Square numbers

1. a) Use 16 counters to make these arrays.

b) What do you notice about the shape of one of the arrays?

________________________

c) Is 16 a square number? How do you know?

2. a) Is it possible to make a square array with 8 counters?
   __________

b) Is it possible to make a square array with 9 counters?
   __________

c) Which number is a square number?
   How do you know?
   __________________________
   __________________________

3. Which of these numbers are square numbers? Circle your answers.

   4  10  18  25

4. Dexter makes a square using 12 counters.

   12 is a square number as I can make the counters into a square.

What mistake has Dexter made?

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5. Whitney is working out a calculation.

   $8 \times 8 = 16$

What mistake has Whitney made?

________________________

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6. The arrays below show a sequence.
   a) Complete the number sentences. Use the arrays to help you.

   \[
   \begin{align*}
   1 \times 1 &= \square \\
   2 \times 2 &= \square \\
   3 \times \square &= \square \\
   \square \times \square &= \square \\
   \end{align*}
   \]

   b) What do these numbers have in common?

   c) Draw the next two numbers in the sequence and write a number sentence for each.

   d) What would the next four numbers in the sequence be?

7. Complete the statements.
   a) \(6^2 = \square\)
   b) \(12^2 = \square\)
   c) \(\square = 9^2\)
   d) \(0^2 = \square\)
   e) \(\square^2 = 100\)
   f) \(64 = \square^2\)

8. a) Write the numbers in the table.

<table>
<thead>
<tr>
<th>Factor of 24</th>
<th>Not a factor of 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square number</td>
<td></td>
</tr>
<tr>
<td>Prime number</td>
<td></td>
</tr>
</tbody>
</table>

   b) Write a different number in each part of the table.

9. Dani is thinking of a square number with 2 digits.
The digits add together to make another square number.
What could the number be?

10. Huan is celebrating his birthday.
His age is a square number.
Last year he was a multiple of 12
Next year he will be a multiple of 10
How old is Huan?