Data Displays Extended

Apply the skill to decisions and designs

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Line graphs preserve time order, bars compare categories, histograms group numerical intervals, and stem-and-leaf plots preserve exact values. Bins must not overlap: $0 \le x < 3$ excludes 3, and $3 \le x < 6$ includes it.

Worked example

A frequency table has counts $6, 8, 10$. Find the total and the share of the first group.

1. Add the counts: $6 + 8 + 10 = 24$.
2. The first group contains 6 of the 24 observations.
3. Simplify its share: $6/24 = 1/4$.
Answer: Total 24; first share $1/4$.

Practice Problems

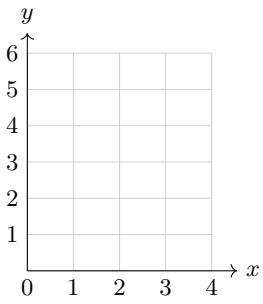
Show your thinking.

1. Report the frequencies after combining the bins into $0 \le t < 8$ and $8 \le t < 16$. From the original table, can you recover the exact count below 10 minutes? Give its smallest and largest possible values.

time (min)	frequency
$0 \le t < 4$	3
$4 \le t < 8$	4
$8 \le t < 12$	6
$12 \le t < 16$	2

2. Plot both sensor series with time on x and reading on y. Connect each in time order, using solid A and dashed B. Which first begins a run of three consecutive readings at least 4? Give the starting time for each.

time	0	1	2	3	4
A	1	4	4	5	4
B	2	3	5	6	6

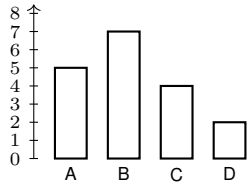


3. Which fair has the greater share of votes for the workshop? Give both shares. How many new workshop votes must Fair Y add to match Fair X if all original votes stay?

fair	workshop votes	total votes
X	12	20
Y	18	36

4. A report compares counts 18 and 27 with bars. Choose a fair baseline, 0 or 15. Give the actual difference and larger-to-smaller ratio, and explain how the other baseline changes the apparent ratio.

5. The bars show workshop registrations. Fund exactly two workshops, serving at least 10 registrations with the smallest possible excess over 10. Which two should be funded? Give their total and the excess.



6. Choose a time-order line graph or a stem-and-leaf plot to show when a repair time first exceeded 17 minutes and what happened the next day. Give that first day and the next change. Explain what the other display would lose.

day	1	2	3	4	5	6
minutes	12	18	10	20	11	19

Answer Key

1. New frequencies $7, 8$. The below-10 count could be any whole number from 7 to 13.
2. A begins at time 1; B begins at time 2. A begins first.
3. X: $3/5$; Y: $1/2$. X is higher. Add 9 workshop votes to Y.
4. Use 0. Difference 9; true ratio $3/2$. Baseline 15 gives an apparent ratio of 4.
5. B and C: 11 registrations, an excess of 1.
6. Use a time-order line graph. Day 2 first exceeds 17; the next reading drops by 8 minutes.

Step-by-Step Solutions

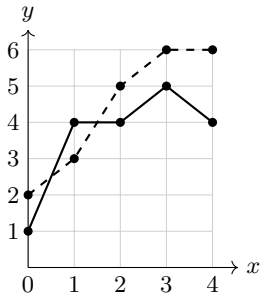
Follow each calculation, then check your own work.

Problem 1

1. The first two bins combine to $3 + 4 = 7$; the last two combine to $6 + 2 = 8$.
2. All 7 readings in the first two bins are below 10. None in the last bin is.
3. The 6 readings in $8 \le t < 12$ could contribute anywhere from 0 to 6. So the count is between 7 and $7 + 6 = 13$.

Problem 2

1. Draw a solid line for A and a dashed line for B through their own five points, in order from time 0 to 4.
2. A starts at $1 < 4$. Its readings at times $1, 2, 3$ are $4, 4, 5$, so the first qualifying run starts at time 1.
3. B starts with $2 < 4$ and $3 < 4$. Its readings at times $2, 3, 4$ are $5, 6, 6$, so its first qualifying run starts at time 2.



Problem 3

1. Compare shares rather than raw heights: $12/20 = 3/5$ and $18/36 = 1/2$.
2. Adding v workshop votes raises both Y counts. Set $(18 + v)/(36 + v) = 3/5$.
3. Cross-multiply: $90 + 5v = 108 + 3v$, so $2v = 18$ and $v = 9$. The revised share is $27/45 = 3/5$.

Problem 4

1. The actual difference is $27 - 18 = 9$ and the actual ratio is $27/18 = 3/2$.
2. With a 15 baseline, visible lengths become $18 - 15 = 3$ and $27 - 15 = 12$, with ratio $12/3 = 4$.
3. Use baseline 0 so the bar lengths represent the actual counts and preserve the ratio.

Problem 5

1. The counts are A 5, B 7, C 4, and D 2.
2. With B, pairing A gives $7 + 5 = 12$, C gives $7 + 4 = 11$, and D gives $7 + 2 = 9$.
3. Without B, even the two highest counts total $5 + 4 = 9$. The smallest qualifying total is 11, which is 1 over 10.

Problem 6

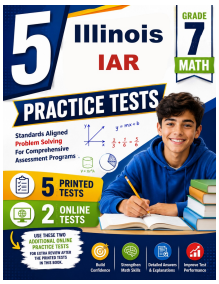
1. Plot in day order. Day 1 is 12 minutes; day 2 is 18, the first above 17.
2. Day 3 is 10 minutes. The change is $10 - 18 = -8$ minutes.
3. A stem-and-leaf plot would sort the 6 values and preserve their sizes, but it would not identify which day came next.

TESTINAR

Keep Building Grade 7 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 7 books



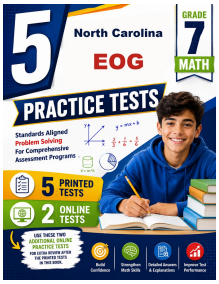
ILLINOIS IAR

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook



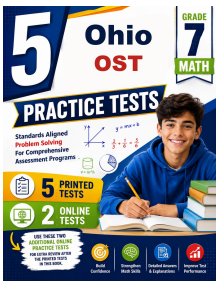
NORTH CAROLINA EOG

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook



OHIO OST

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 7 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/7