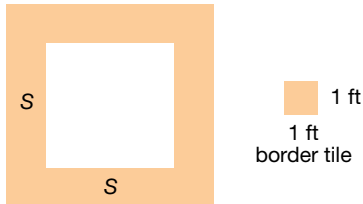


**Task 5: Swimming Pool**

You want to build a square swimming pool in your backyard. Let  $s$  denote the length of each side of the swimming pool (measured in feet). You plan to surround the pool by square border tiles, each of which is 1 foot by 1 foot (see figure).



A teacher asks her students to find an expression for the number of tiles needed to surround such a square pool, and sees the following responses from her students:

$$4(s+1)$$

$$s^2$$

$$4s+4$$

$$2s+2(s+2)$$

$$4s$$

Is each mathematical model correct or incorrect? How do you know?

$$4(s+1)$$

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$$s^2$$

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$$4s+4$$

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$$2s+2(s+2)$$

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$$4s$$

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**Task #6: Smartphones**

Suppose  $p$  and  $q$  represent the price (in dollars) of a 64GB and a 32GB smartphone, respectively, where  $p > q$ . Interpret each of the expressions in terms of money and smartphones. Then, if possible, determine which of the expressions in each pair is larger.

$p+q$  and  $2q$

$p+0.08p$  and  $q+0.08q$

$600-p$  and  $600-q$

**Task #7: University Population**

Let  $x$  and  $y$  denote the number male and female students, respectively, at a university. where  $x < y$ . If possible, determine which of the expressions in each pair is larger? Interpret each of the expressions in terms of populations.

$$x+y \text{ and } 2y$$

$$\frac{x}{x+y} \text{ and } \frac{y}{x+y}$$

$$\frac{x-y}{2} \text{ and } \frac{x}{x+y}$$

**Independent Practice**

For each pair of expressions below, without substituting in specific values, determine which of the expressions in the given pairs is larger. Explain your reasoning in a sentence or two.

$$5+t^2 \text{ and } 3-t^2$$

$$\frac{15}{x^2+6} \text{ and } \frac{15}{x^2+7}$$

$$(s^2+2)(s^2+1) \text{ and } (s^2+4)(s^2+3)$$

$$\frac{8}{k^2+2} \text{ and } k^2+2$$