

Before and After

Before and After is a routine to address numerical fluency and number sense by analyzing relationships between values on the number line. This routine is compatible with Function Fun as both involve analyzing numbers to determine a relationship and a rule that governs the relationship.

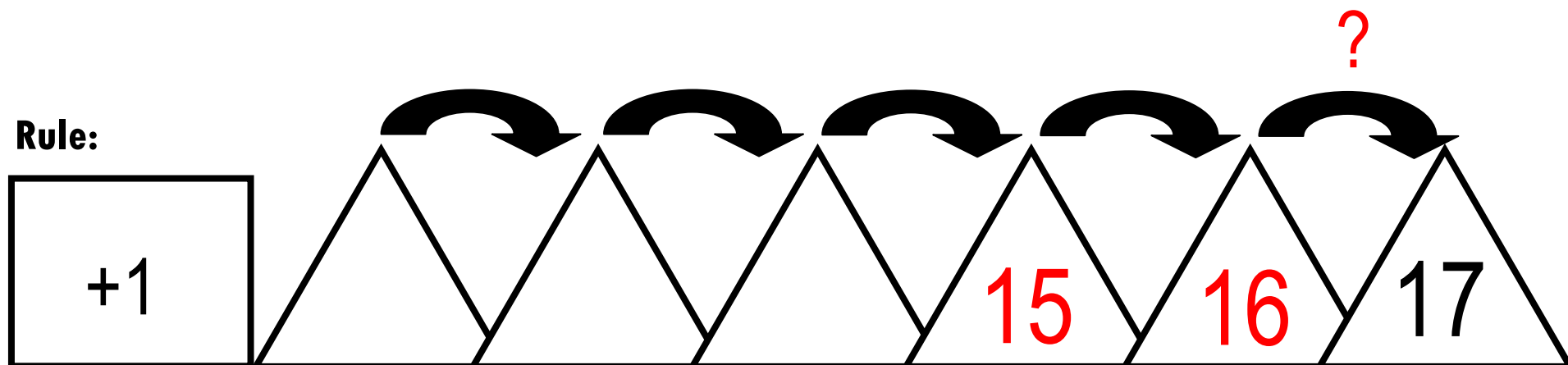
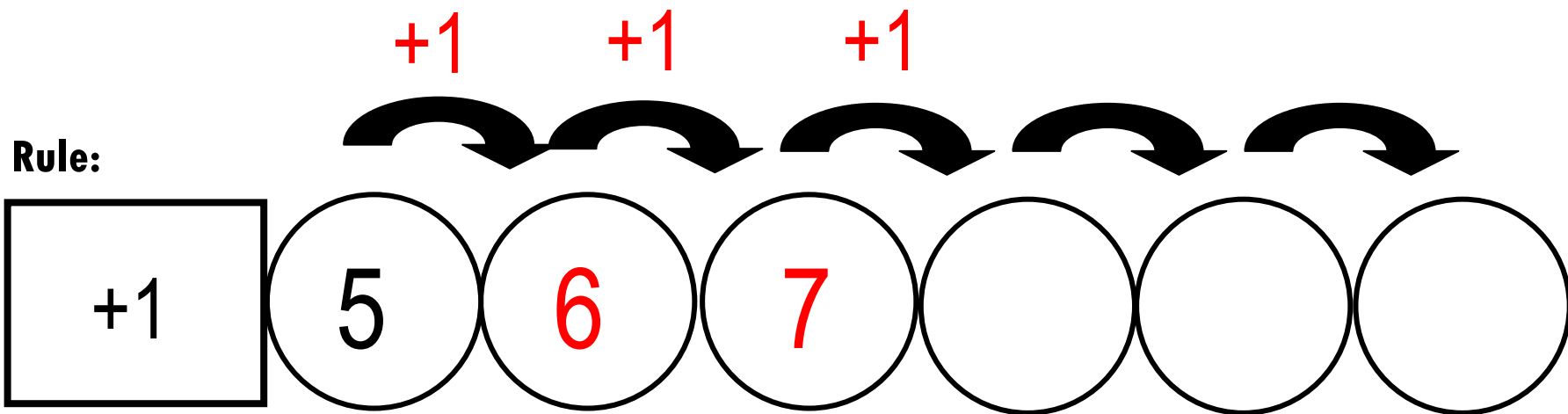
Introducing the routine to students involves using simple relationships and numbers low in value so that the students focus on the flow of the routine. After the flow of the routine is established, the relationships become more complicated (+, -, \times) and the numbers increase in value (appropriate to grade level). The shapes used in the graphic—circle and triangle—have no specific significance.

Write a rule in the box indicated for this purpose. (For the sake of this discussion the rule is +1.) Write a number in the first circle or triangle. Indicate that the rule is applied to the number displayed in order to determine the next number in the sequence (see example below). Write the rule above the arrow to show that the arrow represents the application of the rule. Within the same time frame but on the triangle string of shapes, present the same rule, but from the opposite perspective. Write a number at the end of the sequence. Press students to figure out what number comes before 17 on the number line. When students identify 16, 15, etc., press the students on how this can be true if the rule is +1. Facilitate a discussion regarding the reality that when one is going in the opposite direction as indicated by the rule, the operation must be the opposite (inverse operations).

Alternative presentations of the **Before and After** routine involve:

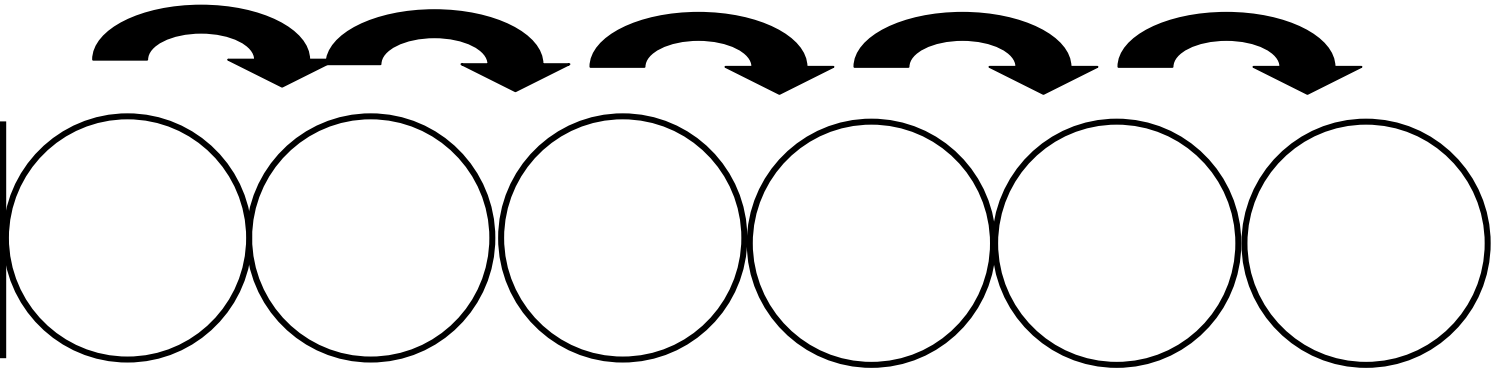
- placing numbers in the circle/triangles and expecting students to analyze the numbers and determine the rule that governs the skip counting.
- provide a rule, but write a number in the middle of the string of shapes so that students must analyze the rule from both perspectives.

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Rule:



Rule:

