

1.1 Patterns + Inductive Reasoning

Chapter Goal:

Be able to measure segments and angles
Divide segments + angles into two equal parts
Relationships among special pairs of angles

Objective

Find + describe patterns

Warm-up evaluate the expression

$$x^2, x = .5, 1, -1$$

$$(x+1)(x-1), x = 1, 2, 3$$

$$\frac{(x+1)}{2}, x = 1, 2, 3$$

$$\sqrt{x}, x = \frac{1}{4}, 4, 9$$

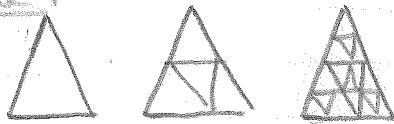
Vocab

Conjecture - unproven statement that is based on observations

Counter Example - an example that shows a conjecture is false

Inductive Reasoning - a process that involves looking for patterns and making conjectures

Example 1



Example 2 Describe the pattern and predict the next #
5, 3, 1, -1 1, -4, 9, -16 $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$

Complete the conjecture

The product of two consecutive even integers is ?
- $2 \cdot 4 = 8$ / $4 \cdot 6 = 24$ / $6 \cdot 8 = 48$

The sum of the first n odd integers is ?

$$1 = 1$$

$$1+3 = 4$$

$$1+3+5 = 9$$

$$1+3+5+7 = 16$$

Finding a counter example

All odd #'s are prime

- False, 9 is odd but has factors of 3, not prime

Closure

- What is a conjecture?

- The sum of two numbers is equal to the sum of the squares of the two numbers. That is; $(a+b)^2 = a^2 + b^2$

