

Answers

1 • Square Tiles

A $2 \times 2 = 4$ | $3 \times 3 = 9$ | $4 \times 4 = 16$ |
 $5 \times 5 = 25$
 B $1^2 = 1$ | $2^2 = 4$ | $3^2 = 9$ | $4^2 = 16$ |
 $5^2 = 25$ | $6^2 = 36$ | $7^2 = 49$ | $8^2 = 64$ |
 $9^2 = 81$ | $10^2 = 100$

Typical mistake: $6^2 = 12$. Correct: $6^2 = 6 \times 6 = 36$.

2 • Big Squares

A $12^2 = 120 + 24 = 144$
 $14^2 = 140 + 56 = 196$
 $16^2 = 160 + 96 = 256$
 $18^2 = 180 + 144 = 324$
 B $11^2 = 121$ | $12^2 = 144$ | $13^2 = 169$ |
 $14^2 = 196$ | $15^2 = 225$ | $16^2 = 256$ |
 $17^2 = 289$ | $18^2 = 324$ | $19^2 = 361$ |
 $20^2 = 400$
 C $17^2 = 289$ | $13^2 = 169$ | $19^2 = 361$ |
 $11^2 = 121$ | $15^2 = 225$ | $20^2 = 400$ |
 $14^2 = 196$ | $16^2 = 256$

3 • Square Detective

A $14 \times 14 = 196$ | $9 \times 9 = 81$ |
 $17 \times 17 = 289$ | $15 \times 15 = 225$ |
 $19 \times 19 = 361$ | $12 \times 12 = 144$
 B 64: **yes** | 90: **no** | 121: **yes** | 150: **no** |
 169: **yes** | 200: **no** | 256: **yes** | 324: **yes**
 C $100 < 110 < 121$ | $196 < 200 < 225$ |
 $289 < 300 < 324$ | $361 < 390 < 400$
 D $13^2 < 170$ | $12 \times 14 < 13^2$ | $15^2 > 220$ |
 $11^2 > 100 + 20$ | $16^2 > 250$ | $9^2 > 8 \times 10$
 E 7^2 means $7 \times 7 = 49$. Pixel did 7×2 .

4 • Pattern Garden

A 1 | 4 | 9 | 16 | 25, 10 odd numbers: 100
 B $12 \times 14 = 168$, $13^2 = 169$ |
 $14 \times 16 = 224$, $15^2 = 225$ |
 $18 \times 20 = 360$, $19^2 = 361$ | $16 \times 18 = 288$
 Pattern: the product of the two neighbors is always 1 less than the square of the middle number.
 1: $15 \times 15 = 225$. 225 tiles are needed.
 2: $14 \times 14 = 196$ ($15 \times 15 = 225$ would be too many), $200 - 196 = 4$. He lays 14 tiles in each row, and 4 tiles are left over.

5 • Test Check

A $16^2 = 256$ | $13 \times 13 = 169$ | $9^2 = 81$ |
 $19^2 = 361$ | $8 \times 8 = 64$ | $12^2 = 144$ |
 $18 \times 18 = 324$ | $15^2 = 225$ | $7^2 = 49$ |
 $16 \times 16 = 256$ | $18^2 = 324$ | $20 \times 20 = 400$
 B 1: **true** | 2: **false** | 3: **false** | 4: **true** |
 5: **false** | 6: **true**
 C 1: 169 | 2: 289 | 3: 256

For grown-ups: what helps most

- The square numbers up to 20^2 should be known by heart, forward and backward. 5 minutes of the trainer a day is enough.
- Most common mistake: reading 7^2 as 7×2 . Have the child say it out loud: "7 times 7".
- The staircase (jumps 21, 23, 25, ...) is a good self-check for the big square numbers.