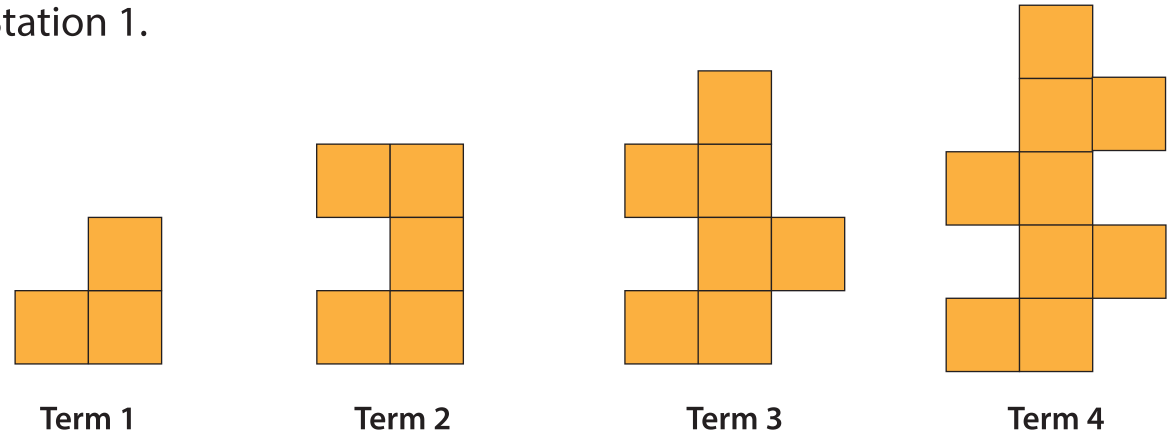
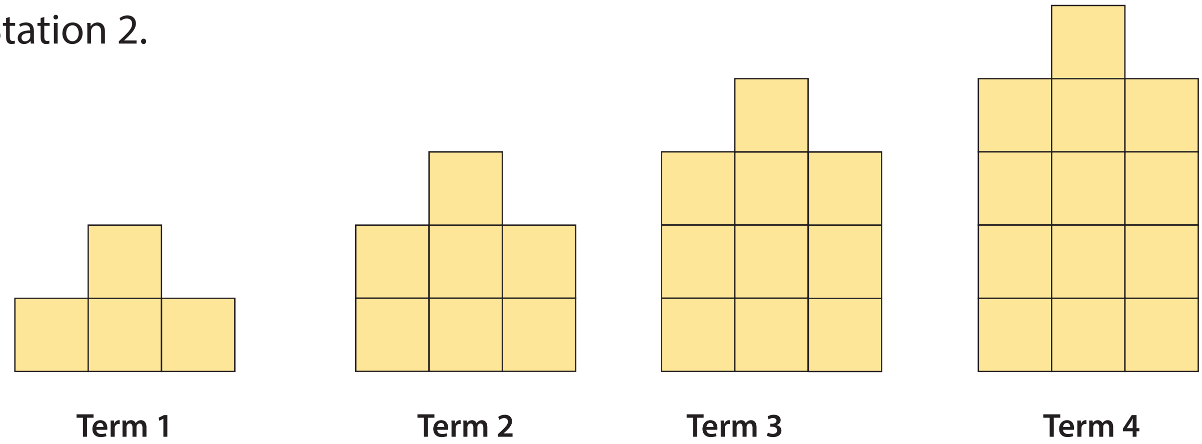
Station 1.



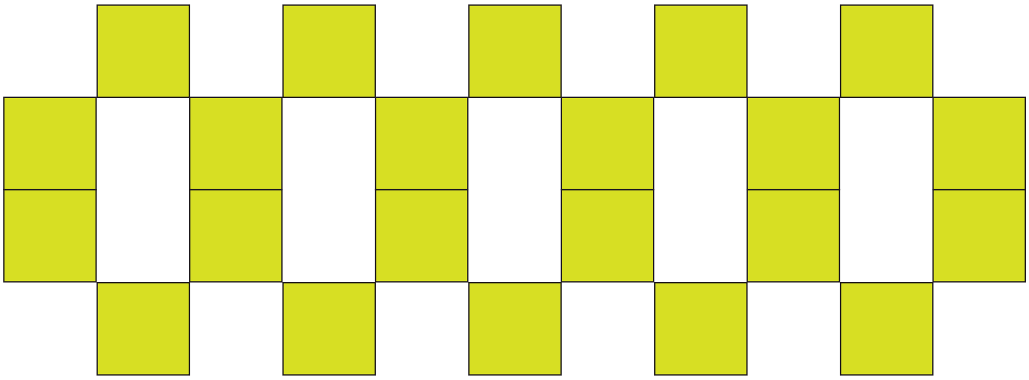
1. Build or draw the pattern for Term 10. How many square tiles are needed?
   Is there a way to work out the number of tiles in 'chunks' rather than count each one?
2. How many extra tiles are needed to build the next pattern?
   For example, how many tiles are added to Term 3 to make Term 4?
3. Find a way to predict the number of tiles in Term 16, … in Term 30, … in Term 100, … in any term.

Station 2.



1. Create a table for the terms in this pattern. Continue the table to Term 10.
2. Create a graph for the pattern. Use the graph to predict how many square tiles are in Term 15.
3. Predict which term can be built with 100 tiles in total.

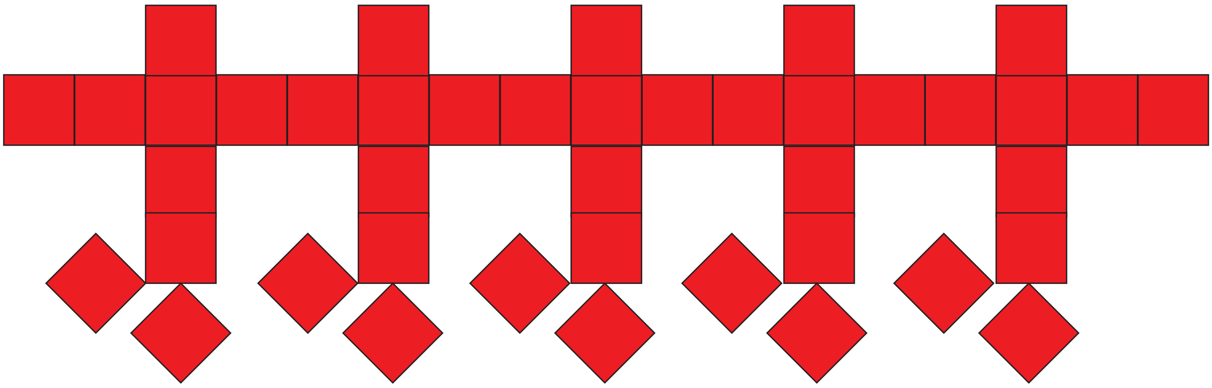
Station 3.



1. Here is Term 5 of a pattern. Draw or make Term 2 of the pattern.
2. What ways can you find to count the total number of tiles in Term 5? Try not to count in ones.
3. Would Term 10 of this pattern have twice as many tiles as Term 5? Explain why or why not.

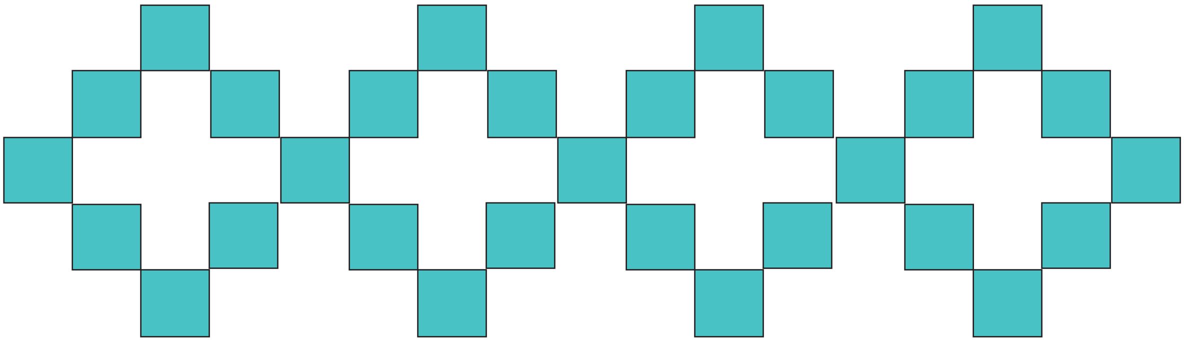
   Draw a diagram to show how many tiles will be in the pattern for Term 10.

Station 4.



1. Here is Term 5 of a pattern.
   How many tiles make up Term 8 of the pattern than has eight Cossack dancers?
2. A single Cossack is made of ten tiles. Why is the number of tiles in Term 8 not 8 x 10 = 80?
3. Create a graph for the Terms of this pattern. Are the points in a line? Why?

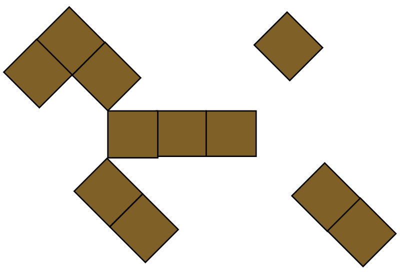
Station 3.



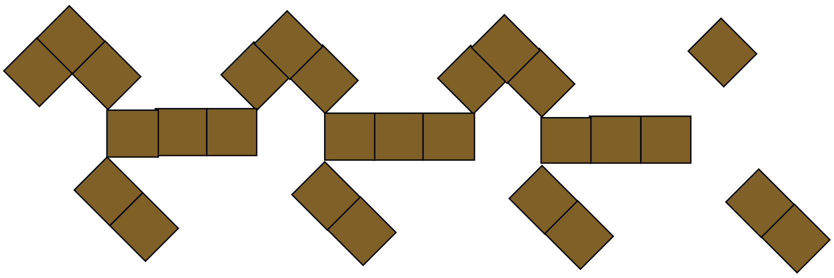
Term 4

1. Term 20 will have twenty white crosses surrounded by blue square tiles? How many blue squares will there be in total?
2. If you want to fill the white crosses with square white tiles, how many will you need for Term 20?
3. How many extra blue tiles are needed to add a white cross onto Term 4? If you graphed the pattern, would the points lie on a straight line? Explain.

Station 4.



Term 1



Term 3

1. How many squares make up Term Two that has two horses?
2. How many squares from the horse before are used to make each new horse? How many extra squares are needed to make a new horse?
3. Find a rule that tells you how many square tiles you need to make 25 horses.

Station 1.

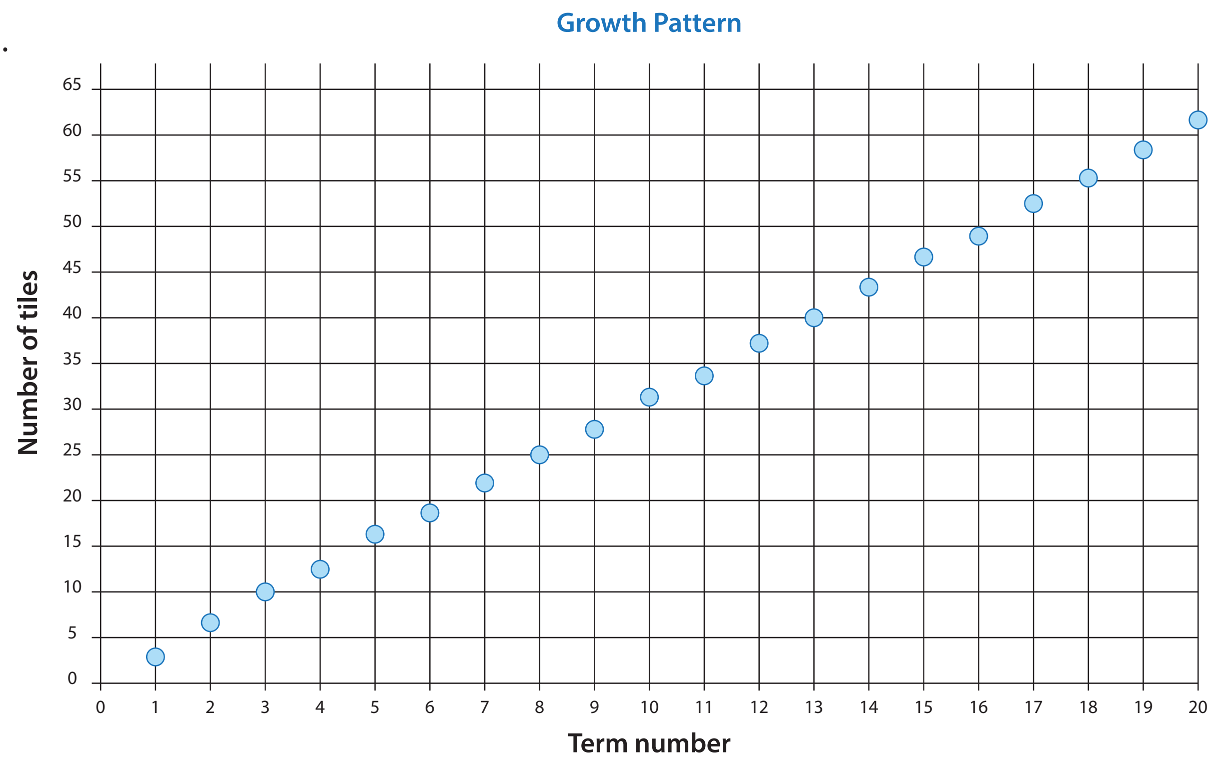
1. 21 square tiles are needed for Term 10.
2. Each row has two tiles so multiplying by two is helpful. Two extra tiles are needed.
3. In general, multiply the Term number by two then add one. This is the direct rule for odd numbers. Term 16 requires 33 tiles, Term 30 requires 61 tiles, and Term 100 requires 201 tiles. Term n requires $(2 \times n) + 1$ tiles.

Station 2.

1.

Term number	1	2	3	4	5	6	7	8	9	10
No. of tiles	4	7	10	13	16	19	22	25	28	31

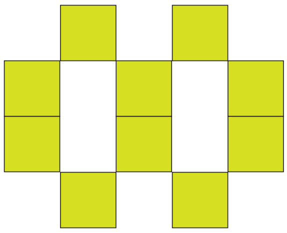
2.



3. Term 33 can be built with 100 tiles.

Station 3.

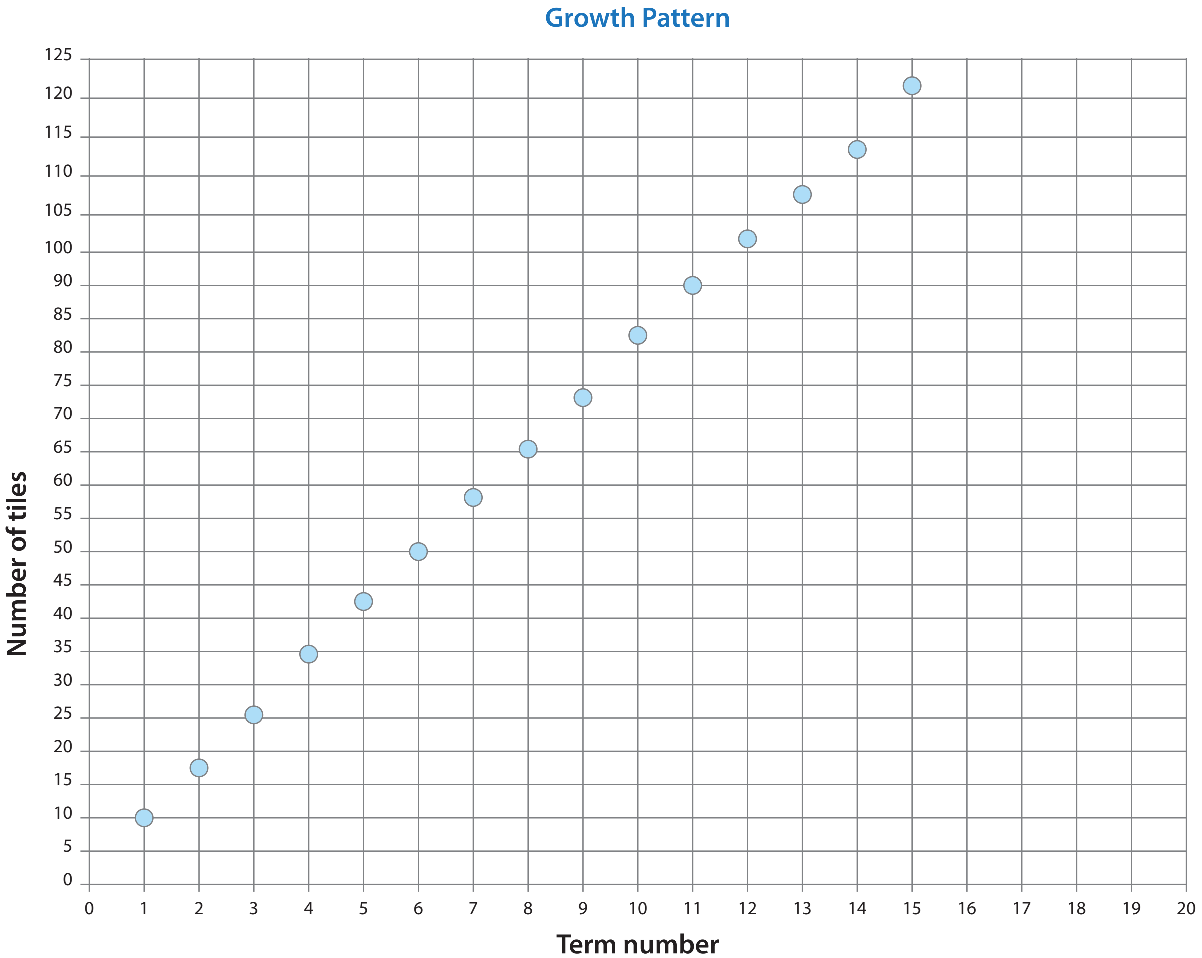
1. Term Two looks like this:



2. There are many ways but 3 x 2 + 2 x 2 looks a good way.
3. No. If you join two copies of Term 5 together, they do not make Term 10. There will be two extra tiles. Your diagram might have 11 x 2 columns of two in the middle, 10 squares on the top and 10 squares on the bottom. That's 42 altogether.

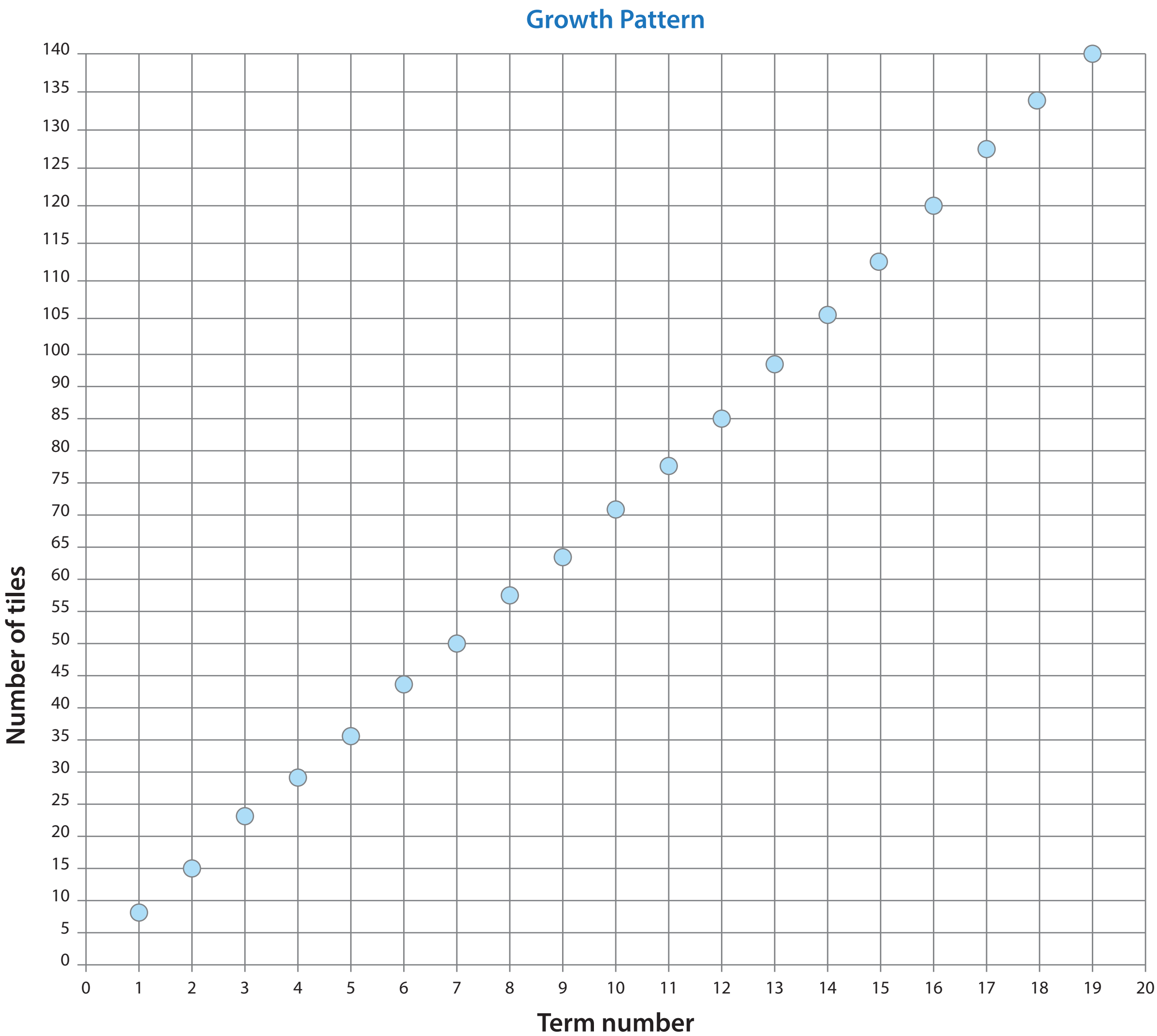
Station 4.

1. Term 8 will have 66 tiles to make 8 Cossack dancers.
2. The dancers overlap so it only takes 8 squares to make each extra dancer.
3. The graph looks like this. The points lie in a straight line because the same number of square tiles is added each time.



Station 5.

1. 141 blue square tiles are needed.
2. It takes five white tiles to make a cross: 20 x 5 = 100.
3. Seven new blue squares are needed. That would mean the points of a graph would lie on a line that has a slope of seven.



Station 6

1. You will need 19 squares to make Term Two (two horses).
2. Three squares from the horse before are used to make a new horse. Eight extra squares are needed. Can you see where the squares are in the pattern?
3. One rule is (25 x 3) + (25 x 3) + (26 x 2) + 1 = 203. Another rule is 11 + (24 x 8) = 203. The most efficient rule is (25 x 8) + 3 = 203. Can you work out where the numbers in the rules come from?