

Toothpick Patterns

Lines of Triangles

P1 You have a large supply of toothpicks. You are making a pattern of triangles. The first three figures of the pattern are shown. Draw the fourth figure and fill in the number of triangles and the number of toothpicks.

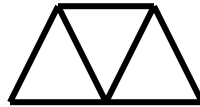


Figure 1

Figure 2

Figure 3

Figure 4

1 triangle

2 triangles

3 triangles

___ triangles

3 toothpicks

5 toothpicks

7 toothpicks

___ toothpicks

P2 Continue drawing figures 5 and 6 and record the number of triangles and toothpicks needed for each figure.

Figure 5

Figure 6

___ triangles

___ triangles

___ toothpicks

___ toothpicks

P3 Predict the number of triangles and toothpicks needed for Figure 10.

T = _____ P = _____

P4 Write a rule for the number of triangles (T) for Figure N. Write a rule for the number of toothpicks (P) for Figure N.

T = _____ P = _____

P5 Which figure will need 41 toothpicks? Explain.

P6 Is it possible to have a figure with 270 toothpicks? Explain.

Toothpick Patterns

Lines of Squares

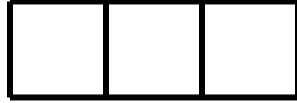
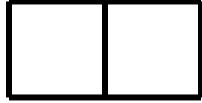
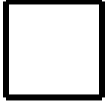


Figure 1

Figure 2

Figure 3

Figure 4

1 square

2 squares

3 squares

___ squares

4 toothpicks

7 toothpicks

10 toothpicks

___ toothpicks

P1 Draw the fourth figure for a line of squares made from toothpicks.

P2 Continue drawing figures 5 and 6 and record the number of squares and toothpicks needed for each figure.

Figure 5

Figure 6

___ squares

___ squares

___ toothpicks

___ toothpicks

P3 Predict the number of squares (S) and toothpicks (T) needed for Figure 10.

S = _____ P = _____

P3 Write a rule for the number of squares (S) for Figure N. Write a rule for the number of toothpicks (P) for Figure N.

S = _____ P = _____

P5 Which figure will need 61 toothpicks? Explain.

P6 Is it possible to have a figure with 250 toothpicks? Explain.

Toothpick Patterns

Growing Squares

P1 Draw the fourth figure for a square of squares made from toothpicks.

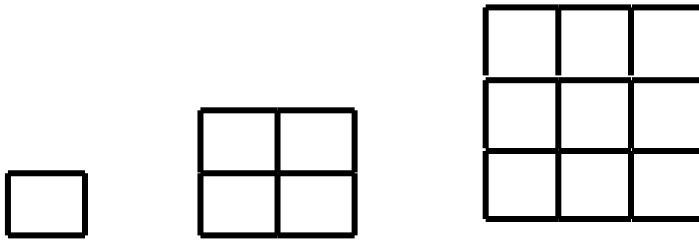


Figure 1

1 square

4 toothpicks

Figure 2

4 squares

12 toothpicks

Figure 3

9 squares

24 toothpicks

Figure 4

___ squares

___ toothpicks

P2 Continue drawing figures 5 and 6 and record the number of squares and toothpicks needed for each figure.

Figure 5

___ squares

___ toothpicks

Figure 6

___ squares

___ toothpicks

P3 Predict the number of squares (S) and toothpicks (T) needed for Figure 10.

S = _____ P = _____

P4 Write a rule for the number of squares (S) for Figure N. Write a rule for the number of toothpicks (P) for Figure N.

S = _____ P = _____

P5 Which figure will need 84 toothpicks? Explain.

P6 Is it possible to have a figure with 360 toothpicks? Explain.

Toothpick Patterns

Growing Triangles

P1 You have a large supply of toothpicks. You are making a pattern of triangles. The first three figures of the pattern are shown. Draw the fourth figure and fill in the number of triangles and the number of toothpicks.

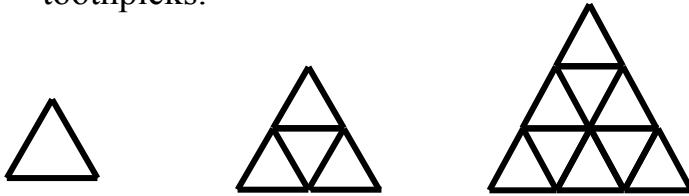


Figure 1

1 triangle

3 toothpicks

Figure 2

4 triangles

9 toothpicks

Figure 3

9 triangles

18 toothpicks

Figure 4

____ triangles

____ toothpicks

P2 Continue drawing figures 5 and 6 and record the number of triangles and toothpicks needed for each figure.

Figure 5

____ triangles

____ toothpicks

Figure 6

____ triangles

____ toothpicks

P3 Predict the number of triangles and toothpicks needed for Figure 10.

T = _____ P = _____

P4 Write a rule for the number of triangles (T) for Figure N. Write a rule for the number of toothpicks (P) for Figure N.

T = _____ P = _____

P5 Which figure will need 63 toothpicks? Explain.

P6 Is it possible to have a figure with 270 toothpicks? Explain.

Toothpick Patterns

Staircase

P1 Draw the fourth figure for a square of squares made from toothpicks.

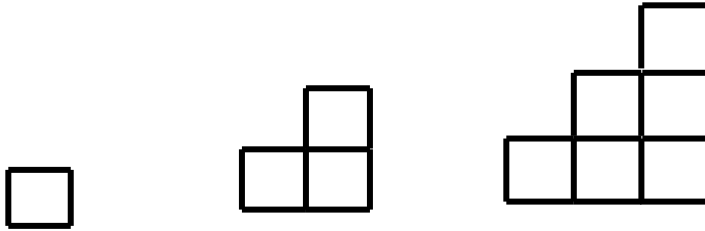


Figure 1

1 square
4 toothpicks

Figure 2

3 squares
10 toothpicks

Figure 3

6 squares
18 toothpicks

Figure 4

____ squares
____ toothpicks

P2 Continue drawing figures 5 and 6 and record the number of squares and toothpicks needed for each figure.

Figure 5

____ squares
____ toothpicks

Figure 6

____ squares
____ toothpicks

P3 Write a rule for the number of squares (S) for Figure N. Write a rule for the number of toothpicks (P) for Figure N.

S = _____ P = _____

P4 Which figure will need 84 toothpicks? Explain.

P5 Is it possible to have a figure with 275 toothpicks? Explain.