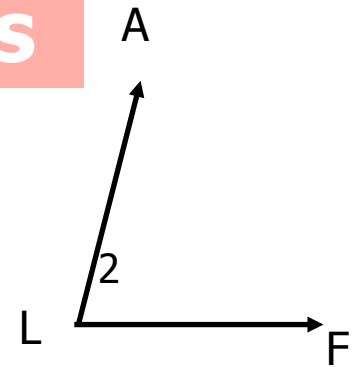


# Definitions and Defining Angles



## 1. Opener

a)  $-4(x + 10) - 6 = -3(x - 2)$

b) Name the angle 2 in every way you can:

c) Is it acute, obtuse, or right?

d) What is the midpoint between  $(5,9)$  and  $(-11, 17)$

e) How much did Nike pay for its logo?

## Warm-Up

Take out the following supplies:

- Protractor
- Ruler
- Graph Paper
- Index Cards
  
- **HOMEWORK:**
  - Pg. 100 / 1-13; 20-25;**
  - Pg. 101/ 29-33 odd ,**
- **Study Flashcards for Quiz**

## **2. Group Work - 3.1 Investigation - Defining Angles**

Provide a definition for:

Right Angle:

Acute Angle:

Obtuse Angle:

Pair of Vertical Angles

Linear Pair of Angles

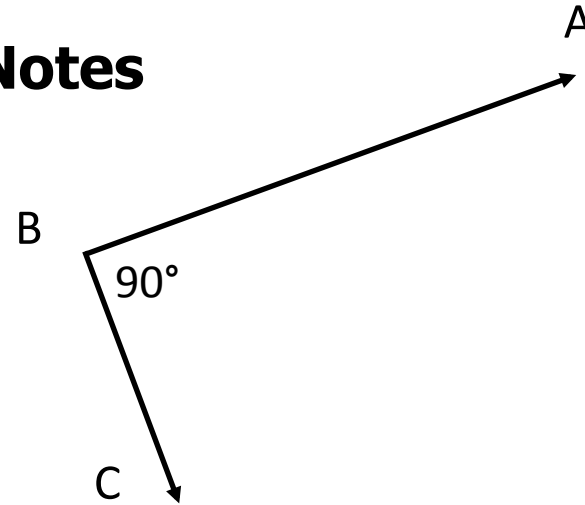
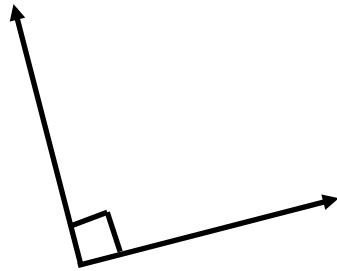
Pair of Complementary Angles

Pair of Supplementary Angles

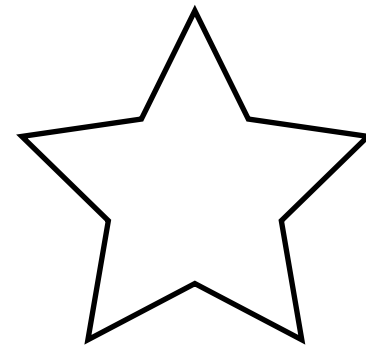
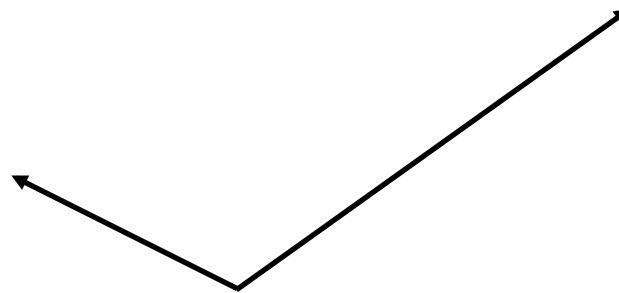
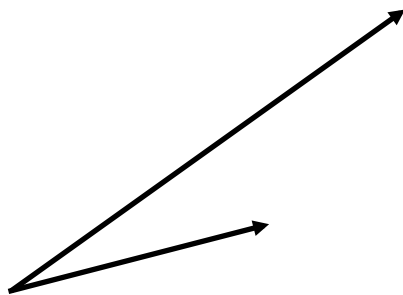
Right Angle: An angle that measure 90 degrees.

### 3. Group Definitions as Notes

Right Angles



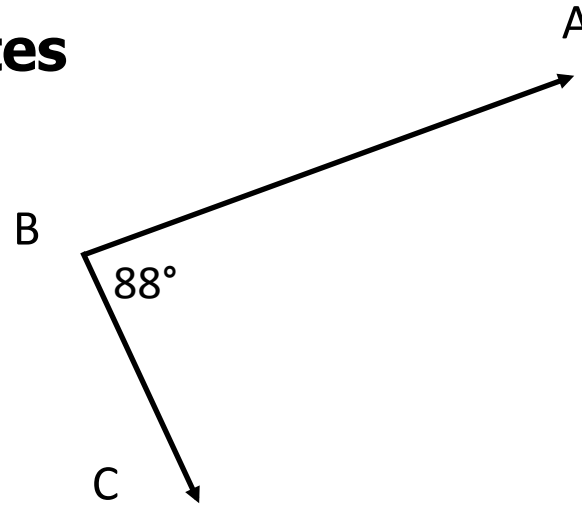
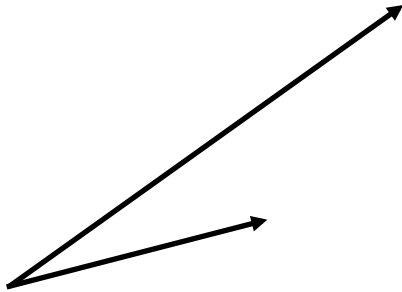
Not Right Angles



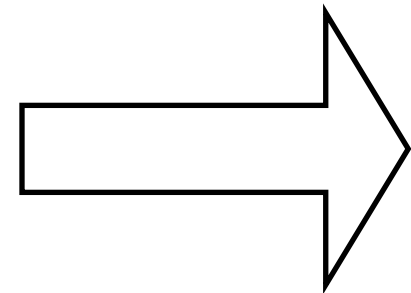
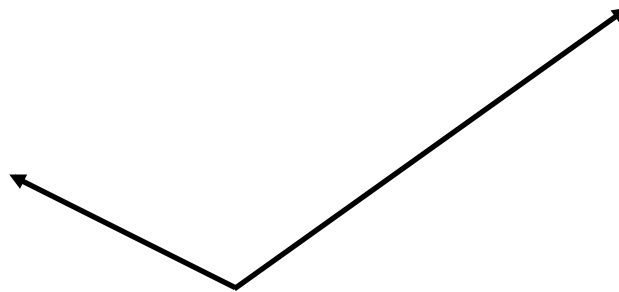
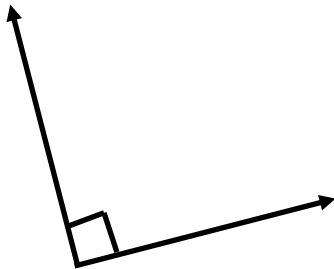
Acute Angle: An angle that measures less than 90 degrees.

### 3. Group Definitions as Notes

Acute Angles



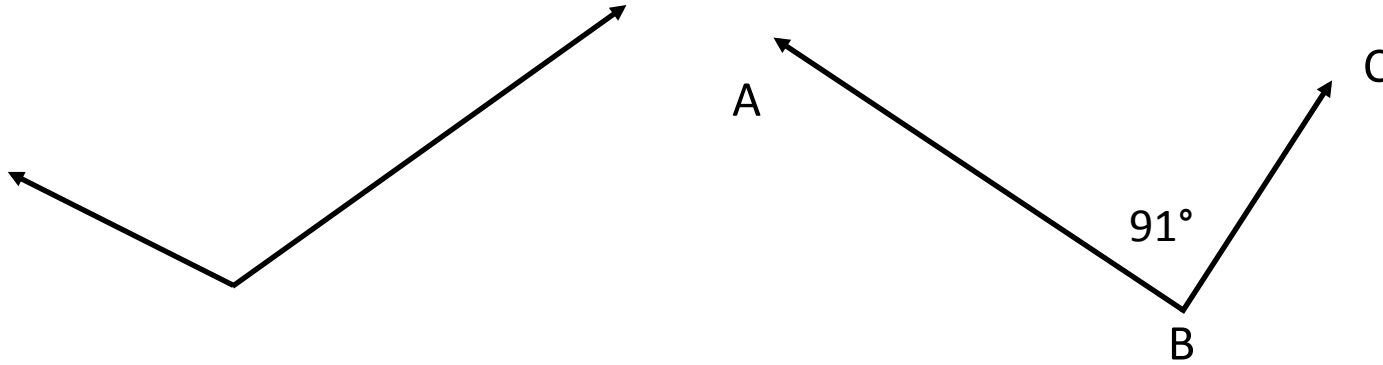
Not Acute Angles



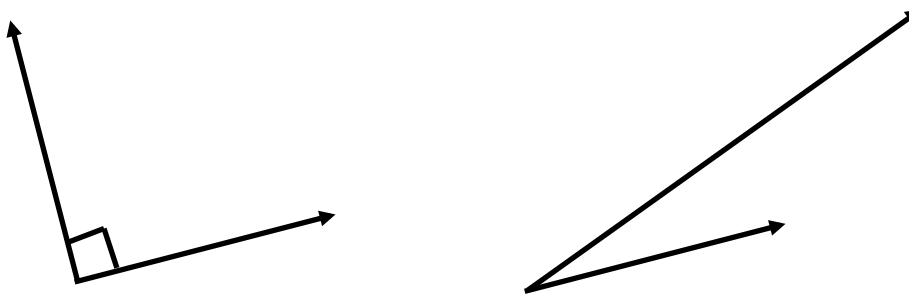
Obtuse Angle: An angle that measures more than 90 degrees.

### 3. Group Definitions as Notes

Obtuse Angles



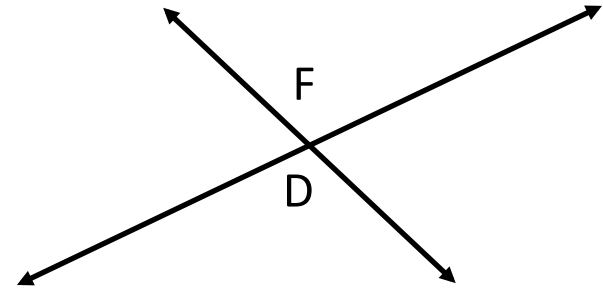
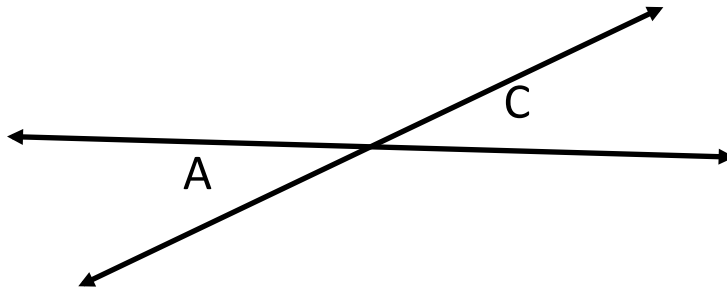
Not Obtuse Angles



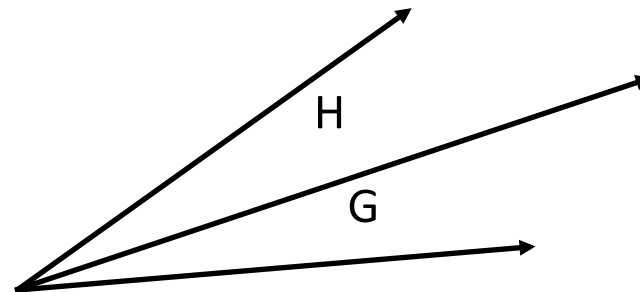
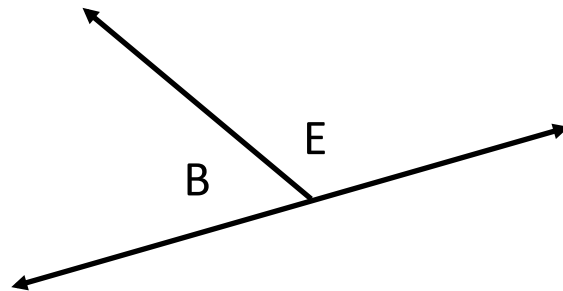
Pair of Vertical Angles: Two congruent and opposite angles formed by two intersecting lines.

### 3. Group Definitions as Notes

Vertical Angles



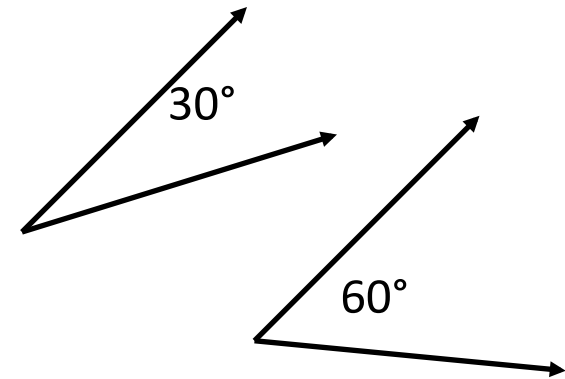
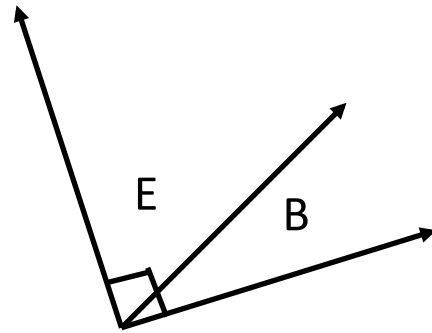
Not Vertical Angles



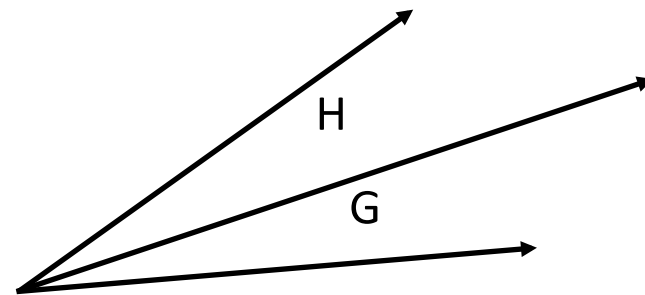
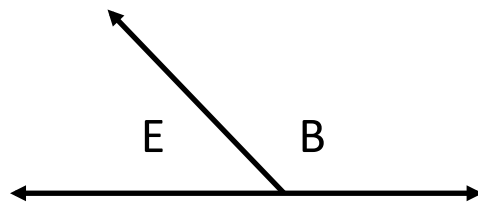
Pair of Complementary Angles: Two angles that add up to  $90^\circ$ .

### 3. Group Definitions as Notes

Complementary Angles



Not Complementary Angles

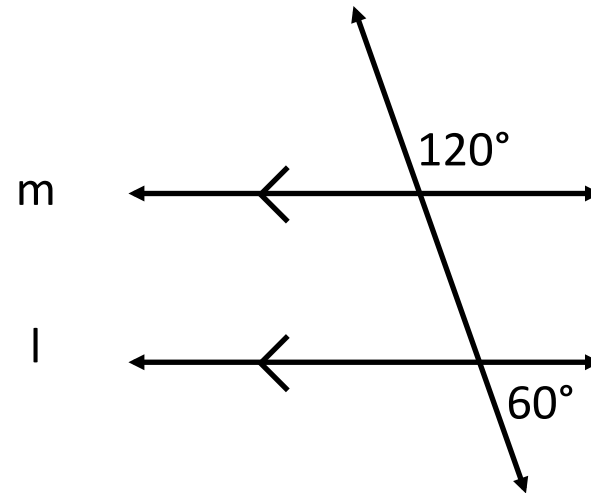
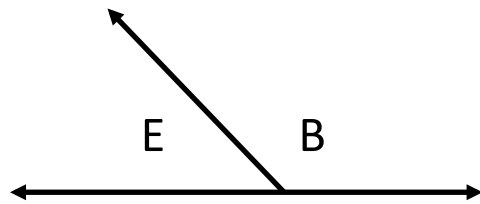




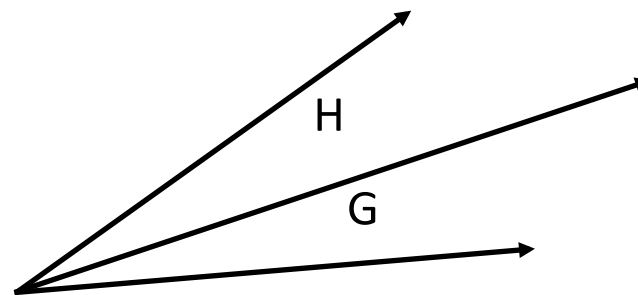
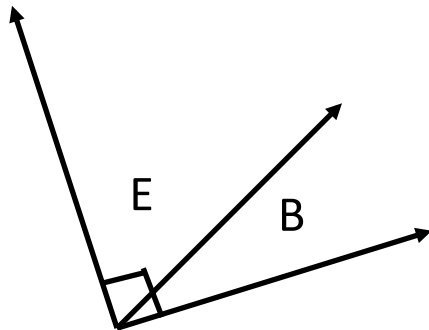
Pair of Complementary Angles: Two angles that add up to  $180^\circ$ .

### 3. Group Definitions as Notes

Supplementary Angles



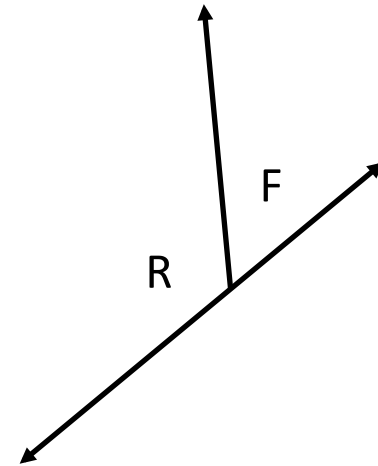
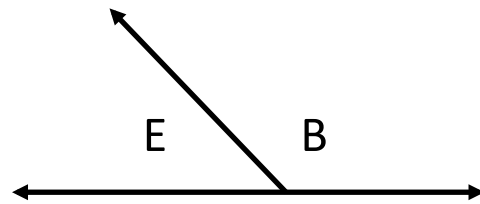
Not Supplementary Angles



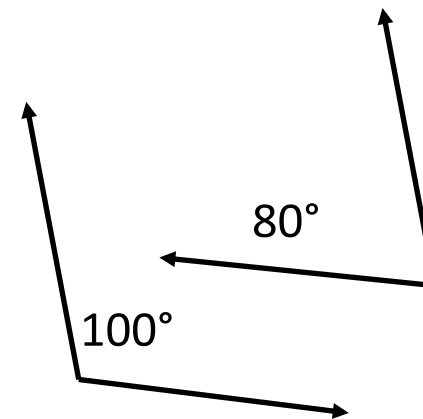
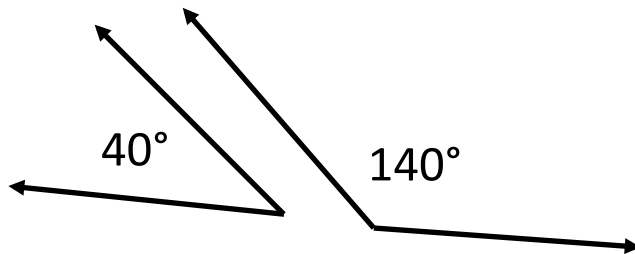
Pair of Linear Angles: Two angles on a line that measure  $180^\circ$ .

### 3. Group Definitions as Notes

Linear Angles

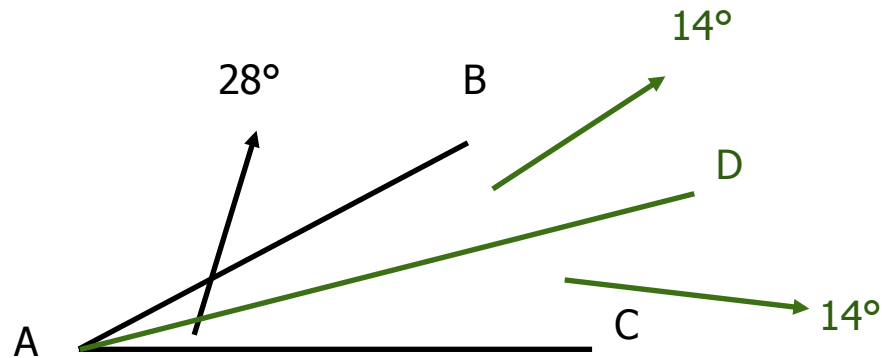


Not Linear Angles



## 4. Notes: Angle Bisector:

Angle Bisector: A ray that extends from the vertex of an angle and divides it into two congruent angles.



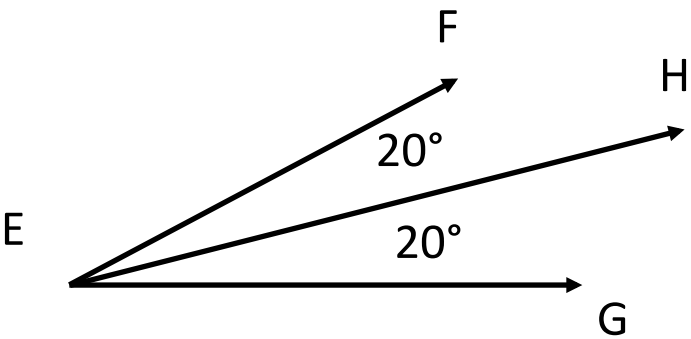
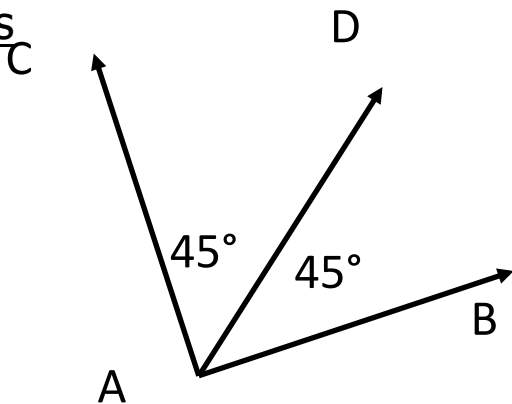
What We Can Write

$\overrightarrow{AD}$  is the angle bisector of  $\angle BAC$ .

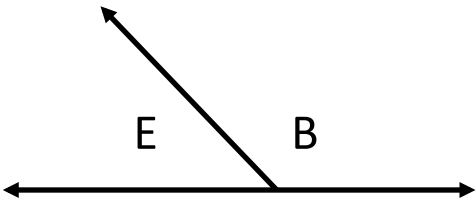
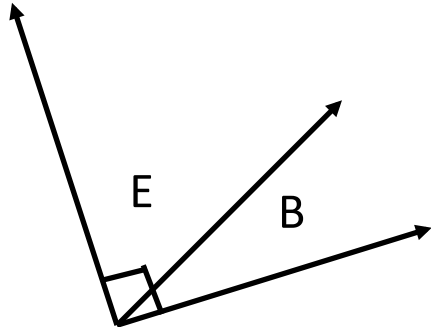
$$\angle BAD \cong \angle DAC$$

# 4. Notes

Angle Bisectors



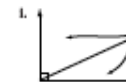
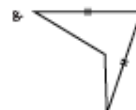
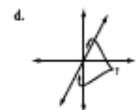
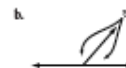
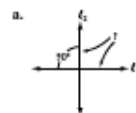
Not Angle Bisectors



# 5. CW (3.2 Defining Angles)

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

For Exercises 1–9, match each term with one of the items (a to i) below.



- |                             |                                |
|-----------------------------|--------------------------------|
| 1. _____ Vertical angles    | 2. _____ Obtuse angle          |
| 3. _____ Right angle        | 4. _____ Complementary angles  |
| 5. _____ Congruent angles   | 6. _____ Linear pair of angles |
| 7. _____ Bisected angle     | 8. _____ Perpendicular lines   |
| 9. _____ Congruent segments |                                |

10. If  $m\angle P = 13^\circ$ ,  $m\angle Q = 77^\circ$ , and  $\angle Q$  and  $\angle R$  are complementary, what can you conclude about  $\angle P$  and  $\angle R$ ? Explain your reasoning.

For Exercises 11–13, sketch, label, and mark a figure showing each property.

11.  $\ell_1 \parallel \ell_2, \ell_2 \perp \ell_3$

12.  $\overline{PQ} \perp \overline{PR}$

13.  $\angle BAC \cong \angle XAY, CX = BC$

## 6. About Good Definitions

What should go in the blanks to define a square?

A square is a  that .

Classify it. What is it?

How does it differ from others?

- Once you've written a definition you should try to come up with a ***counterexample***. If you can't find a counterexample, then you've got a good definition.

## 6. About Good Definitions: EXAMPLE A

Everyone knows, “A square is a figure with four equal sides.” What’s wrong with this definition?

- a. Sketch a counterexample. (You can probably find more than one!)
- b. Write a better definition for a square.

## 6. About Good Definitions

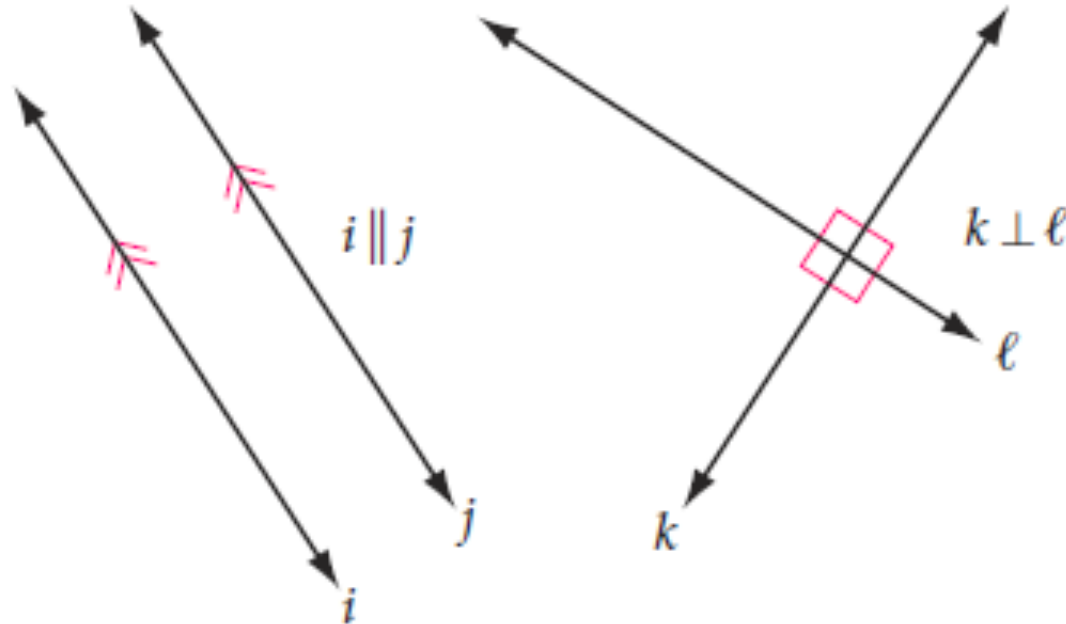
### Beginning Steps to Creating a Good Definition

1. Classify your term. What is it? (“A square is a 4-sided figure . . .”)
2. Differentiate your term. How does it differ from others in that class?  
 (“ . . . that has four congruent sides and four right angles.”)
3. Test your definition by looking for a counterexample.



## 6. About Good Definitions

### Parallel and Perpendicular Lines



- The  $\parallel$  symbol means “is parallel to”.
- The symbol  $\perp$  means “is perpendicular to”.

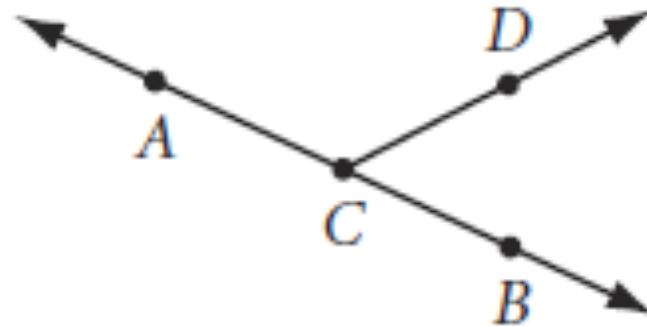
## 6. About Good Definitions: Example B

Define these terms:

- a. Parallel lines
- b. Perpendicular lines

## 6. About Good Definitions: Example C

Use a labeled figure to define a pair of linear angles.



## **8. Homework**

**HW: Pg. 100 – Lesson 2.5 (No proofs)/**

**1-13; 20-25;**

**Pg. 101/ 29-33 odd**