2 - 1
Inductive Reasoning and Conjecture
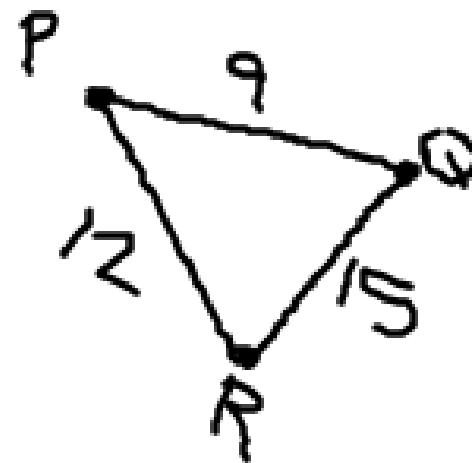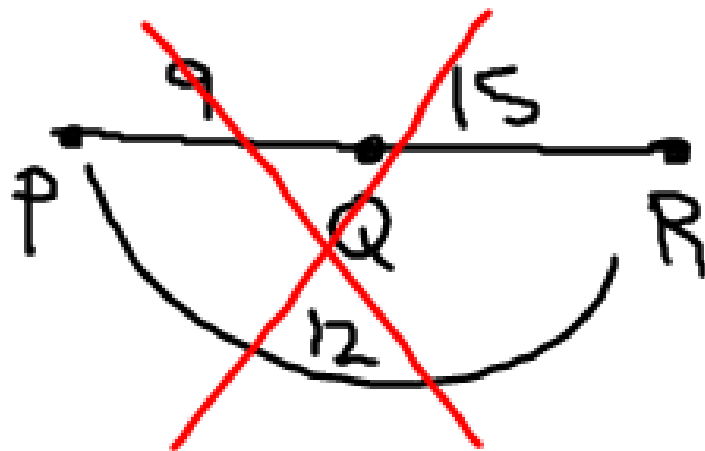
conjecture: an educated guess

inductive reasoning: use a number of specific examples to make a plausible generalization or prediction

Ex: Find a pattern.
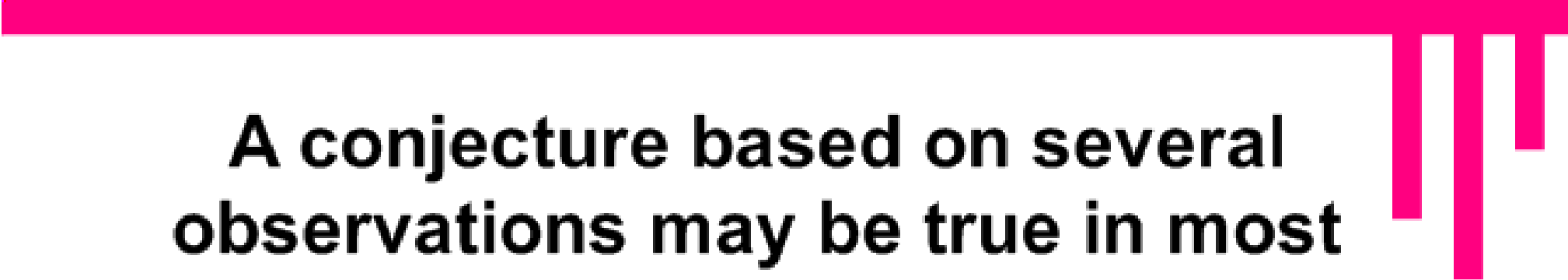
1, 3, 6, 10, 15, ...21 28 36
  +2 +3 +4 +5   +6   +7 +8

Geometric Conjecture

For points P, Q, and R, PQ = 9, QR = 15, and PR = 12. Make a conjecture and draw a figure to illustrate your conjecture.

noncollinear

A conjecture based on several observations may be true in most circumstances but false in others.

It takes only one false example to show that a conjecture is not true.

(COUNTEREXAMPLE)

Determine whether each conjecture is true or false. If false, give a counterexample.
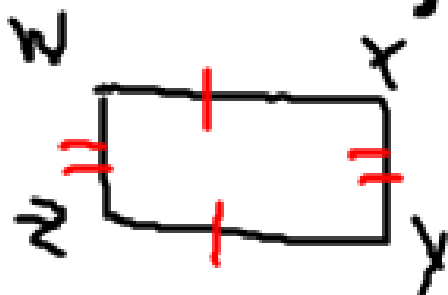
Ex: Given: x is an integer
   Conjecture: -x is a negative

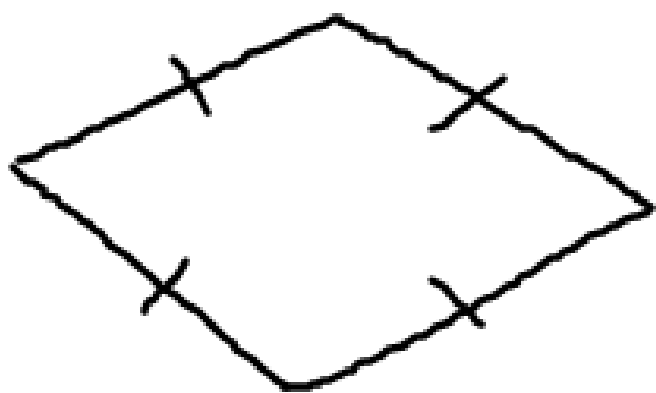$Z: \ldots -3, -2, -1, 0, 1, 2, 3, \ldots$ $\searrow -1 \cdot x$

false, $x = -3$

Ex: Given: WXYZ is a rectangle
   Conjecture: WX = YZ and WZ = XY
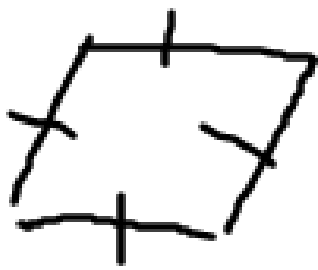
true

Ex: Given: JK = KL = LM = MJ
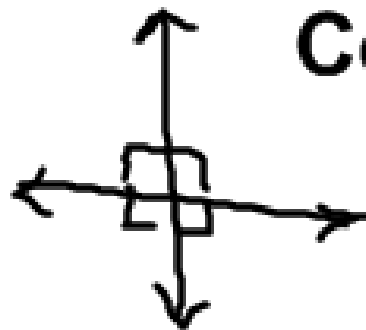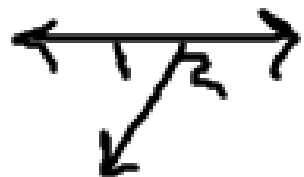**Conjecture: JKLM is a square**

false

→ rhombus

Make a conjecture based on the given information.

Ex: Given: lines l and m are perpendicular

Conjecture: l and m form 4 right angles

Ex: Given: ∠3 and ∠4 are a linear pair

Conjecture: ∠3 and ∠4 are supplementary

$m\angle 3 + m\angle 4 = 180$

Homework:

p.64 #11-18, 24-28