

Music for Movies

The Movie:

To write and play music, you need to know how to work with patterns. Featured: James Newton Howard, composer. (*Movie length: 3:18*)



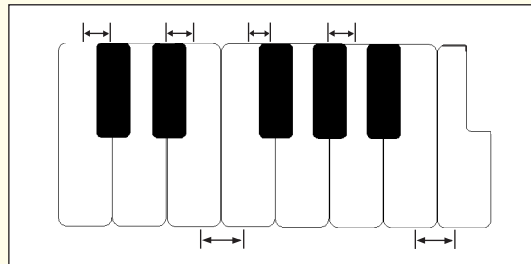
Background:

Part of the appeal of a piece of music is the composer's artful combination of two opposite qualities: predictability and unpredictability. As listeners, we delight in thinking we know what comes next and in finding that we are right, wrong, or both right and wrong.

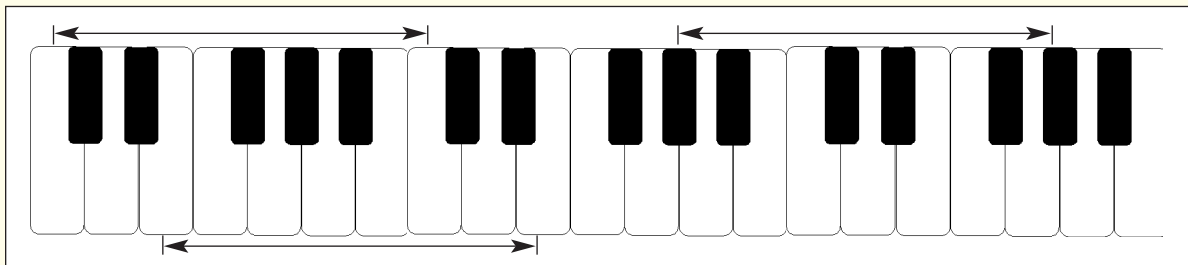
Composers create this effect through skillful use of patterns: patterns of rhythms, patterns of notes, patterns of speed, and patterns of volume. This is a rich collection of variables, since a composer can choose to repeat one type of pattern (a rhythm, say) while changing the notes, or speed, or volume—or the instruments used.

With regards to patterns of notes on a keyboard, there are a few basic facts which will help any budding composer get started:

- 1) The difference between one note on a piano and the next note is called a *half-step*. This is true whether the keys for the notes are white or black.



- 2) A whole step is equal to two half-steps.
- 3) The keys on a piano are arranged in a repeating pattern of 11 half-steps. The distance from one key to the similar key in the next repeating pattern is called an *octave*.



Algebra (patterns), Coordinate systems

1

- 1) Start on any piano key (black or white), except those at the far right of the keyboard. Play this sequence of notes, where x represents the number of the sequence, and y represents the position of notes ($1/2$ for a half step, and 1 for a whole step):

x	1	2	3	4	5	6	7	8
y	0	add 1 to previous value of y	add 1 to previous value of y	add $1/2$ to previous value of y	add 1 to previous value of y	add 1 to previous value of y	add 1 to previous value of y	add $1/2$ to previous value of y

If you play this sequence of notes on a keyboard, it will sound familiar. It is called a *major scale*. Plot the points that represent it on a coordinate system.

- 2) You can also produce the notes of a major scale (though not in order) in this way:

x	1	2	3	4	5	6	7
y	0	add 3.5 to previous value of y	subtract 2.5 from previous value of y	add 3.5 to previous value of y	subtract 2.5 from previous value of y	add 3.5 to previous value of y	subtract 2.5 from previous value of y

Plot the points for this pattern on a coordinate system.

If you continue for $x > 7$, does this rule continue to produce notes on the same major scale?

Algebra (evaluating expressions, coordinate systems)

2

Here are two rules that combine to make an interesting pattern.

$$y = 2x + 4$$

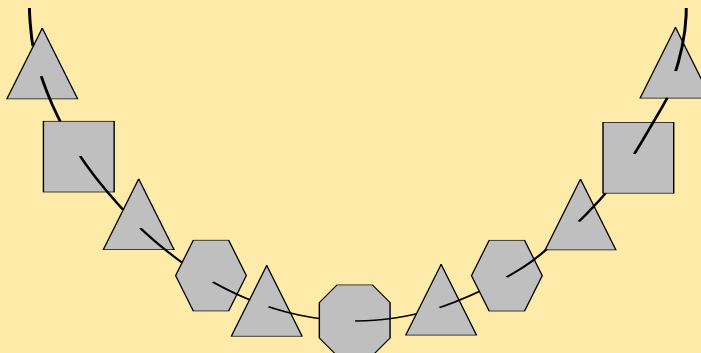
If $y > 16$, subtract 17 from y to give a new value for y . Repeat until $y < 16$.

- Plot the values of x and y for $x = 1, 2, 3, 4, 5$, etc. to 36
- On a keyboard, play a sequence of keys which has a similar basic pattern.
- Try changing the rules a little bit and see how it changes the pattern.

Algebra (patterns), Geometry (polygons)

3

Describe the pattern in this polygon necklace. Then make your own polygon necklace with a different pattern.



Dance Patterns

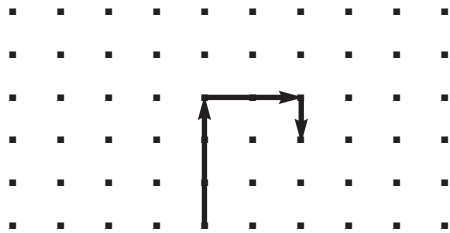
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You can use a grid of dots to work out a dance step.

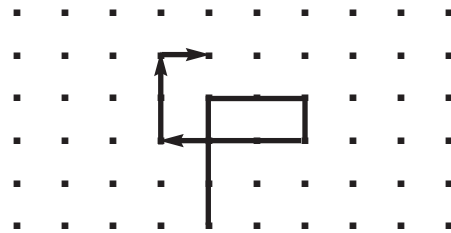
Suppose you move with this pattern:

1. Take three steps forward, turn right.
2. Take two steps forward, turn right.
3. Take one step forward, turn right.
4. Go to step 1.

After the first three moves, your dance would look like this:

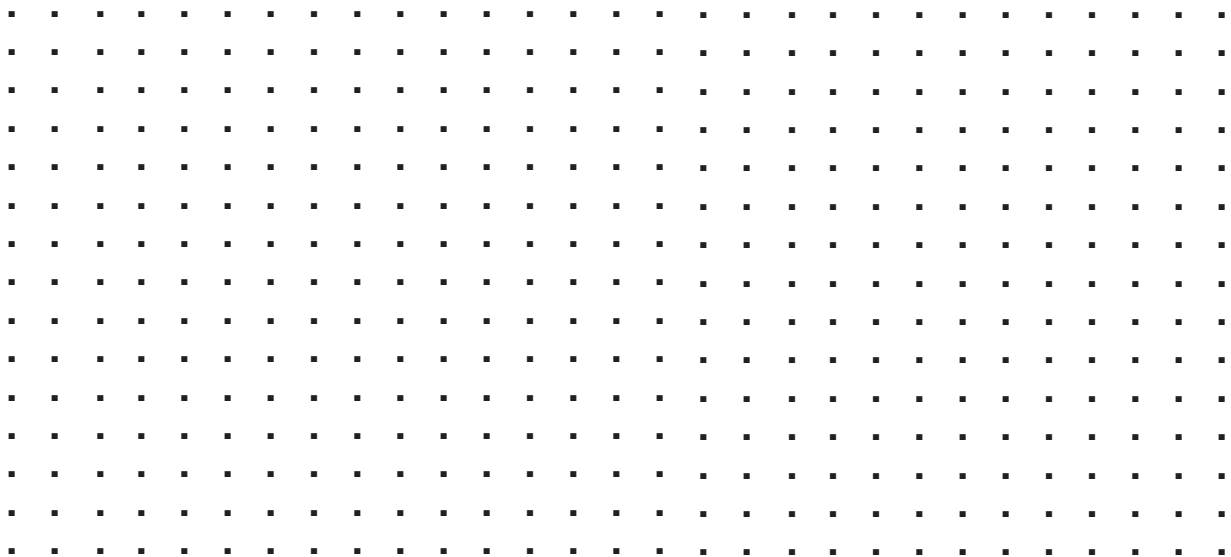


After three more moves, your dance would look like this:



What happens if you keep going for 3 more steps? 6 more steps? 9 more steps?

Make up your own dance pattern. Draw your dance on this grid.



Algebra (coordinate system)

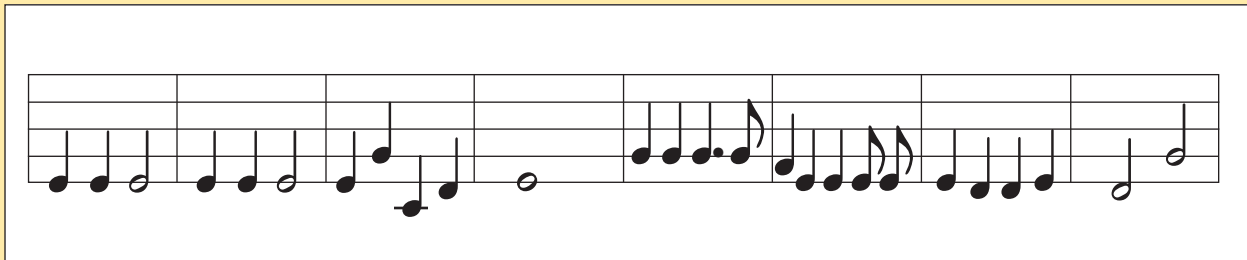
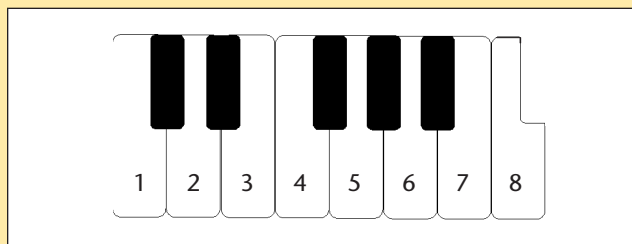
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In this table, x stands for time, in seconds, and y stands for the number of a white piano key as shown in the diagram.

Plot these points in a coordinate system. Compare your graph to the music as it is written out below. What similarities do you notice?

x	1	2	3	5	6	7	9	10	11	12	13	17	18
y	3	3	3	3	3	3	3	5	1	2	3	4	4

x	19	20.5	21	22	23	24	24.5	25	26	27	28	29	31
y	4	4	4	3	3	3	3	3	2	2	3	2	5



If you enjoyed this Futures Channel Movie, you will probably also like these:

<i>Percussion Instruments, #4002</i>	There's a lot more to percussion instruments than a set of drums.
<i>Drumming in Fractions, #4001</i>	Understanding fractions is the most essential skill of playing the drums.
<i>The Art Director, #4004</i>	A set is a place where actors can be placed for filming. Creating a set where everything fits just right calls for an understanding of area.