A **Likelihood Ratio** (LR) is a proportion used to estimate a post-test probability using the presence (LR +) or absence (LR -) of a physical exam finding (or other test). It is used in conjunction with a patient's pre-test probability to determine the patient's *likelihood* for a particular disease.

Remember that a **Pre-Test Probability** is a baseline probability of a particular disease in a given clinical setting before the incorporation of the physical exam finding.

$$LR = \frac{Patients\ with(out)\ finding\ WITH\ disease}{Patient\ with(out)\ finding\ WITHOUT\ disease}$$

In other words:

With a particular physical exam finding:

$$LR+ = \frac{sensitivity}{1 - specificity}$$

Without a particular physical exam finding:

$$LR- = \frac{1 - sensitivity}{specificity}$$

An LR ***above 1*** reasons ***for*** a disease, while an LR ***below 1*** reasons ***against*** a disease.

The below table estimates the change in post-test probability for the listed LRs using a simplistic 2-5-10 method:

Likelihood Ratio	Δ in Pre-Test Probability
0.1	-45%
0.2	-30%
0.5	-15%
1	0
2	+15%
5	+30%
10	+45%

Note: 0.1 = $^1/_{10}$, 0.2 = $^1/_5$, 0.5 = $^1/_2$
[the denominators follow the 2-5-10 method]

References:
McGee SR. Diagnostic Accuracy of Physical Findings. In: McGee SR, ed. *Evidence-Based Physical Diagnosis*. 4th ed. Philadelphia, PA: Elsevier; 2018:5-16.