

One-Stroke Tracing

When can you draw it without lifting your pencil?

Name: _____

The game. Try to trace each graph without lifting your pencil and without drawing over any edge twice. You may start anywhere. **Circle the node where you START.**

Figure 1

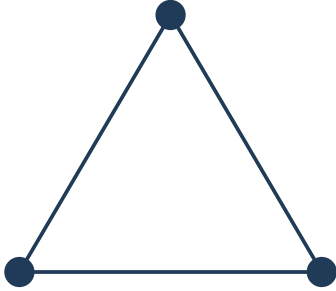


Figure 2

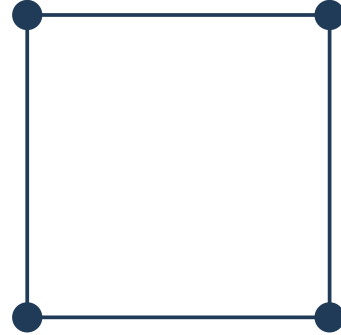


Figure 3

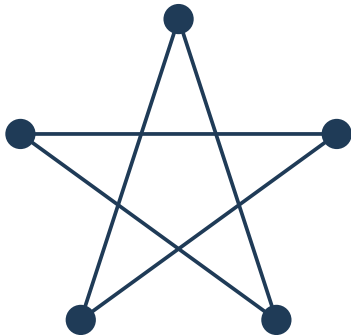


Figure 4

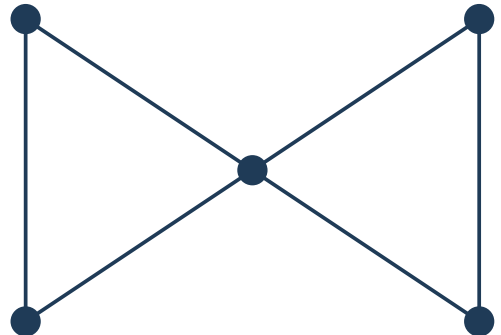


Figure 5

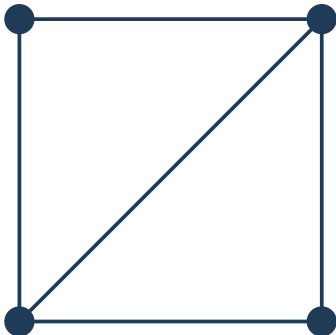


Figure 6

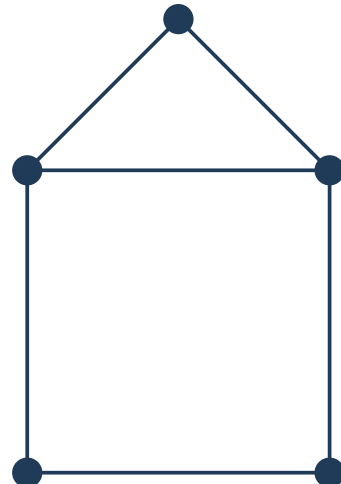


Figure 7

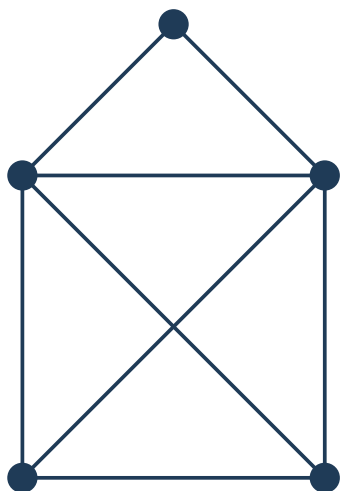


Figure 8

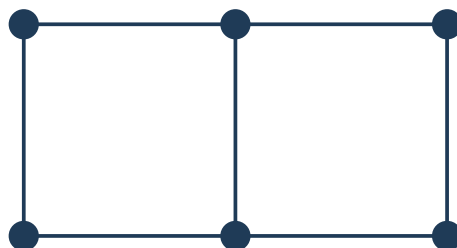


Figure 9

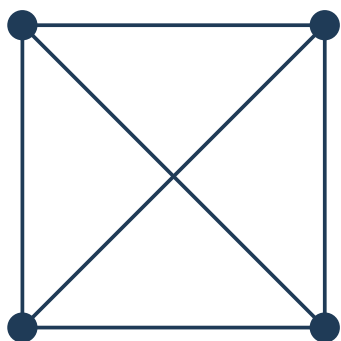


Figure 10

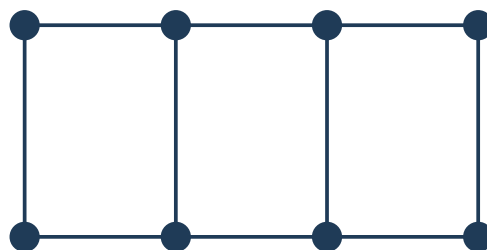


Figure 11

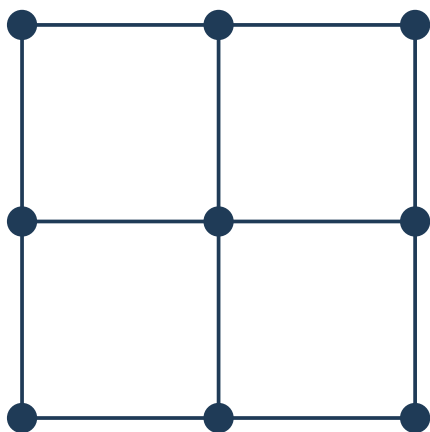
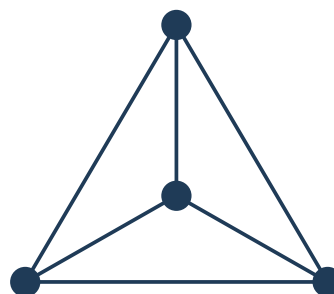


Figure 12



Part 2 Count the odd points

An **odd node** is a node with an *odd* number of edges. Fill in the table. Is your starting point — the point you circled — an odd node?

Figure	Could you trace it?	Did you start at an odd point?	Number of odd points
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Part 3 Find the pattern

Each of the graphs above **can** be traced in one stroke exactly when it has _____ or _____ odd points.

When a figure has **2** odd points, where did you have to start? _____

Answer Key (for the teacher)

Red dots = **odd points**. **The rule:** traceable in one stroke exactly when there are **0 or 2** odd points. With **2** odd points you must *start at one odd point and finish at the other*; with **0** you can start anywhere.

Figure 1



0 odd points

traceable – start anywhere

Figure 2



0 odd points

traceable – start anywhere

Figure 3



0 odd points

traceable – start anywhere

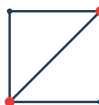
Figure 4



0 odd points

traceable – start anywhere

Figure 5



2 odd points

traceable – start on a red dot

Figure 6



2 odd points

traceable – start on a red dot

Figure 7



2 odd points

traceable – start on a red dot

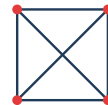
Figure 8



2 odd points

traceable – start on a red dot

Figure 9



4 odd points

not traceable

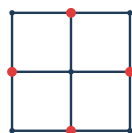
Figure 10



4 odd points

not traceable

Figure 11



4 odd points

not traceable

Figure 12



4 odd points

not traceable