

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? _____
 Histogram bins 0–9:3, 10–19:5, 20–29:2. Total values? _____
- 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? _____
- 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

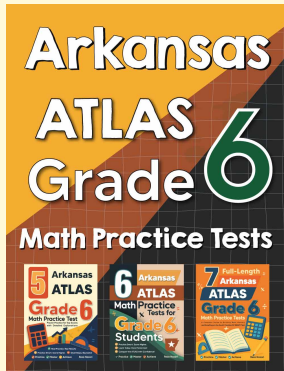
- | | |
|------------------------------|-------------------------------|
| 1. dot plot | 13. 12 |
| 2. box plot | 14. 90° |
| 3. circle graph | 15. 25% |
| 4. histogram | 16. 6 |
| 5. frequency | 17. 24 |
| 6. that value occurs 5 times | 18. 32 |
| 7. Q_3 | 19. bar graph |
| 8. 360° | 20. 0–4 |
| 9. 47 | 21. a circle graph |
| 10. 10 | 22. a histogram |
| 11. 3 | 23. 5 students; mode = 80 |
| 12. 10, 15, 20 | 24. IQR = 12, range = 24; IQR |

Step-by-Step Explanations

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| <p>1. A dot plot keeps each value as its own dot; a histogram only shows interval totals.</p> <p>2. A box plot is built from the minimum, Q_1, median, Q_3, and maximum.</p> <p>3. A circle graph splits one whole into slices, perfect for comparing parts.</p> <p>4. A histogram bins data into equal intervals and draws a bar for each.</p> <p>5. The bar height tells how many values fall in that interval — the frequency.</p> <p>6. Each dot is one data value, so 5 dots means the value appears 5 times.</p> <p>7. The box goes from Q_1 to Q_3, holding the middle half of the data.</p> <p>8. A full circle is always 360°.</p> <p>9. Stem 4 joined with leaf 7 is the value 47.</p> <p>10. Add the frequencies: $3 + 5 + 2 = 10$.</p> <p>11. The tallest stack is at 3 with 4 dots.</p> <p>12. Join each stem with its leaves: 10, 15, 20.</p> <p>13. IQR = $Q_3 - Q_1 = 20 - 8 = 12$.</p> <p>14. $\frac{1}{4} \times 360^\circ = 90^\circ$.</p> | <p>15. All slices total 100%: $100 - 30 - 45 = 25\%$.</p> <p>16. Add the dots: $2 + 2 + 2 = 6$.</p> <p>17. Range is maximum minus minimum: $28 - 4 = 24$.</p> <p>18. The value 32 appears twice (leaf 2 twice on stem 3).</p> <p>19. A bar graph compares separate categories like individual buildings.</p> <p>20. The 0–4 interval has the higher frequency, 6.</p> <p>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.</p> <p>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.</p> <p>23. Count the leaves: $2 + 3 = 5$ students. The value 80 appears twice (leaf 0 twice on stem 8), so it is the mode.</p> <p>24. The IQR is $Q_3 - Q_1 = 20 - 8 = 12$ mi, and the range is $28 - 4 = 24$ mi. The IQR describes the spread of the middle half of the rides.</p> |
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