

Week 14

Tuesday 23rd June 2020

Year 6 Square Numbers

Square Numbers

1a. 13 is the sum of two square numbers.

$$13 = 3^2 + 2^2$$

Using the example above, complete the following:

41 is the sum of 4^2 and which other square number?

34 is the sum of 3^2 and which other square number?



Square Numbers

1b. 20 is the sum of two square numbers.

$$20 = 4^2 + 2^2$$

Using the example above, complete the following:

25 is the sum of 3^2 and which other square number?

18 is the sum of 3^2 and which other square number?



2a. Solve the following problems.

I think of a number. I square it and add 7. My answer is 16.
What was my number?

I think of another number. I square it and take away 10. The answer is 26.
What was my number?



2b. Solve the following problems.

I think of a number. I square it and add 11. My answer is 36.
What was my number?

I think of another number. I square it and take away 12. My answer is 4.
What was my number?



3a. Drew says,

$$\begin{aligned} 2^2 &= 2 \times 2 = 4 \\ 3^2 &= 3 \times 2 = 6 \\ 4^2 &= 4 \times 2 = 8 \end{aligned}$$



Is Drew right? Convince me.



3b. Frankie says,

The first 5 square numbers are; 2, 4, 6, 8, 10.



Is Frankie right? Convince me.



Square Numbers

4a. 20 is the sum of two square numbers.

$$20 = 4^2 + 2^2$$

Using the example above, complete the following:

61 is the sum of two squared numbers.
What could they be?

113 is the sum of two squared numbers.
What could they be?



Square Numbers

4b. 29 is the sum of two square numbers.

$$29 = 5^2 + 2^2$$

Using the example above, complete the following:

89 is the sum of two squared numbers.
What could they be?

193 is the sum of two squared numbers.
What could they be?



5a. Solve the following problems.

I think of a number. I square it and take away 8. My answer is 41.
What was my number?

I think of another number. I square it and add 12. The answer is 48. What was my number?



5b. Solve the following problems.

I think of a number. I square it and add 11. My answer is 92.
What was my number?

I think of another number. I square it and take away 14. My answer is 107.
What was my number?



6a. Henry says,

To find the square of a number, you multiply it by 2.



Is Henry right? Convince me.



6b. Laura says,

Square numbers are easy!
You just add the number twice. For example, 2^2 means $2 + 2$ which is 4.



Is Laura right? Convince me.



Square Numbers

7a. 155 is the sum of 2 squared numbers.

$$155 = 12^2 + 3^2$$

2 squared numbers are added together to make an odd number between 50 and 100. What could they be?

3 squared numbers are added together to make an even number between 150 and 200. What could they be?



Square Numbers

7b. 149 is the sum of 2 squared numbers.

$$149 = 10^2 + 7^2$$

2 squared numbers are added together to make an even number between 50 and 100. What could they be?

3 squared numbers are added together to make an odd number between 150 and 200. What could they be?



8a. Solve the following problems.

I think of a number. I square it, take away 8 and multiply by 3. My answer is 24. What was my number?

I think of another number. I square it, add 12 and then take away 16. The answer is 140. What was my number?



8b. Solve the following problems.

I think of a number. I square it, add 15 and times by 5. My answer is 255. What was my number?

I think of another number. I square it, take away 15 and then add 25. My answer is 131. What was my number?



9a. Tariq says,

Square numbers are easy!
13 squared is 26.



Is Tariq right? Convince me.



9b. Lin says,

Square numbers are easy!
15 squared equals 30.



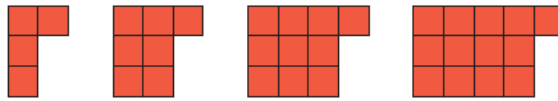
Is Lin right? Convince me.



Challenge

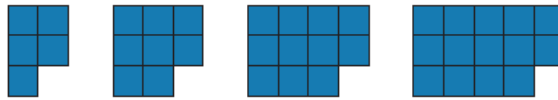
Ali has made three sequences of shapes by sticking coloured squares together.

The sequence of red shapes starts



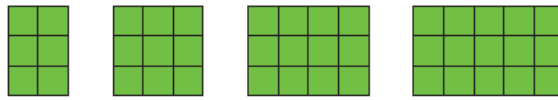
and so on.

The sequence of blue shapes starts



and so on.

The sequence of green shapes starts



and so on.

Ali says, 'If I put a red and a blue shape together, they will make a shape that is the same as one of the green shapes.'

Do you agree with Ali?

Explain your reasoning.