

# Finding Errors in Reasoning

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An excellent way to discredit a person is to find an error in their reasoning.

## Example:

Premise  
Athletes do not compete in both the summer and winter Olympics. Hayley Wickenheiser has represented Canada four times at the winter Olympics. Therefore, Hayley Wickenheiser has not participated in the summer Olympic.

Find the error

Faulty Premise. You can compete in both Summer and Winter olympics.

## Example

I can prove that  $3=4$

Let  $A+B=C$

then  $4a-3a+4b-3b=4c-3c$   
 $4a+4b-4c=3a+3b-3c$   
 $4(a+b-c)=3(a+b-c)$   
 $\frac{4(a+b-c)}{a+b-c} = \frac{3(a+b-c)}{a+b-c}$   
 $4=3$

$A+B=C$   
 $-c -c$   
 $A+B-C=0$

Error: Division by zero

I can prove  $-5=5$

Assume  $-5=5$  Faulty Assumption  
 $(-5)^2=5^2$   
 $25=25$   
 $\therefore -5=5$

Where is the error in this number trick. Choose any number. Add 3. Double it. Add 4. Divide by 2. Take away the number you started with. You should end up with 5.

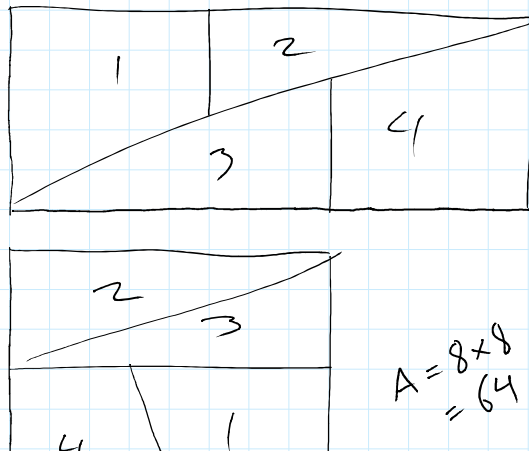
$n$   
 $n+3$   
 $2n+6$   
 $2n+10$   
 $2n+5$   
 $n+5$

Error

$\frac{2n+10}{2} = n+5$   
 $4n+10-n$   
 $5 \checkmark$

Look for errors in the premises, the assumptions, and then in the processes.

Tomorrow  
 Bring your favourite board game to class tomorrow.



$A=5 \times 13$   
 $=65$

Error in Premise  
 these are not all the same shapes

$A=8 \times 8$   
 $=64$



$$A = \begin{matrix} 0 \\ 64 \end{matrix}$$

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