

16. *Counterexample:* Let  $x = 3/2$ . Then  $\lfloor x^2 \rfloor = \lfloor (3/2)^2 \rfloor = \lfloor 9/4 \rfloor = 2$ , whereas  $\lfloor x \rfloor^2 = \lfloor 3/2 \rfloor^2 = 1^2 = 1$ .

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20. *Counterexample:* Let  $x = y = 1.1$ . Then  $\lceil x \cdot y \rceil = \lceil (1.1) \cdot (1.1) \rceil = \lceil 1.01 \rceil = 2$ . On the other hand,  $\lceil x \rceil \cdot \lceil y \rceil = \lceil 1.1 \rceil \cdot \lceil 1.1 \rceil = 2 \cdot 2 = 4$ .