

Random Sampling and Comparing Populations: math test solutions, Grade 7 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Vocabulary of sampling

/ 3 pts

- a. The population is all 900 students of the school. (1 pt)
- b. The sample is the 45 students chosen. (1 pt)
- c. Every student had an equal chance of being chosen and chance alone decided, so there is no bias and the sample is likely representative. (1 pt)

2 Estimating from a sample

/ 4 pts

- a. $\frac{18}{60} = 0.3$. (1 pt)
- b. $0.3 \times 2400 = 720$ students. (1 pt)
- c. $\frac{21}{60} = 0.35$ and $0.35 \times 2400 = 840$ students. (1 pt)
- d. Both estimates (720 and 840) are below 1,000, so the samples do not support the claim. The number of bus riders is more likely to be about 700 to 850. (1 pt)

3 Center and spread

/ 4 pts

- a. Sum = 77, so the mean is $77 \div 11 = 7$ messages. (1 pt)
- b. The 6th value is 7, so the median is 7 messages. (1 pt)
- c. Lower half (2, 3, 5, 5, 6): $Q_1 = 5$. Upper half (8, 8, 9, 11, 13): $Q_3 = 9$. (1 pt)
- d. Range = $13 - 2 = 11$ and $IQR = 9 - 5 = 4$. (1 pt)

4 Two bakers

/ 4 pts

- a. Ben: $125 \div 5 = 25$. Cara: $125 \div 5 = 25$. Both means are 25 cookies. (1 pt)
- b. Ben: distances 3, 1, 0, 1, 3, sum 8, **MAD = 1.6**. Cara: distances 5, 2, 0, 2, 5, sum 14, **MAD = 2.8**. (2 pts)
- c. Ben's MAD is smaller, so his sales are more consistent. (1 pt)

5 Reading two box plots

/ 3 pts

- a. Team Red: 18 points. Team Blue: 20 points. (1 pt)
- b. Team Red: $22 - 14 = 8$. Team Blue: $23 - 16 = 7$. (1 pt)
- c. Team Blue usually scores more (higher median) and is more consistent (smaller IQR, and also a smaller range: 14 against 20). (1 pt)

6 A poll at the game

/ 2 pts

The sample is not random, because only people at the game could be chosen. (1 pt)

It is probably not representative, since fans at a game may be more attached to the mascot than other students. A better plan is to draw the names from the full school roster with a random number generator. (1 pt)



Test yourself: quick challenge for Grade 7

Change level

Level : Grade 7

6 random questions, instant feedback.



Start the challenge



Keep exploring with Zyro

 Math tests

Random Sampling and Comparing
Populations: math test, Grade 7

 Math lessons

Random Sampling and Comparing
Populations: math lesson, Grade 7

 Math quizzes

Random Sampling and Comparing
Populations: math quiz, Grade 7

 Math tests

Probability and Compound Events: math
test, Grade 7

 Math tests

Ratios and Proportional Relationships:
math test, Grade 7

 Math lessons

Probability and Compound Events: math
lesson, Grade 7

Zyro vous emmène sur nos sites partenaires

Embarquez pour d'autres planètes du savoir et leurs applis.

Décollage