

# Monday, August 20, 2012

## TISK Problems

- 1) Simplify:  $\frac{21}{\sqrt{7}}$
- 2) Simplify:  $2\sqrt{45} + 7\sqrt{21} - 4\sqrt{63}$
- 3) Divide:  $\frac{4}{21} \div \frac{8}{7}$

We will have 3 Mental Math questions today.

# Return of Graded Work

- \* Reminder: Chapter 1 Test is this Thursday
- \* Quiz Corrections should be turned in when finished or at tutoring.
- \* Tutoring after school today will be in room 219.

# §2-1 Inductive Reasoning & Conjecturing

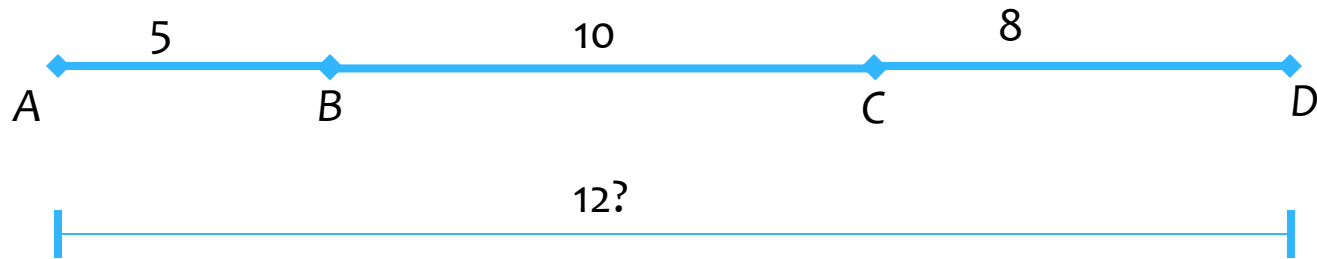
- \* Inductive Reasoning
  - \* Using several smaller examples to arrive at a larger, more general conclusion.
- \* Conjectures
  - \* Educated guess based on observed details
  - \* Examples:
    - \* I have been to Seattle 3 times in my life. Every time I went it was raining. I conjecture that it is always raining in Seattle.
    - \* I notice that when open the angle the door makes with the door frame is complementary to the angle the door makes with the wall. I conjecture that the measures of these angles add up to 90 degrees.

# More Inductive Reasoning Examples

- \* I notice that the everyone in this class is wearing black socks. Everyone is also in 9<sup>th</sup> grade. Therefore, I conjecture that all 9<sup>th</sup> graders wear black socks.

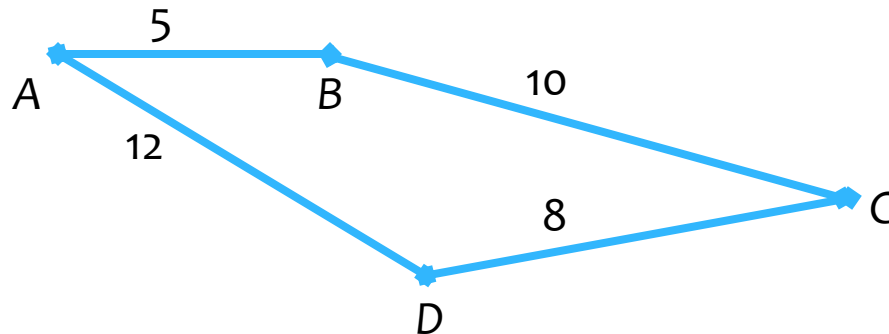
# Conjecturing

- \* Make a conjecture and draw a figure to illustrate your conjecture.
- \* Given: Points  $A$ ,  $B$ ,  $C$ , and  $D$ ,  
 $AB = 5$ ,  $BC = 10$ ,  $CD = 8$  and  $AD = 12$ .



# Conjecturing

- \* Make a conjecture and draw a figure to illustrate your conjecture.
- \* Given: Points A, B, C, and D,  
 $AB = 5$ ,  $BC = 10$ ,  $CD = 8$  and  $AD = 12$ .



Conjecture:  
ABCD is a quadrilateral.

# A Good Read

- \* Interested in learning more about inductive reasoning?
- \* Check out:  
[http://www.spcollege.edu/spg/math/rutledge/CH02SEC01\\_3e.pdf](http://www.spcollege.edu/spg/math/rutledge/CH02SEC01_3e.pdf)
- \* This link will be provided on the Homework Calendar.

# Counterexamples

- \* Once a conjecture has been made, it is up to the mathematician to prove it is either right or wrong ***all the time***.
- \* In order to prove some conjecture is wrong, you need only provide a single **counterexample**.
- \* A counterexample is an example that meets all the requirements of the given information but does not match the conjecture being tested.



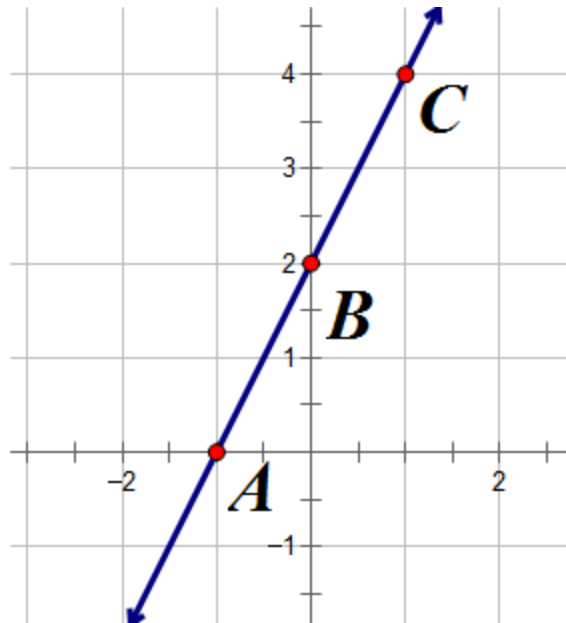
# Counterexamples

- \* Frank notices that the first five students to exit Miss Wiltjer's class today were male. Frank conjectures that ***all students in Miss Wiltjer's class are male.***
- \* Counterexample:  
Mahina is in Miss Wiltjer's class and is a female.
- \*  $\therefore$  Frank's conjecture is false

# Counterexamples & Conjectures

Write a conjecture based on the given information. If appropriate, draw a figure to illustrate your conjecture.

- \* Given:  $A(-1, 0)$ ,  $B(0, 2)$ ,  $C(1, 4)$
- \* Conjecture: Points  $A$ ,  $B$ , and  $C$  are collinear.



# Counterexamples & Conjectures

Determine if the conjecture is true or false based on the given information. If true, explain your answer. If false, state a counterexample.

- \* Given:  $\angle 1$  and  $\angle 2$  are supplementary angles.  
 $\angle 1$  and  $\angle 3$  are supplementary angles.
- \* Conjecture:  $\angle 2 \cong \angle 3$

True.

If  $\angle 1$  and  $\angle 2$  are supplementary, the sum of their angles is 180.

Then,  $m\angle 2 = 180 - m\angle 1$ .

By the same logic,  $m\angle 3 = 180 - m\angle 1$ .

Therefore, since both  $m\angle 3$  and  $m\angle 2$  are equal,  $\angle 2 \cong \angle 3$ .

# Counterexamples & Conjectures

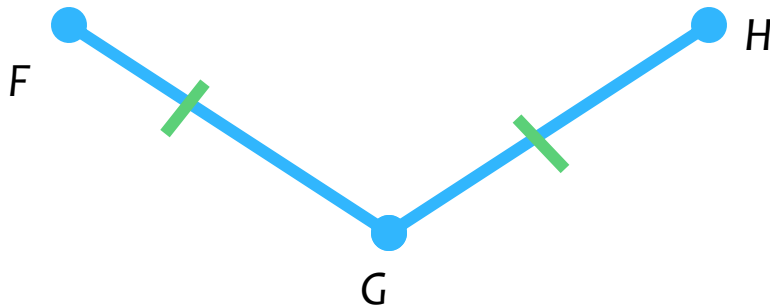
Determine if the conjecture is true or false based on the given information. If true, explain your answer.

If false, state a counterexample.

\* Given:  $\overline{FG} \cong \overline{GH}$

\* Conjecture: G is the midpoint of  $\overline{FH}$

False.



# Homework

\* p. 73 #15-20, 23-26