

Warm-up: Work independently, then discuss your work with a partner.

Fill in the missing expressions by rewriting the given expression in either *factored form* or *standard form*.

Factored form	Standard form
$(x - 3)(x - 5)$	
$x(x - 5)$	
	$x^2 + 6x + 5$
$(2x + 3)(x + 6)$	

Use this space for work

Were you able to rewrite any expressions "in your head" (without the area model)? If so, what shortcuts did you use?

Exploration: Work independently, then discuss your work with a partner.

ACTIVITY 1: Finding a shortcut

Look at the expressions in the table below. *What do you notice?*

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Rewrite the following expressions in standard form.

$(x + 1)(x + 1) =$	$(x - 1)(x - 1) =$
$(x + 2)(x + 2) =$	$(x - 2)(x - 2) =$
$(x + 3)(x + 3) =$	$(x - 3)(x - 3) =$
$(x + 5)(x + 5) =$	$(x - 5)(x - 5) =$

Can you think of a shortcut? Describe your shortcut. How does it work?

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Give two other expressions (in factored form) that will work with your shortcut:

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Will your shortcut work for $(x + 1)(x + 2)$? How do you know?

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Will your shortcut work for $(2x + 1)^2$? How do you know?

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Will your shortcut work for $(x^2 + 3)(x^2 + 3)$? How do you know?

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Will your shortcut work for $x^2 - 15x^2 + 30$? How do you know?

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Application & Reflection: Work independently, then discuss your work with a partner.

ACTIVITY 2: Working backwards

Use your shortcut to help you work backwards to rewrite the following expressions in factored form.

$x^2 + 8x + 16$	$x^2 - 8x + 16$
$x^2 + 12x + 36 =$	$x^2 - 12x + 36 =$
$x^2 + 20x + 100 =$	$x^2 - 20x + 100 =$
$4x^2 + 4x + 1 =$	$4x^2 - 4x + 1 =$
$x^4 - 20x^2 + 100 =$	$x^4 + 20x^2 + 100 =$