

# Data Displays Extended

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 24

## Quick Review

Different **data displays** are good for different jobs. A **dot plot** or **stem-and-leaf plot** shows every single value. A **histogram** groups data into intervals to show shape. A **box plot** highlights center and spread using the five-number summary. A **circle graph** compares parts of a whole, and a **bar graph** compares separate categories. When you choose a display, ask: do I need every value, the shape, the spread, or the parts of a whole? Reading any display well means knowing what each piece — a dot, a bar, a slice — stands for.

◇ **Example:** You want to compare what fraction of a class chose each of 4 after-school clubs. Which display is best, and why?

⇒ Think about the goal: you are comparing *parts of one whole* — the four clubs make up the entire class. A circle graph is built exactly for that, because each slice shows one club's share of the full circle. A dot plot or histogram would show individual values or intervals, which is not what you need here. So a circle graph is the best choice for comparing parts of a whole.

**Answer:** a circle graph (it compares parts of a whole)

## PRACTICE

Answer each question about choosing and reading data displays.

- Which display shows every single data value: dot plot or histogram? \_\_\_\_\_
- Which display uses a five-number summary? \_\_\_\_\_
- Which display best compares parts of a whole? \_\_\_\_\_
- Which display groups data into equal intervals? \_\_\_\_\_
- In a histogram, what does the height of a bar show? \_\_\_\_\_
- In a dot plot, what does a stack of 5 dots mean? \_\_\_\_\_
- In a box plot, the box stretches from  $Q_1$  to what? \_\_\_\_\_
- In a circle graph, the whole circle equals how many degrees? \_\_\_\_\_
- In a stem-and-leaf plot,  $4|7$  represents what value? \_\_\_\_\_
- Histogram: 0–9:3, 10–19:5, 20–29:2. Total values? \_\_\_\_\_
- Dot plot: 2:3, 3:4, 4:1. What is the mode? \_\_\_\_\_
- Stem-and-leaf: stem 1:0,5, stem 2:0. List the values. \_\_\_\_\_
- Box plot:  $Q_1 = 8$ ,  $Q_3 = 20$ . Find the IQR. \_\_\_\_\_
- Circle graph: a slice is  $\frac{1}{4}$ . Find its angle. \_\_\_\_\_
- Circle graph slices 30% and 45%. Find the third slice's percent. \_\_\_\_\_
- Dot plot: 1:2, 2:2, 3:2. How many data values? \_\_\_\_\_
- Box plot: min 4, max 28. Find the range. \_\_\_\_\_
- Stem-and-leaf: stem 3:2,2,7. What is the mode? \_\_\_\_\_
- Which display is best for comparing the heights of 5 separate buildings? \_\_\_\_\_
- Histogram: 0–4:6, 5–9:4. Tallest bar interval? \_\_\_\_\_

## Word Problems

- A teacher wants to show how the 24 hours of a day are divided among sleep, school, and free time. Which data display should she use, and why? \_\_\_\_\_
- A scientist records the exact lengths of 30 fish and wants to see the overall shape of the data without listing every value. Which display fits best? \_\_\_\_\_



23. A stem-and-leaf plot of quiz scores has stem 7 with leaves 0, 5 and stem 8 with leaves 0, 0, 5. How many students scored, and what is the mode of the scores? \_\_\_\_\_

24. A box plot of bike-ride distances shows minimum 4 mi,  $Q_1 = 8$ , median 12,  $Q_3 = 20$ , maximum 28. Find the IQR and the range, and say which describes the middle half. \_\_\_\_\_



## Answer Keys

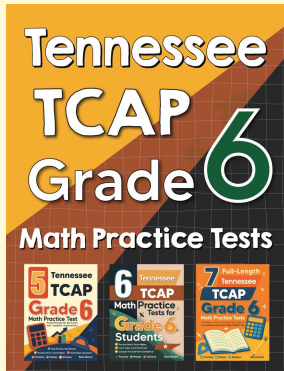
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|---|--|
| <ol style="list-style-type: none"> <li>1. dot plot</li> <li>2. box plot</li> <li>3. circle graph</li> <li>4. histogram</li> <li>5. frequency</li> <li>6. that value occurs 5 times</li> <li>7. <math>Q_3</math></li> <li>8. <math>360^\circ</math></li> <li>9. 47</li> <li>10. 10</li> <li>11. 3</li> <li>12. 10, 15, 20</li> </ol> | <ol style="list-style-type: none"> <li>13. 12</li> <li>14. <math>90^\circ</math></li> <li>15. 25%</li> <li>16. 6</li> <li>17. 24</li> <li>18. 32</li> <li>19. bar graph</li> <li>20. 0–4</li> <li>21. a circle graph</li> <li>22. a histogram</li> <li>23. 5 students; mode = 80</li> <li>24. IQR = 12, range = 24; IQR</li> </ol> |
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### Step-by-Step Explanations

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| <ol style="list-style-type: none"> <li>1. A dot plot keeps each value as its own dot; a histogram only shows interval totals.</li> <li>2. A box plot is built from the minimum, <math>Q_1</math>, median, <math>Q_3</math>, and maximum.</li> <li>3. A circle graph splits one whole into slices, perfect for comparing parts.</li> <li>4. A histogram bins data into equal intervals and draws a bar for each.</li> <li>5. The bar height tells how many values fall in that interval — the frequency.</li> <li>6. Each dot is one data value, so 5 dots means the value appears 5 times.</li> <li>7. The box goes from <math>Q_1</math> to <math>Q_3</math>, holding the middle half of the data.</li> <li>8. A full circle is always <math>360^\circ</math>.</li> <li>9. Stem 4 joined with leaf 7 is the value 47.</li> <li>10. Add the frequencies: <math>3 + 5 + 2 = 10</math>.</li> <li>11. The tallest stack is at 3 with 4 dots.</li> <li>12. Join each stem with its leaves: 10, 15, 20.</li> <li>13. IQR = <math>Q_3 - Q_1 = 20 - 8 = 12</math>.</li> <li>14. <math>\frac{1}{4} \times 360^\circ = 90^\circ</math>.</li> </ol> | <ol style="list-style-type: none"> <li>15. All slices total 100%: <math>100 - 30 - 45 = 25\%</math>.</li> <li>16. Add the dots: <math>2 + 2 + 2 = 6</math>.</li> <li>17. Range is maximum minus minimum: <math>28 - 4 = 24</math>.</li> <li>18. The value 32 appears twice (leaf 2 twice on stem 3).</li> <li>19. A bar graph compares separate categories like individual buildings.</li> <li>20. The 0–4 interval has the higher frequency, 6.</li> <li>21. The three activities together make up one whole day, and a circle graph is built to compare parts of a whole — each slice shows one activity's share of the 24 hours.</li> <li>22. With 30 values, grouping them into equal intervals makes the shape clear. A histogram does exactly that, while a dot plot would be very crowded.</li> <li>23. Count the leaves: <math>2 + 3 = 5</math> students. The value 80 appears twice (leaf 0 twice on stem 8), so it is the mode.</li> <li>24. The IQR is <math>Q_3 - Q_1 = 20 - 8 = 12</math> mi, and the range is <math>28 - 4 = 24</math> mi. The IQR describes the spread of the middle half of the rides.</li> </ol> |
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