Dilation Exemplar Instruction Card

- ❑ Draw an original polygon, label it "original," and estimate its area.*
- ❑ Choose the location of a fixed point and label it "fixed point."
- ❑ Choose a scale factor for an enlargement or a reduction (must fit on the page).
- ❑ Draw dashed lines from the fixed point to each vertex on the polygon.
- ❑ Measure and label the length of each dashed line in centimeters (i.e., 5.1 cm).
- ❑ Multiply each measurement by the scale factor to find the correct distances between the fixed point and the new vertices along the same dashed lines.
- ❑ Draw each new vertex (extend dashed lines as needed), connect the new vertices, and label the new polygon "new."
- ❑ Estimate the new polygon's area. Compare to: $A_{new} = A_{original} \bullet (\text{scale factor})^2$

**Use graph paper and choose a shape with an area that is easy to estimate.*

 Geometry EOC

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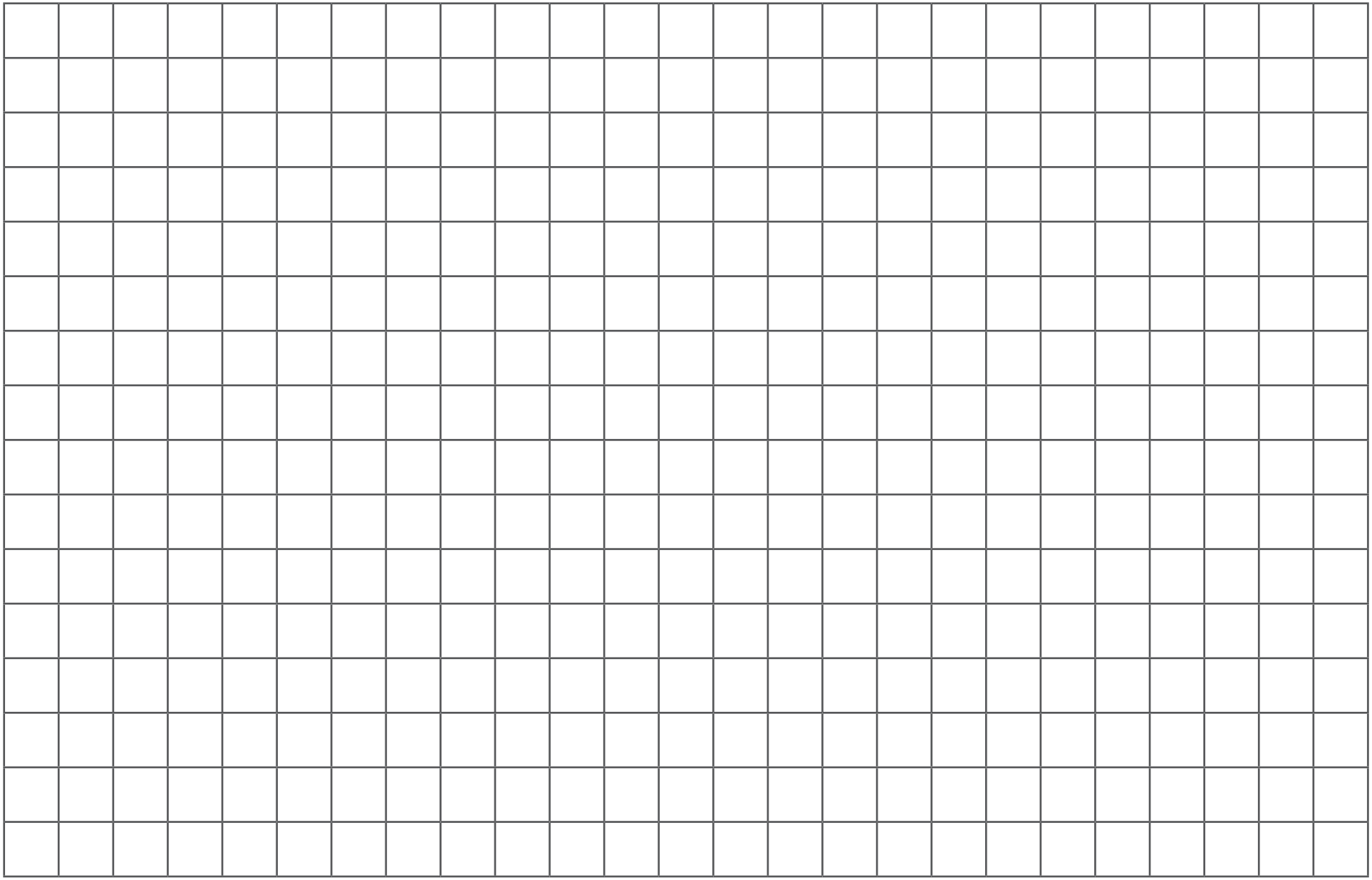
Dilation: _____ **Scale Factor =** _____ **Name:** _____

$A_{original} \approx$ _____ cm^2 $A_{new} \approx$ _____ cm^2 $A_{calculated} =$ ( ) • ( )^2 = _____ cm^2



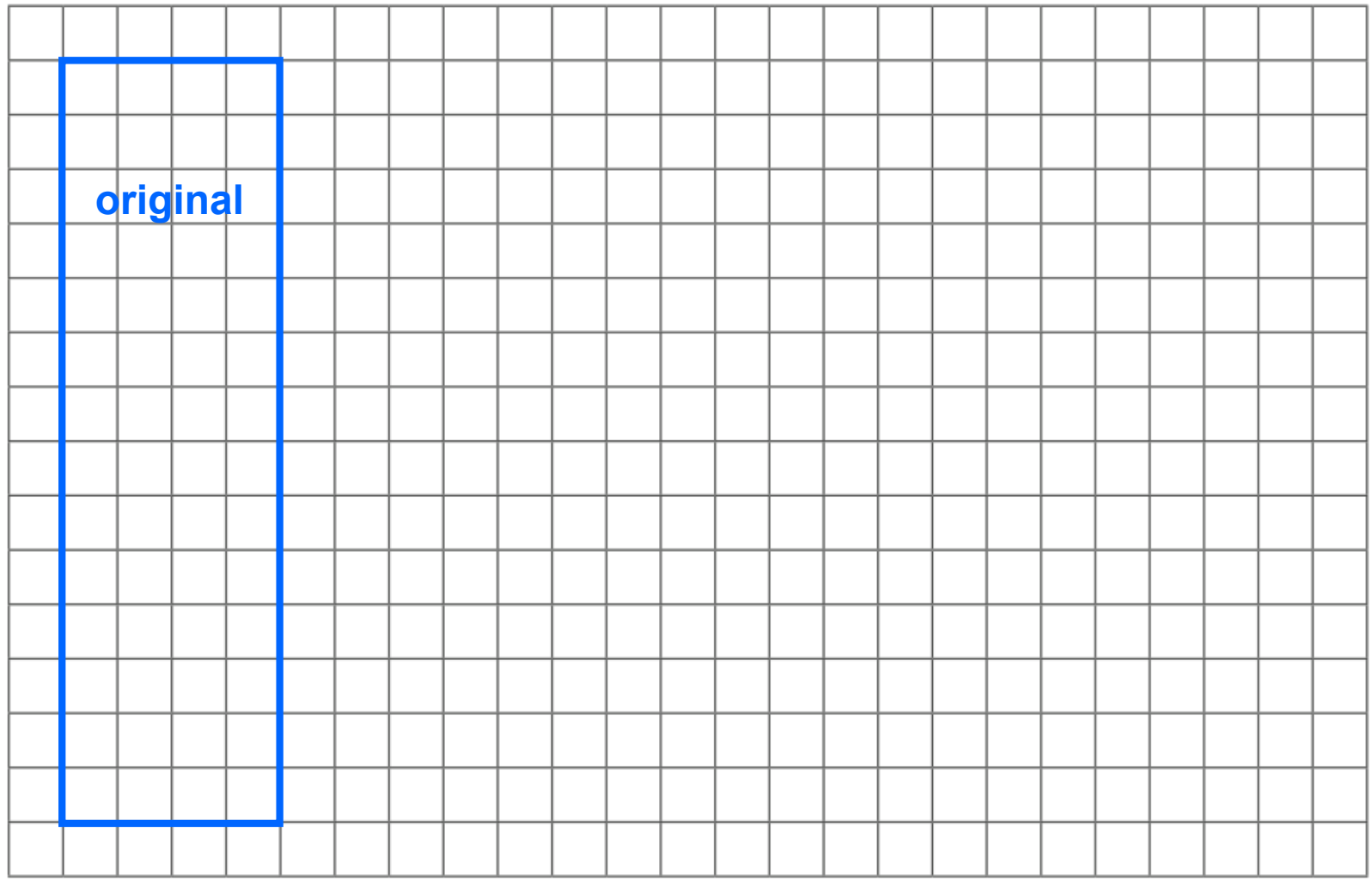
Step-by-step Dilation Guide

❑ Draw an original polygon, label it "original," and estimate its area.*

*Use graph paper and choose a shape with an area that is easy to estimate.

Dilation: _____ **Scale Factor =** _____ **Name:** *Jacky Jackson*

$A_{original} \approx$ 56 cm^2 $A_{new} \approx$ _____ cm^2 $A_{calculated} = (\quad)\bullet(\quad)^2 =$ _____ cm^2

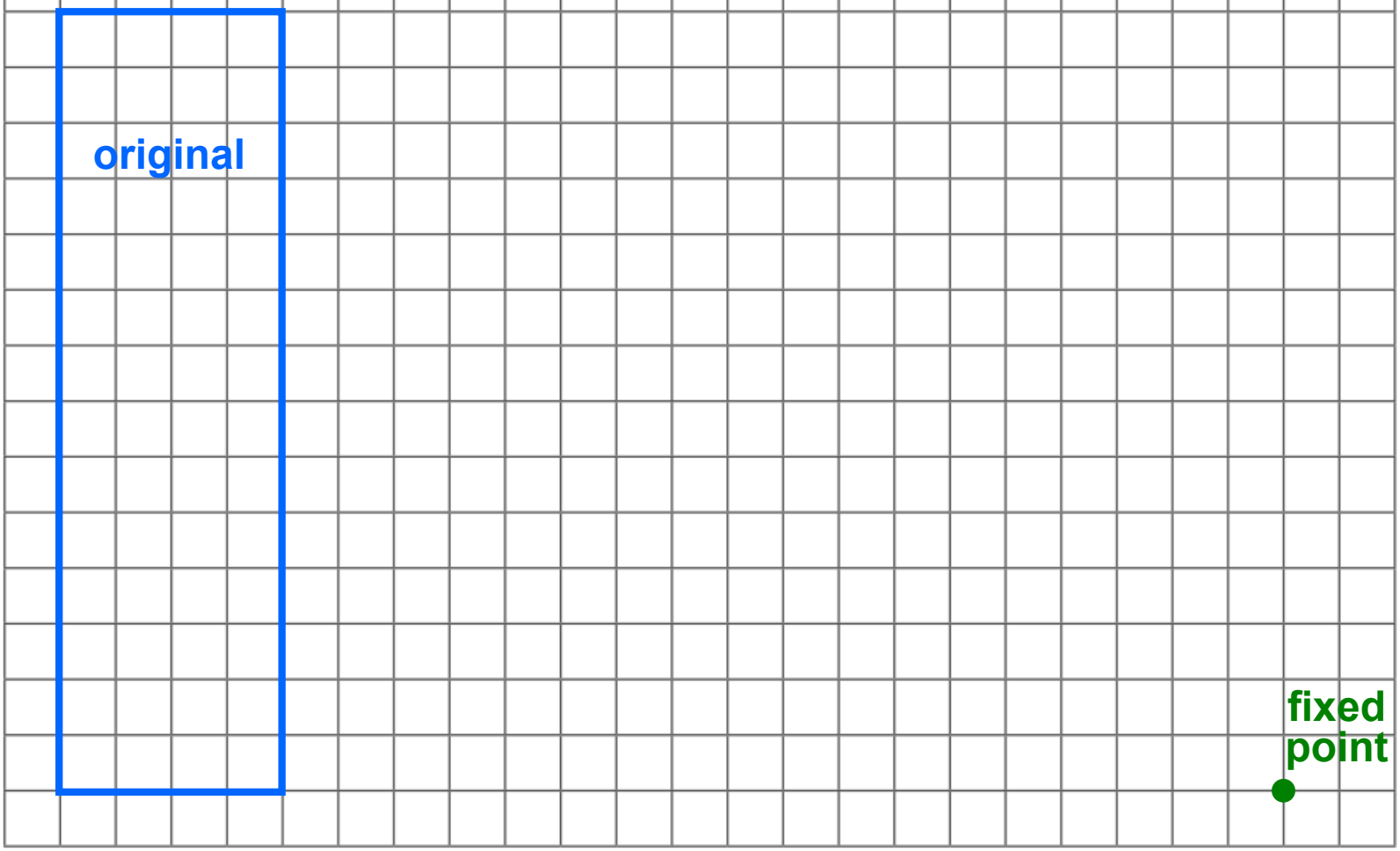


Step-by-step Dilation Guide

❑ Choose the location of a fixed point and label it "fixed point."

Dilation: _____ Scale Factor = _____ Name: *Jacky Jackson*

$A_{original} \approx$ 56 cm^2 $A_{new} \approx$ _____ cm^2 $A_{calculated} = (\quad) \bullet (\quad)^2 =$ _____ cm^2

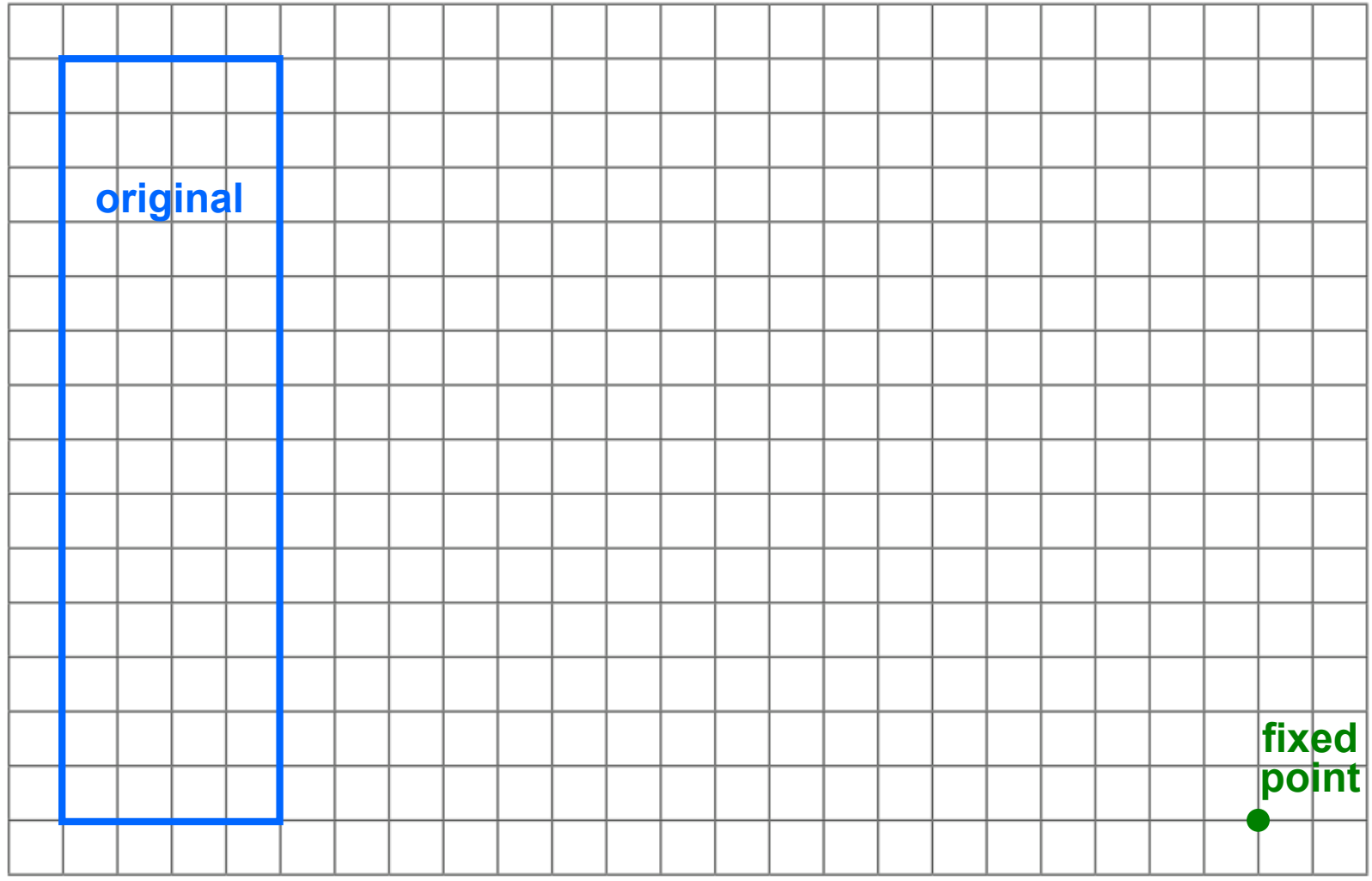


Step-by-step Dilation Guide

❑ Choose a scale factor for an enlargement or a reduction (must fit on the page).

Dilation: Reduction Scale Factor = $\frac{1}{2}$ Name: *Jacky Jackson*

$A_{original} \approx$ 56 cm^2 $A_{new} \approx$ _____ cm^2 $A_{calculated}$ = ( ) • ( )^2 = _____ cm^2

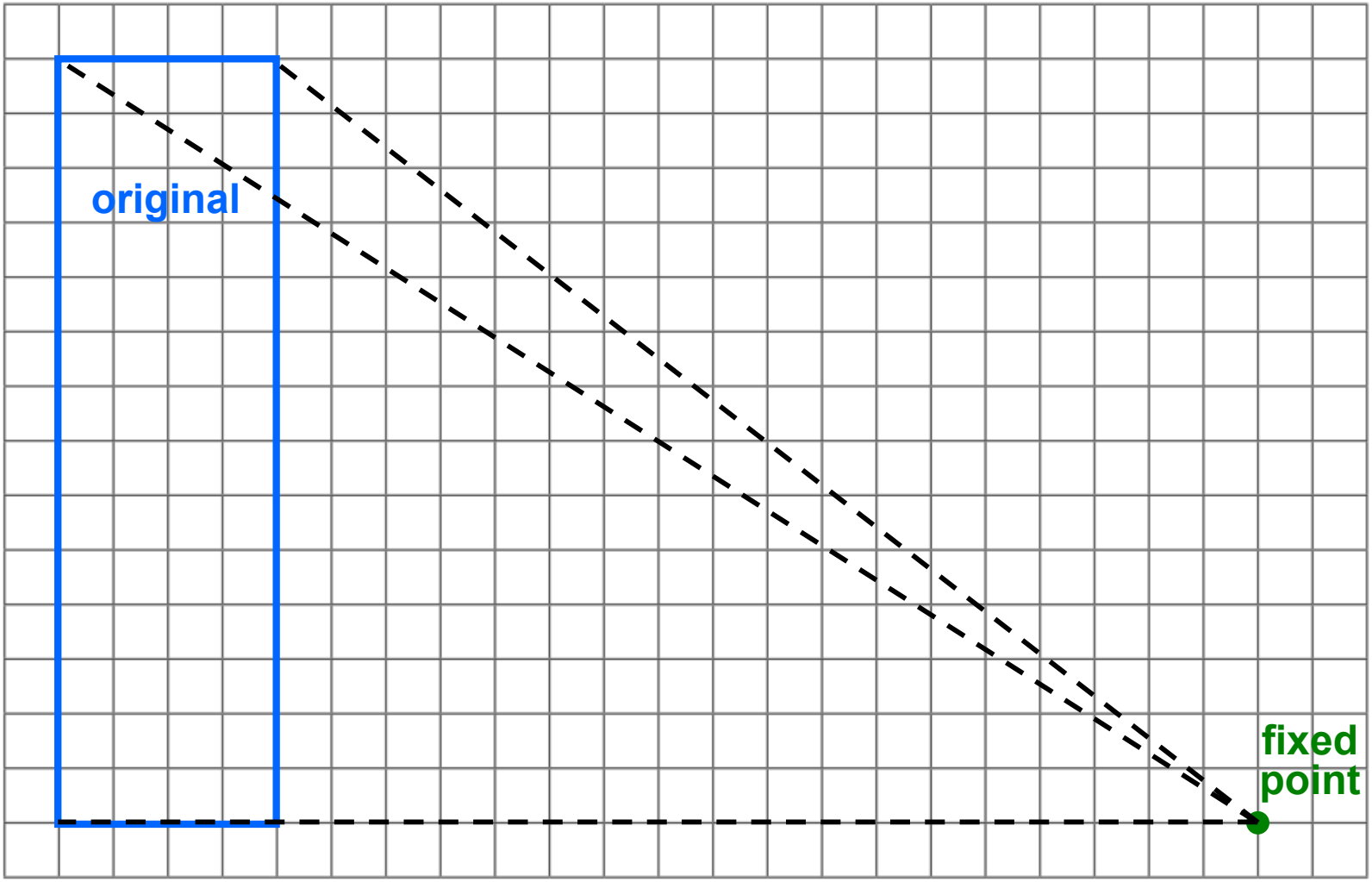


Step-by-step Dilation Guide

❑ Draw dashed lines from the fixed point to each vertex on the polygon.

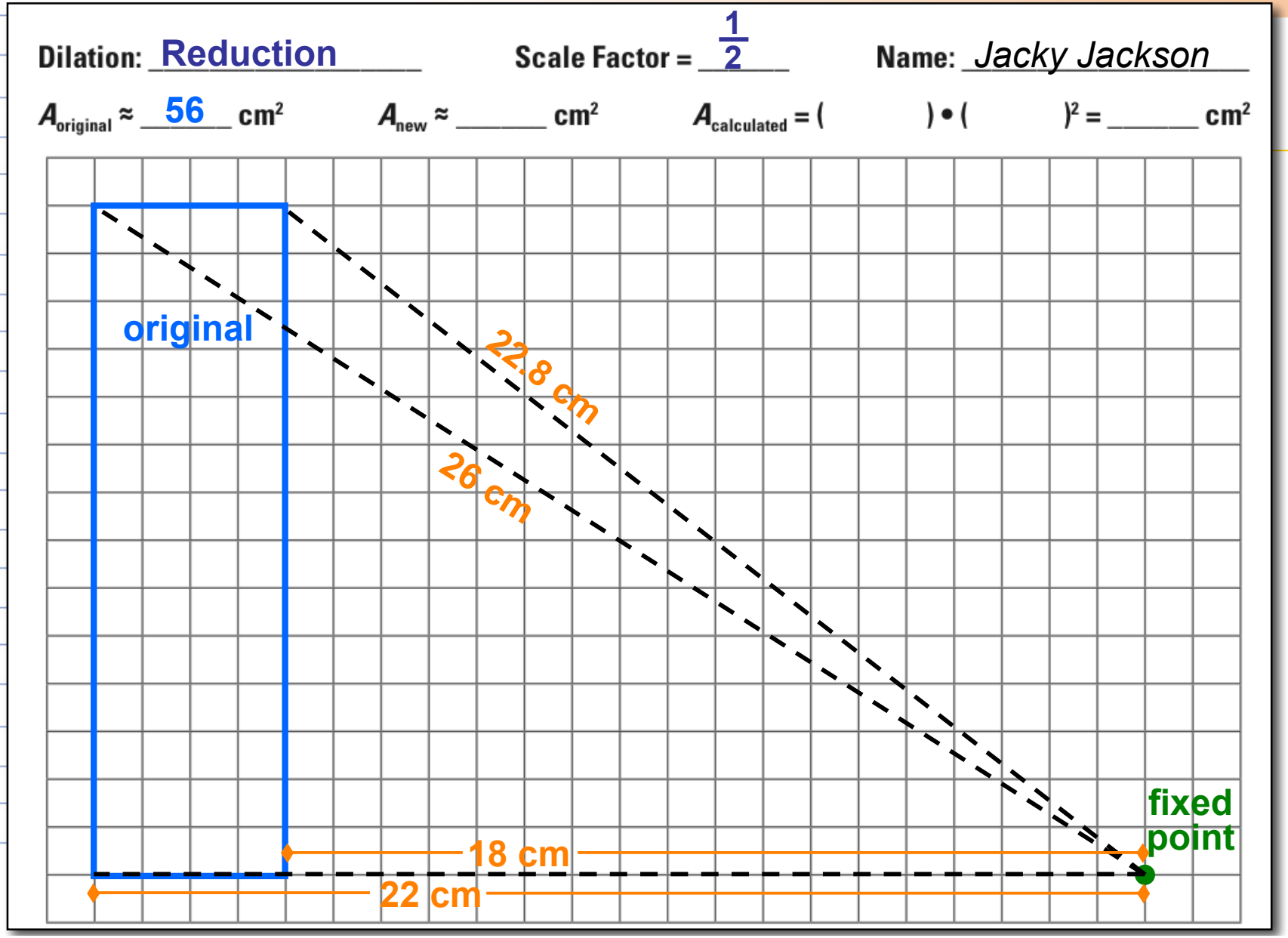
Dilation: Reduction Scale Factor = $\frac{1}{2}$ Name: *Jacky Jackson*

$A_{original} \approx$ 56 cm^2 $A_{new} \approx$ _____ cm^2 $A_{calculated} = (\quad)\bullet(\quad)^2 =$ _____ cm^2



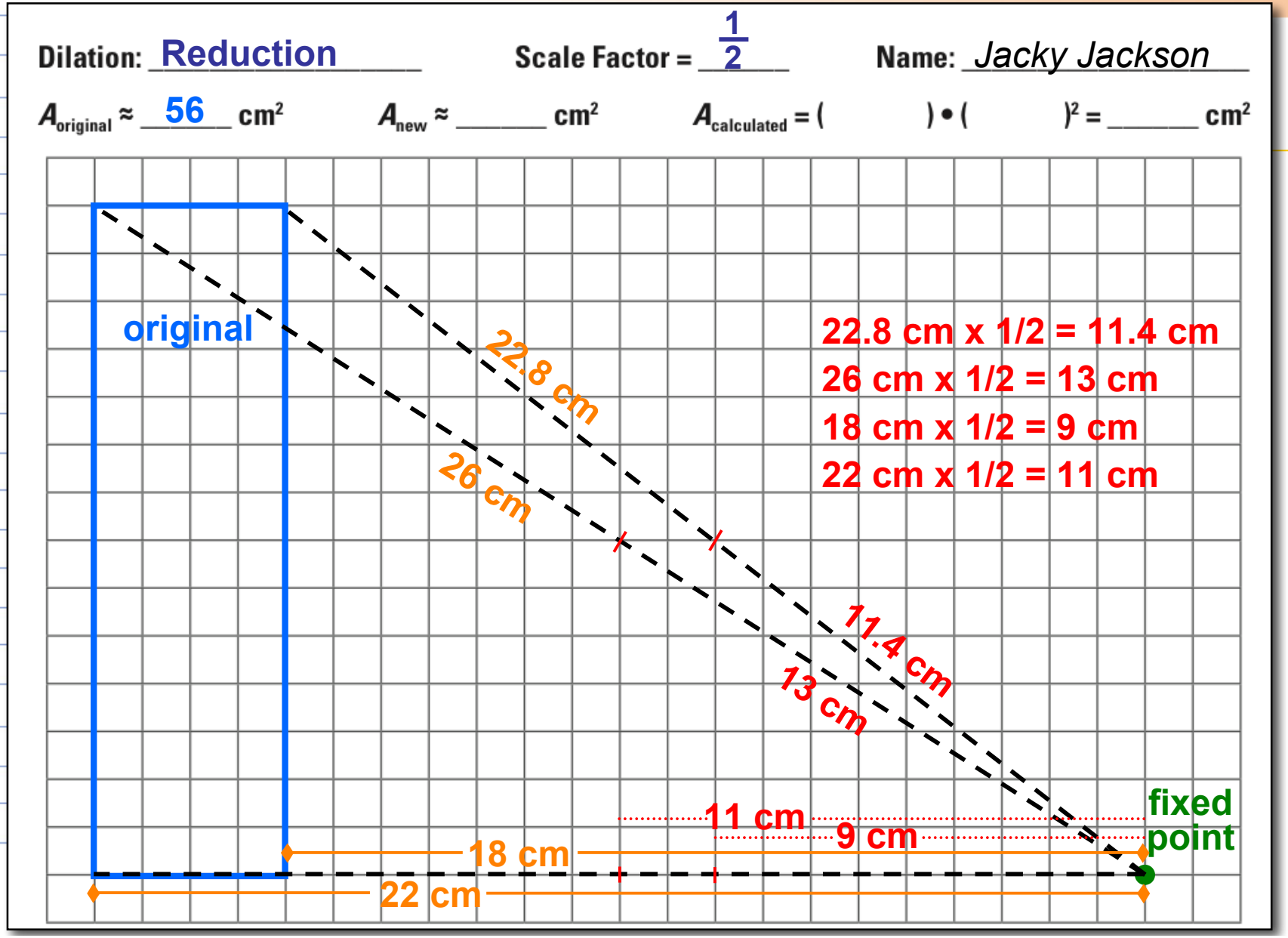
Step-by-step Dilation Guide

❑ Measure and label the length of each dashed line in centimeters (i.e., 5.1 cm).



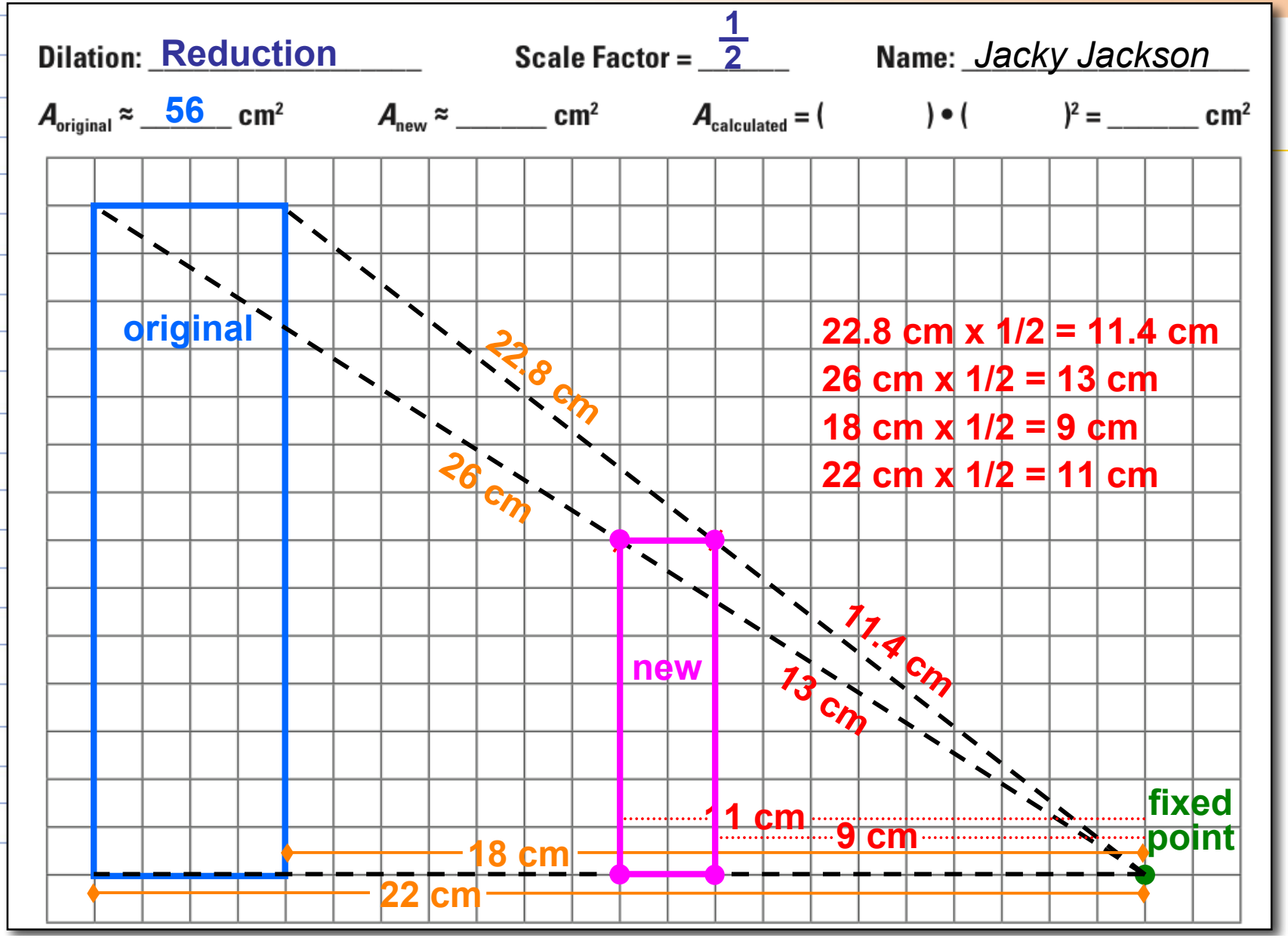
Step-by-step Dilation Guide

- Multiply each measurement by the scale factor to find the correct distances between the fixed point and the new vertices along the same dashed lines.



Step-by-step Dilation Guide

❑ Draw each new vertex (extend dashed lines as needed), connect the new vertices, and label the new polygon "new."

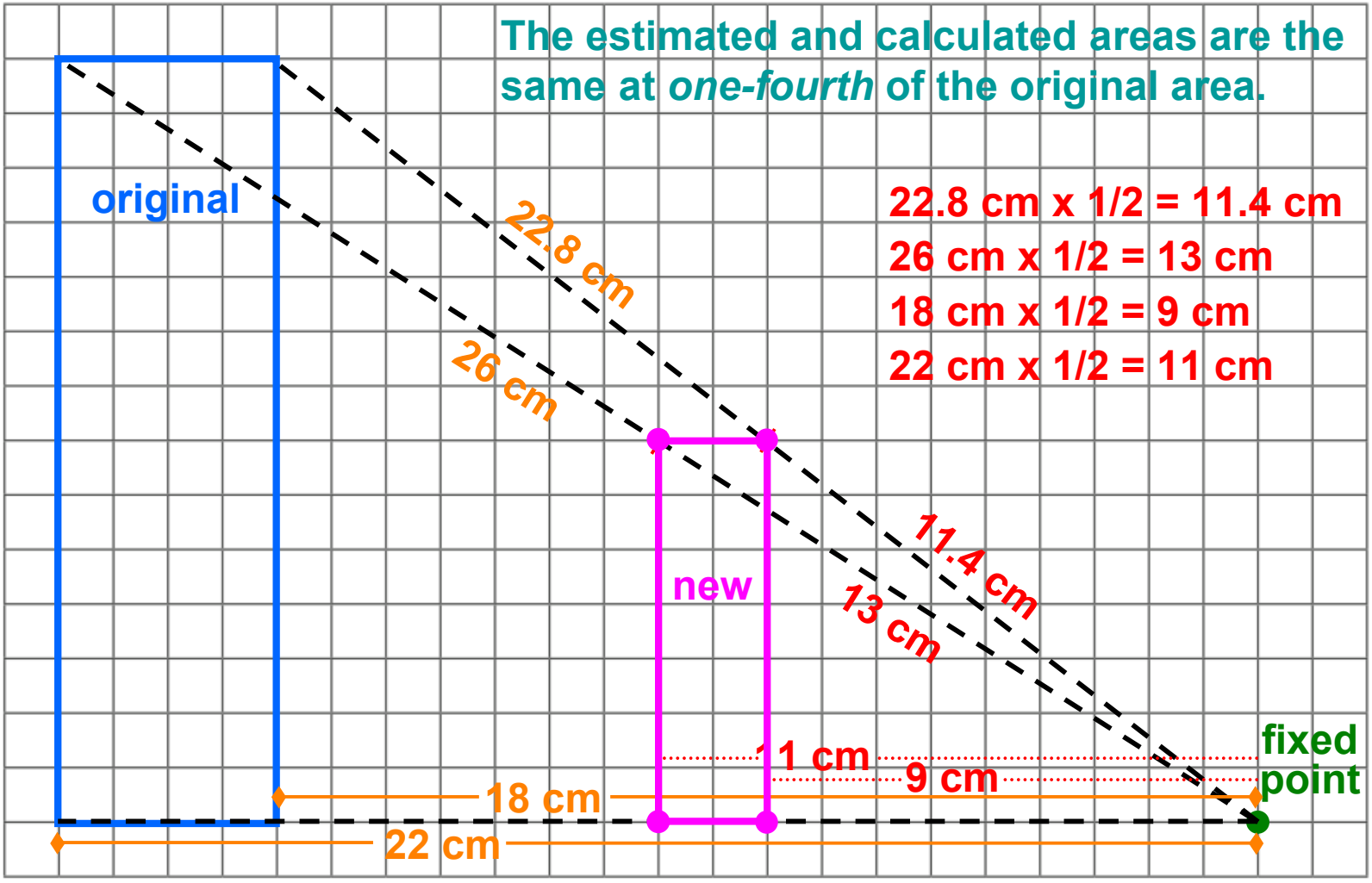


Step-by-step Dilation Guide

- Estimate the new polygon's area.
  Compare to: $A_{new} = A_{original} \cdot (\text{scale factor})^2$

Dilation: Reduction Scale Factor = $\frac{1}{2}$ Name: *Jacky Jackson*

$A_{original} \approx$ 56 cm² $A_{new} \approx$ 14 cm² $A_{calculated} = (\ 56\ ) \cdot (\ \frac{1}{2}\ )^2 =$ 14 cm²

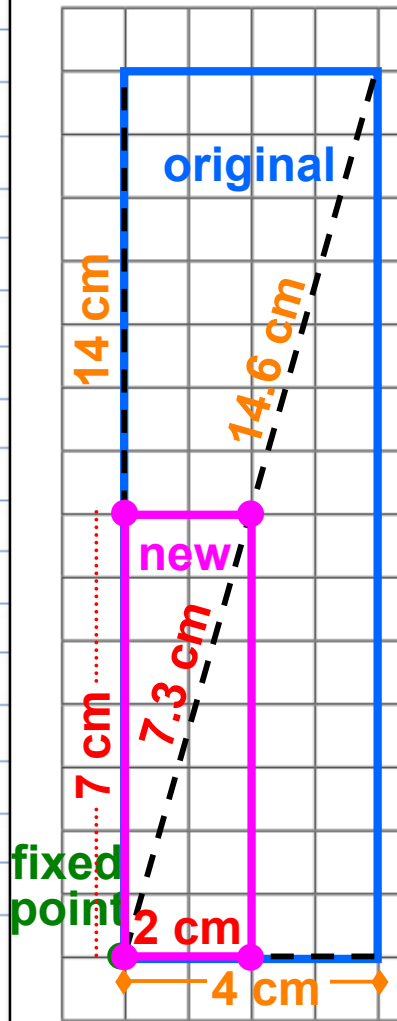


Another Example

What if the fixed point was moved to a vertex?

Dilation: Reduction Scale Factor = $\frac{1}{2}$ Name: *Jacky Jackson*

$A_{original} \approx$ 56 cm² $A_{new} \approx$ 14 cm² $A_{calculated} = ($ 56 $) \bullet ($ $\frac{1}{2}$ $)^2 =$ 14 cm²



The estimated and calculated areas are the same at *one-fourth* of the original area.

0 cm x 1/2 = 0 cm
4 cm x 1/2 = 2 cm
14 cm x 1/2 = 7 cm
14.6 cm x 1/2 = 7.3 cm