

Sample Methods to Discuss: Penelope

$a = 3\text{cm}$
 $b = 5\text{cm}$
 $c = 5.5\text{cm}$

This one trapezoid is three triangles!

Area trapezoid = $\frac{1}{2}(a+b) \times (a+b) = \cancel{32} = \frac{1}{2}(a+b)^2$
 $= \frac{1}{2}(3+5)^2 = \frac{1}{2} \times 64 = 32\text{ cm}^2$

Area triangle = $\frac{1}{2} \times a \times b = \frac{1}{2} \times 3 \times 5 = 7.5\text{ cm}^2$
 Two of them = 15 cm^2
 Other triangle = $\frac{1}{2} \times c^2 = \frac{1}{2} \times 5.5^2 = 15.125\text{ cm}^2$
 Altogether $15\text{ cm}^2 + 15.125\text{ cm}^2 \approx 32\text{ cm}^2$.

1. What connects Penelope's diagram to the Pythagorean Theorem?

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2. Is Penelope's reasoning convincing? Explain your answer.

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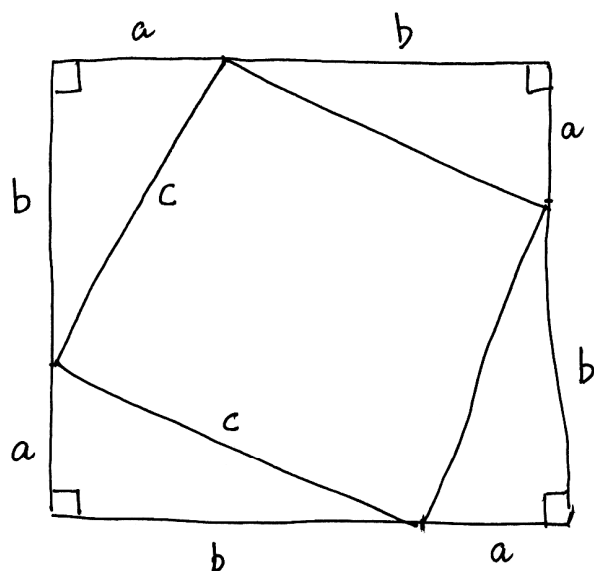
3. Explain how Penelope could improve her proof.

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Sample Methods to Discuss: Nadia



Area of middle square = c^2

Area of four triangles = $\frac{1}{2} \times a \times b \times 4 = 2 \times a \times b$.

Total area = $(a+b)^2 = a^2 + b^2$

1. Describe the method Nadia used in her proof.

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2. Is Nadia's reasoning convincing? Explain your answer.

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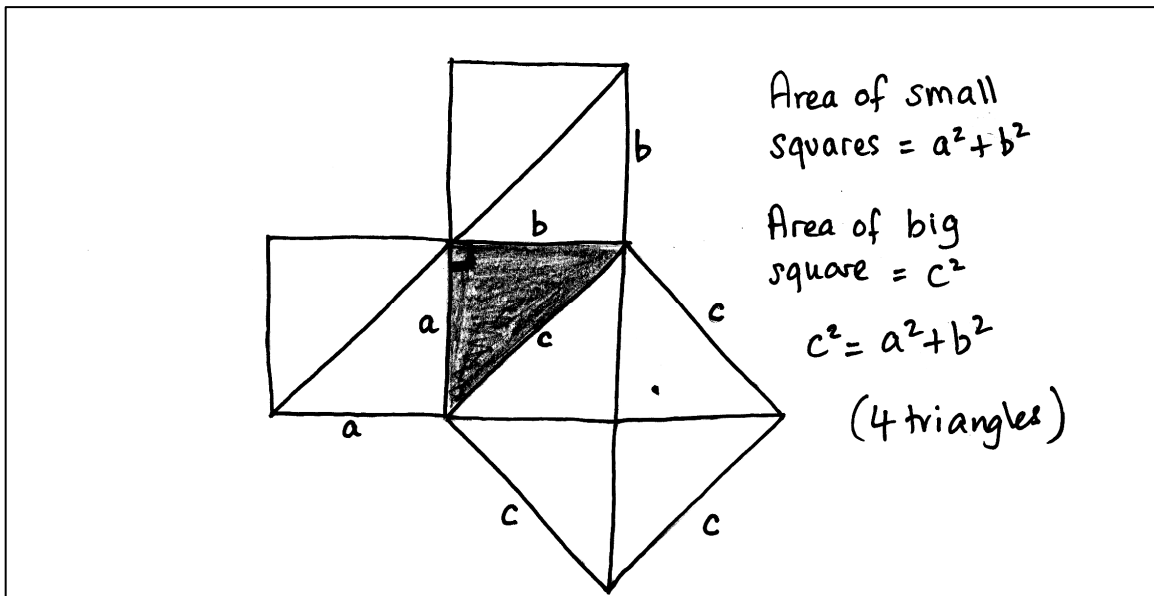
3. Explain how Nadia could improve her proof.

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Sample Methods to Discuss: Sophie



1. What type of triangle does Sophie use in her proof?

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2. Is Sophie's reasoning convincing? Explain your answer.

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3. Explain how Sophie could improve her proof.

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Comparing the Sample Methods

1. Compare the work written by Penelope, Nadia, and Sophie.

Whose solution method do you find most convincing? Why?

2. Produce a complete and correct proof using your preferred method.

Your teacher has grid paper if you want to use it.
