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.

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

Word Problems

21. 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? _____

22. 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
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. $10, 15, 20$
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

Step-by-Step Explanations

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. $\frac{1}{4} \times 360^\circ = 90^\circ$.
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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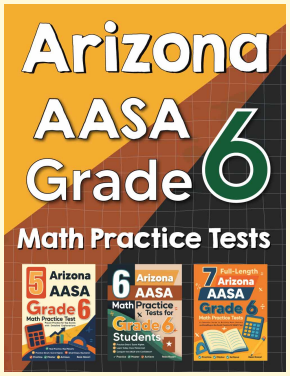

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