

Maths

# Triangular and Fibonacci style sequences

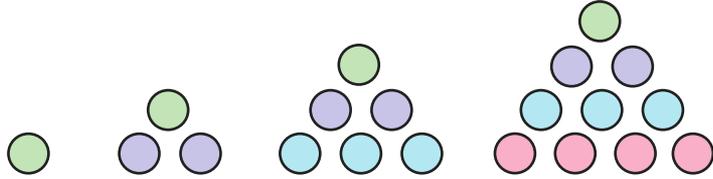
Mr Chan

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# Triangular and Fibonacci style sequences

1. Use these diagrams to generate the first 4 triangular numbers.



Describe how this sequence builds.

What are the next two terms in this sequence?

2. How many combinations of two jelly beans can you get from each set? One has been done for you.

a) 2 jelly beans



b) 3 jelly beans



c) 4 jelly beans



d) 5 jelly beans



Comment on your results.



# Triangular and Fibonacci style sequences

3. A Fibonacci-style sequence is formed by summing two consecutive terms to find the next term. Find the missing terms.

a) 1, 1, 2, 3, 5, —, —, —, ...

b) 2, 5, 7, —, —, —, —, ...

c) 3, -2, —, —, —, —, —, ...

d) 1.5, 4, —, —, —, —, —, ...

e) a, b, a + b, —, —, —, —, ...

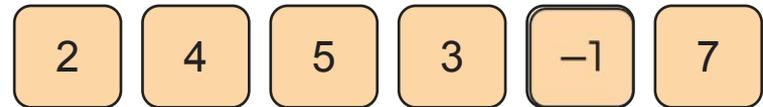
4. Find the missing integers from these Fibonacci-style sequences.

a) —, 6, —, 15, 24, —, —, ...

b) —, —, —, —, —, 28, 45, ...

c) —, —, —, —, 30, —, 79, ...

5. Arrange the cards so that each term is the sum of the two terms before it.

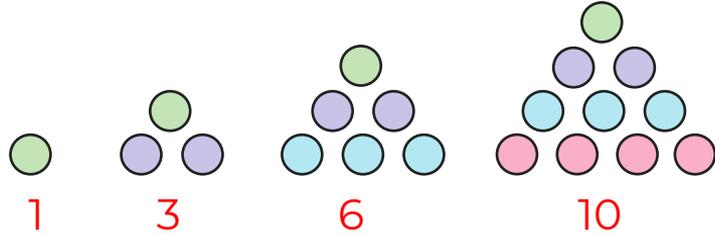


# Answers



# Triangular and Fibonacci style sequences

1. Use these diagrams to generate the first 4 triangular numbers.



Describe how this sequence builds.  
 Triangular numbers are formed by adding consecutive integers starting with 1.

What are the next two terms in this sequence?  
 $1 + 2 + 3 + 4 + 5 = 15$   
 $1 + 2 + 3 + 4 + 5 + 6 = 21$

2. How many combinations of two jelly beans can you get from each set?  
 One has been done for you.

a) 2 jelly beans



b) 3 jelly beans GP, GY, PY



c) 4 jelly beans GP, GY, GB, PY, PB, YB



d) 5 jelly beans GP, GY, GB, GO, PY, PB, PO, YB, YO, BO



Comment on your results.

The sequence is the triangular numbers.



# Triangular and Fibonacci style sequences

3. A Fibonacci-style sequence is formed by summing two consecutive terms to find the next term. Find the missing terms.

a) 1, 1, 2, 3, 5, 8, 13, 21, ...

b) 2, 5, 7, 12, 19, 31, 50, ...

c) 3, -2, 1, -1, 0, -1, -1, ...

d) 1.5, 4, 5.5, 9.5, 15, 24.5, 39.5, ...

e) a, b, a + b, a+2b, 2a+3b, 3a+5b, 5a+8b, ...

4. Find the missing integers from these Fibonacci-style sequences.

a) 3, 6, 9, 15, 24, 39, 63, ...

b) 1, 5, 6, 11, 17, 28, 45, ...

c) 3, 8, 11, 19, 30, 49, 79, ...

5. Arrange the cards so that each term is the sum of the two terms before it.

