

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

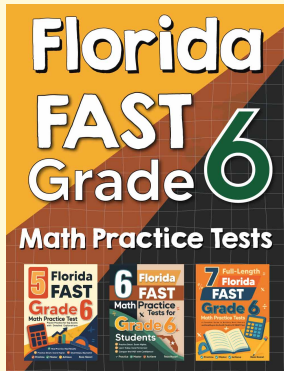
- | | |
|---|--|
| <ol style="list-style-type: none"> 1. dot plot 2. box plot 3. circle graph 4. histogram 5. frequency 6. that value occurs 5 times 7. Q_3 8. 360° 9. 47 10. 10 11. 3 12. 10, 15, 20 | <ol style="list-style-type: none"> 13. 12 14. 90° 15. 25% 16. 6 17. 24 18. 32 19. bar graph 20. 0–4 21.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

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