

Unit 8: Probability and Sampling[Open Up Family Resource Link](#)

| Lesson | Skill | Online Resources | Standard |
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| 1 | Get an idea for the likelihood of an event by using results from previous experiments. | https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/experimental-probability | 7.SP.C.6 |
| 2 | Describe the likelihood of events using the words impossible, unlikely, equally likely as not, likely, or certain. Tell which event is more likely when the chances of different events are expressed as fractions, decimals, or percentages. | https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/simple-probability https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/probability-1-module-examples https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/e/probability_1 | 7.SP.C.5 |
| 3 | Use the sample space to calculate the probability of an event when all outcomes are equally likely. Write out the sample space for a simple chance experiment. | http://virtualnerd.com/act-math/advanced-arithmetic/probability-counting/sample-space-definition https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/e/using-probability-to-make-predictions | 7.SP.C.5, 7.SP.C.6, 7.SP.C.7.a, 7.SP.C.7 |
| 4 | Explain whether certain results from repeated experiments would be surprising or not. Estimate the probability of an event based on the results from repeating an experiment. | https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/comparing-theoretical-to-experimental-probabilities https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/making-predictions-with-probability | 7.RP.A, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7.b, 7.SP.C.7 |
| 5 | Explain why results from repeating an experiment may not exactly match the expected probability for an event. Calculate the probability of an event when the outcomes in the sample space are not equally likely. | https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/intuitive-sense-of-probabilities https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/e/understanding-probability | 7.SP.C.5, 7.SP.C.6, 7.SP.C.7.b, 7.SP.C.7 |
| 6 | Simulate a real-world situation using a simple experiment that reflects the probability of the actual event. | https://www.khanacademy.org/math/probability/probability-geometry/probability-basics/v/constructing-probability-model-from-observations https://www.khanacademy.org/math/ap-statistics/probability-ap/randomness-probability-simulation/v/experimental-versus-theoretical-probability-simulation https://www.khanacademy.org/math/probability/probability-geometry/probability- | 7.SP.C, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7.b, 7.SP.C.8.c |

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| | | basics/e/probability-models | |
| 7 | Use a simulation to estimate the probability of a multi-step event. | https://www.youtube.com/watch?v=tXTA7_T4fuo https://www.youtube.com/watch?v=4lgGOjvY9Ps https://www.khanacademy.org/math/ap-statistics/probability-ap/randomness-probability-simulation/v/random-number-list-to-run-experiment | 7.RP.A, 7.SP.C.8.c |
| 8 | Write out the sample space for a multi-step experiment, using a list, table, or tree diagram. | https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/v/compound-sample-spaces https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/e/sample-spaces-for-compound-events | 7.SP.C.8.b |
| 9 | Use the sample space to calculate the probability of an event in a multi-step experiment. | https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/v/events-and-outcomes-2 https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/v/probability-from-compound-sample-space https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/e/compound-events https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/v/counting-pot-and-flower-scenarios | 7.SP.C.8.a, 7.SP.C.8.b |
| 10 | Design a simulation to estimate the probability of a multi-step real-world situation. | https://www.youtube.com/watch?v=-sef6JkRcaU https://www.youtube.com/watch?v=Umdbj1wl-60 https://www.youtube.com/watch?v=D4lvJBkvkqg | 7.SP.C.8.c |
| 11 | Calculate the difference between two means as a multiple of the mean absolute deviation. When looking at a pair of dot plots, I can determine whether the distributions are very different or have a lot of overlap. | https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6-mad/v/mean-absolute-deviation https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6-mad/v/mean-absolute-deviation-example https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6-mad/e/calculating-the-mean-absolute-deviation--mad- | 7.SP.B, 7.SP.B.3 |

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| 12 | <p>Explain why it may be useful to gather data on a sample of a population.</p> <p>Name the population of interest and give an example of a sample for that population.</p> | <p>https://www.khanacademy.org/math/ap-statistics/gathering-data-ap/sampling-observational-studies/v/identifying-a-sample-and-population</p> <p>https://www.khanacademy.org/math/ap-statistics/gathering-data-ap/sampling-observational-studies/e/identifying-population-sample</p> <p>https://www.cliffsnotes.com/study-guides/statistics/sampling/populations-samples-parameters-and-statistics</p> | 7.SP.A.1, 7.SP.B |
| 13 | <p>Remember that when a distribution is not symmetric, the median is a better estimate of a typical value than the mean.</p> <p>Determine whether a sample is representative of a population by considering the shape, center, and spread of each of them.</p> <p>Know that some samples may represent the population better than others.</p> | <p>https://www.youtube.com/watch?v=POgrB-m7kw0</p> <p>https://www.khanacademy.org/math/ap-statistics/gathering-data-ap/sampling-observational-studies/v/examples-of-bias-in-surveys</p> <p>https://www.khanacademy.org/math/ap-statistics/gathering-data-ap/sampling-observational-studies/v/example-of-under-coverage-introducing-bias</p> <p>https://learnzillion.com/lesson_plans/4985-identify-a-representative-sample/</p> <p>https://www.investopedia.com/terms/r/representative-sample.asp</p> | 7.SP.A, 7.SP.A.1, 7.SP.A.2 |
| 14 | <p>Know that selecting a sample at random is usually a good way to get a representative sample.</p> <p>Describe ways to get a random sample from a population.</p> | <p>https://www.youtube.com/watch?v=PdXDLNNXPik</p> <p>https://www.youtube.com/watch?v=sonXfzE1hvo</p> <p>https://www.youtube.com/watch?v=yx5KZi5QArQ</p> | 7.SP.A.1, 7.SP.A.2, 7.SP.C.7 |
| 15 | <p>Consider the variability of a sample to get an idea for how accurate my estimate is.</p> <p>Estimate the mean or median of a population based on a sample of the population.</p> | <p>http://www.bristol.ac.uk/medical-school/media/rms/red/sampling_variation_and_sampling_distributions.html</p> <p>http://www.statisticshowto.com/sampling-variability/</p> <p>https://mathbitsnotebook.com/Algebra2/Statistics/STsamplingVariability.html</p> | 7.SP.A.1, 7.SP.A.2, 7.SP.B.4 |
| 16 | <p>Estimate the proportion of population data that are in a certain category based on a sample.</p> | <p>https://www.youtube.com/watch?v=nK9Uf-7ijkl</p> <p>https://learnzillion.com/lesson_plans/6910-make-inferences-about-a-population-by-analyzing-random-samples/</p> | 7.NS.A.2.d, 7.RP.A, 7.SP.A, 7.SP.A.2, 7.SP.B.4 |

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| 17 | <p>Know that as the sample size gets bigger, the sample mean is more likely to be close to the population mean.</p> <p>Use the means from many samples to judge how accurate an estimate for the population mean is.</p> | <p>https://www.khanacademy.org/math/statistics-probability/sampling-distributions-library/sample-means/v/statistics-sample-vs-population-mean</p> | 7.SP.A, 7.SP.A.2 |
| 18 | <p>Determine whether there is a meaningful difference between two populations based on a sample from each population.</p> <p>Calculate the difference between two medians as a multiple of the interquartile range.</p> | <p>https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-population-sampling/e/making-inferences-from-random-samples</p> <p>https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/measuring-spread-quantitative/v/calculating-interquartile-range-iqr</p> <p>https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/measuring-spread-quantitative/e/calculating-the-interquartile-range-iqr</p> <p>https://www.youtube.com/watch?v=7KnnCF6Eomg</p> | 7.SP.B.3, 7.SP.B.4 |
| 19 | <p>Decide what information I need to know to be able to compare two populations based on a sample from each.</p> | <p>https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-population-sampling/v/comparing-swim-times-at-the-olympics</p> | 7.SP.B.4 |
| 20 | <p>Compare two groups by taking a random sample, calculating important measures, and determining whether the populations are meaningfully different</p> | <p>https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-population-sampling/e/comparing-populations</p> <p>https://www.youtube.com/watch?v=3Ep-zqdtU_s</p> | 7.RP.A, 7.SP.A, 7.SP.A.1, 7.SP.A.2, 7.SP.B.4, 7.SP.C.7.a |