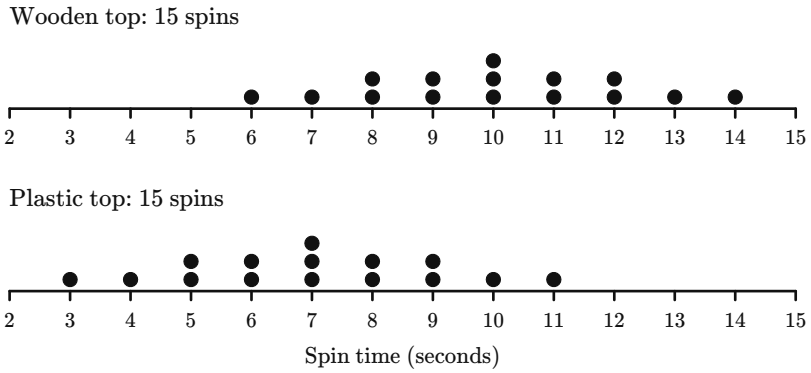
Statistics Unit 1 worksheet: Comparing two distributions

Name _____ Date _____ Period _____

1. Ava has two spinning tops, one wooden and one plastic. She spun each top 15 times on the same table and timed each spin, to the nearest second. The dot plots show the times.



Wooden top: 6, 7, 8, 8, 9, 9, 10, 10, 10, 11, 11, 12, 12, 13, 14

Plastic top: 3, 4, 5, 5, 6, 6, 7, 7, 7, 8, 8, 9, 9, 10, 11

(a) Find the median, the mean and the range of each top's spin times.

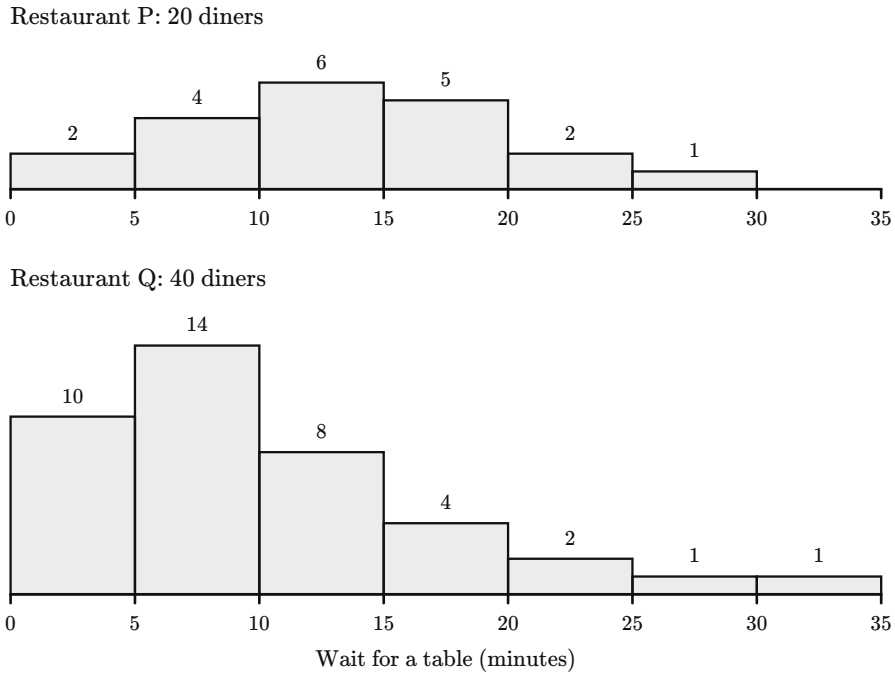
(b) Describe the shape of each distribution.

(c) Write one comparison sentence about center and one about spread.

(d) How many plastic-top spins lasted longer than the median wooden-top spin? How many wooden-top spins were shorter than the median plastic-top spin?

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2. Mia asked 20 diners at Restaurant P and 40 diners at Restaurant Q how many minutes they waited for a table on a Saturday night. The histograms show the waits in 5-minute bins, a wait on a bin edge going into the bin to its right.



(a) Describe the shape of each distribution.

(b) Find the bin that holds each restaurant's median wait.

(c) Mia says waits of 10 to 15 minutes are more common at Restaurant Q, because its bar for that bin is taller, 8 against 6. Find the fraction of each restaurant's diners who waited 10 to 15 minutes, and say whether Mia is right.

(d) Which measures of center and spread should a comparison of the two restaurants use? Explain.

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3. Omar recorded the ages, in years, of everyone in two made-up pottery classes at a community center.

Parent-and-child class: 5, 6, 6, 7, 7, 8, 31, 33, 35, 36, 38, 40

Evening class: 19, 22, 24, 25, 27, 28, 29, 31, 33, 34, 36, 40

Omar writes: "The median age in the parent-and-child class is 19.5 years, 9 years below the evening class's median of 28.5 years, so people in the parent-and-child class are typically 9 years younger."

(a) How many people in the parent-and-child class are within 5 years of 19.5?

(b) Explain what is wrong with Omar's comparison.

(c) Write a better description of the parent-and-child class, and use it to compare the two classes.

4. A made-up farm grows two varieties of peas in two large fields. Jenny opened a random sample of 12 pods from each field and counted the peas in each pod.

Variety A: 4, 5, 5, 6, 6, 6, 7, 7, 7, 8, 8, 9

Variety B: 4, 5, 6, 6, 7, 7, 7, 8, 8, 8, 9, 9

(a) Both distributions are roughly symmetric. Which measures of center and spread should a comparison use? Find them for each variety.

(b) How many pods of each variety hold from 6 to 8 peas?

(c) Jenny says, "Variety B has more peas per pod." Do the samples support that for all the pods in the two fields? Explain by comparing the shift with the spread.

(d) Jenny opens three more pods chosen at random from each field. Variety A's hold 8, 9 and 10 peas, and Variety B's hold 6, 7 and 8. Find each variety's mean for all 15 of its pods. What does the change show about the first gap between the means? Does it show that the two varieties have the same number of peas per pod?

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5. Kevin chose random samples of 10 members from each of two made-up community clubs and asked how many hours each member volunteered last month.

Club X: 2, 3, 3, 4, 4, 5, 5, 6, 6, 42

Club Y: 2, 3, 4, 4, 5, 5, 6, 6, 7, 8

Kevin says, "Club X members volunteered 3 hours more on average, so members of Club X tend to volunteer more."

(a) Find the mean and the median of each sample.

(b) Which pair, the means or the medians, should be compared? Explain, using the 1.5 IQR rule.

(c) Is Kevin's conclusion justified? Explain by comparing the shift with the spread.

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