Name: _____

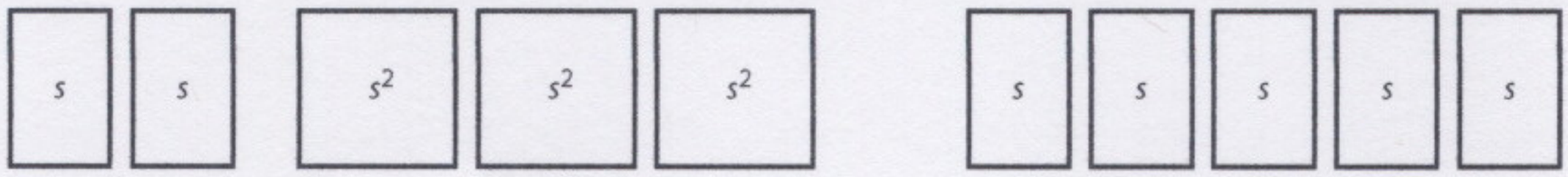
Determine Whether Expressions Are Equivalent

Study the example problem showing how to determine whether expressions are equivalent. Then solve problems 1–7.

Example

Is $2s + 3s^2$ equivalent to $5s$?

Use math tiles to model $2s + 3s^2$ and $5s$.



The expression $2s + 3s^2$ is not equivalent to $5s$.

1 Are the terms $2s$ and $3s^2$ like terms? Explain.

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_____

2 Explain how the tiles show that $2s + 3s^2$ is not equivalent to $5s$.

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3 Use substitution to prove that $2s + 3s^2$ is not equivalent to $5s$.

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4 Use the distributive property to write an expression that is equivalent to $2s + 3s^2$.

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Solve.

5 Look at the expressions $s^2 + 2s^2$ and $3s^2$.

a. Draw math tiles to model $s^2 + 2s^2$ and $3s^2$. Does your model show that they are equivalent expressions? Explain.

b. Use substitution to check your answer in part (a).

6 Use the terms 4, $12a$, 6, $2a$, and 24 to make equivalent expressions. Use each term only once. Use substitution to prove that the expressions are equivalent.

Show your work.

Solution:

7 Bethany says that $3x + 6 + x$ and $3(x + 2)$ are equivalent expressions. She used substitution to support her answer. Explain what Bethany did wrong.

Let $x = 2$.

$3x + 6 + x = 3(2) + 6 = 6 + 6 = 12$

$3(x + 2) = 3(2 + 2) = 3(4) = 12$

$12 = 12$