Reasoning and Geometry

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Inductive Reasoning: The process of coming to a conclusion through experimentation.

Your conclusion is called a **conjecture.**

Examples:

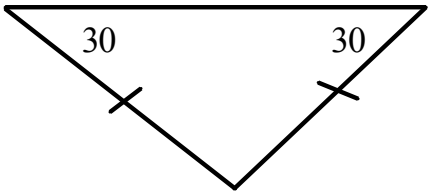
$5 + 7 = 12$

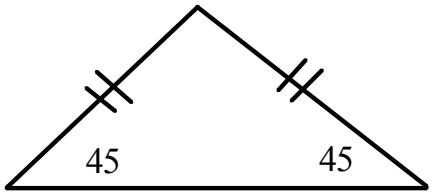
$21 + 93 = 114$

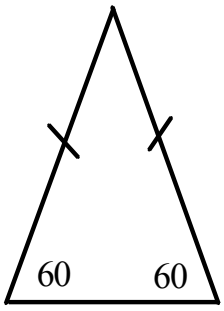
$347 + 209 = 556$

Conjecture:

The sum of 2 odd numbers is an even #.







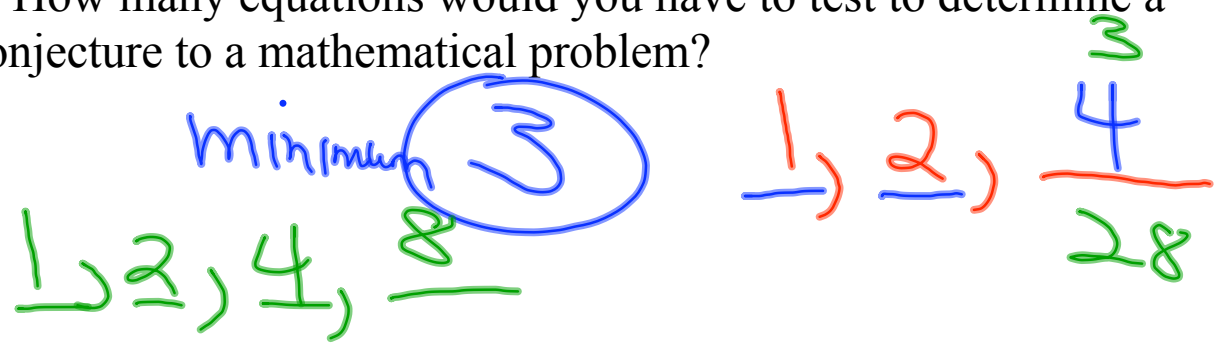
Conjecture:

How many times do you need to test before you can come to a conjecture?

a) How many times would you have to touch a stove element before you conclude it burns you?

b) How many times would you have to test samples of rope before you determine the maximum load that it will hold?

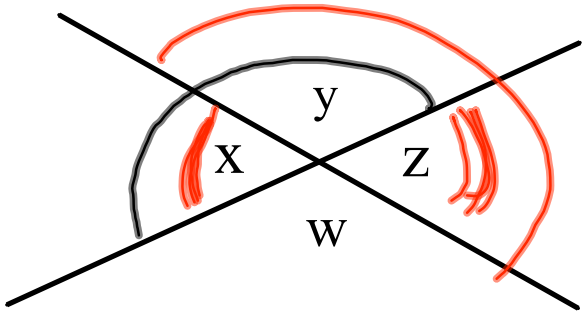
c) How many equations would you have to test to determine a conjecture to a mathematical problem?



You must be **absolutely** sure of your conjecture. When can this be so?

Deductive Reasoning: Coming to conclusions based on statements that we accept to be true.

Prove that opposite angles in the following diagram are equal in measure.



$x + y = 180°$

$y + z = 180°$

x, z vertically opposite $\angle$'s

$y, w \rightarrow$

$x + y = y + z$

$-y \quad -y$

$x = z$

Prove the following inductively and deductively.

Inductive:

Choose a number	7	7582	1	x
Double it	14	15164	2	2x
Add 5	19	15169	7	2x+5
Add your original number	26	22751	8	3x+5
Add 7	33	22758	15	3x+12
Divide by 3	11	7586	5	x+4
Subtract the original number	4	4	4	4

Deductive: Variable

Proves a conjecture for all possible situations.

Reasoning and Geometry

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Here's another one!!!! You need your calculator for this.

1. Key in the first 3 digits of your phone number

2. Multiply by 80

3. Add 1

4. Multiply by 250

5. Add the last 4 digits of your phone number

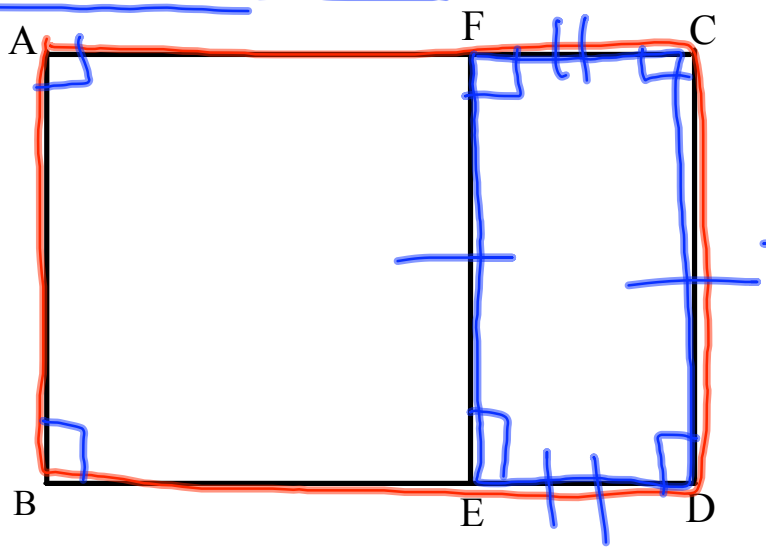
6. Add the last 4 digits of your phone number again

7. Subtract 250

8. Divide by 2

Do you recognize this answer???

In the figure, ABCD is a rectangle and ABEF is a square. Explain why FECD is a rectangle



$FC = ED$

$EF = CD$

$\angle F = \angle C = \angle D = \angle E$

90°

Defn of □

a figure with 4 sides where all angles measure 90° and opposites sides are equal in measure and parallel.

Assignment:

Pg. 371 1, 2, 4, 6, 7

Pg. 375 1, 2, 3, 5, 6, 8