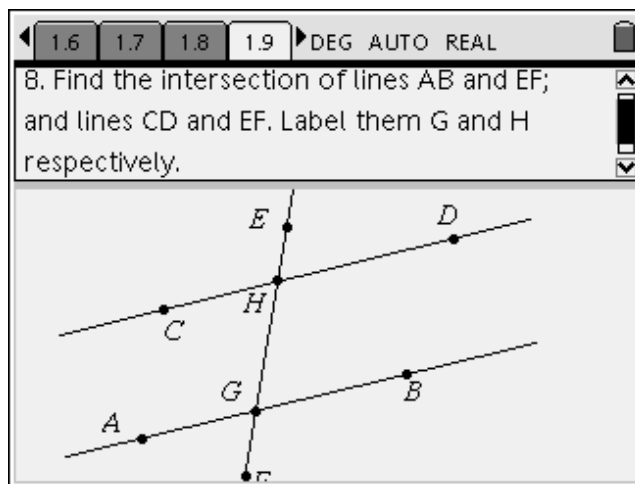


Draw two points outside the parallel lines.  
Label them  $E$  and  $F$ . Draw transversal line  $EF$ .

1. Press  $\text{\textcircled{menu}}$ , choose 6: Points and Lines  $\blacktriangleright$ , 1: Point; Label it  $E$  immediately. Repeat for point  $F$ .
2. Draw transversal line  $EF$  by pressing  $\text{\textcircled{menu}}$ , choose 6: Points and Lines  $\blacktriangleright$ , 4: Line; join points  $E$  and  $F$ .



Find the intersection of line  $AB$  and transversal line  $EF$ . Label it  $G$ . Find the intersection of line  $CD$  and transversal line  $EF$ . Label it  $H$ .



**INVESTIGATE**

1. Measure all eight angles formed by the three lines. What do you notice?

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2. Drag line AB on the side of B to change the angle the transversal makes with the parallel lines.

Be sure *E* and *F* stay outside the parallel lines. What do you notice?

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**MAKE A CONJECTURE**

3. Make a conjecture about the measures of corresponding angles when two parallel lines are cut by a transversal.

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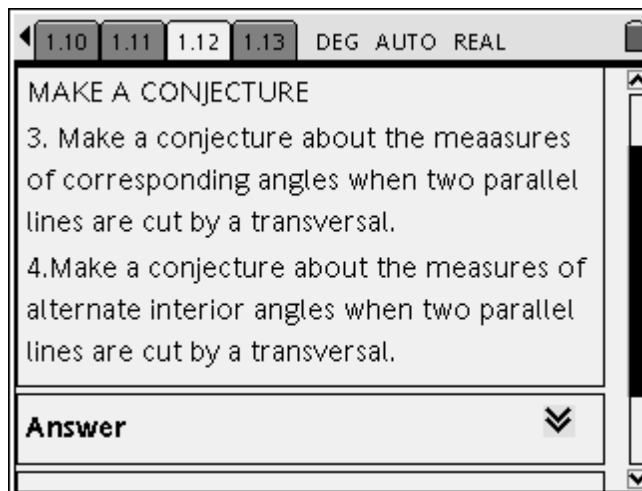
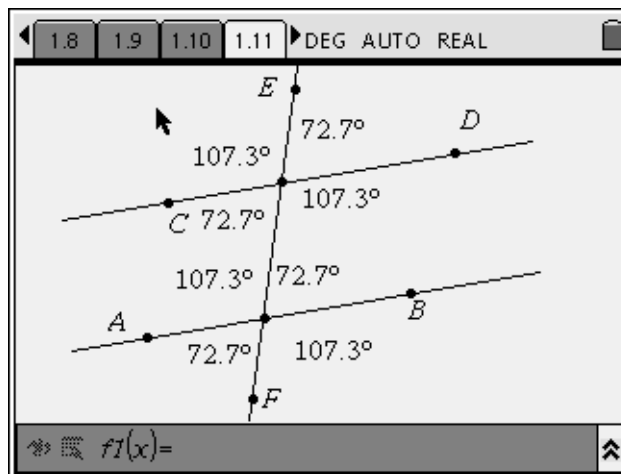
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4. Make a conjecture about the measures of alternate interior angles when two parallel lines are cut by a transversal.

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**EXTENSION**

**CRITICAL THINKING** Calculate the sum of two consecutive interior angles. Make and test a conjecture about the sum.

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