| 1 | Classify sampling methods a bias in samples and survey questions | Exercises (4-10) | P375 |

4. A survey asks a random sample of eight people for their favorite food to gauge Americans' food preferences. Is this sample biased or unbiased?

a) Unbiased, because it's a random sample.

b) Biased, because the sample size is too small to represent all Americans.

c) Unbiased, because asking about favorite food is a direct question.

d) Biased, because food preferences are too diverse to survey.

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5. A survey asks every tenth student at band camp about their favorite band to gather information about the campers. Is this sample biased or unbiased?

a) Biased, because only band students are included.

b) Unbiased, because it uses a systematic sampling method from the target population.

c) Biased, because "favorite band" is a subjective question.

d) Unbiased, but only if the students are listed alphabetically.

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6. A survey asks every fifth person entering a museum about their favorite type of book to gauge the reading interests of people in the city. Is this sample biased or unbiased?

a) Unbiased, because a systematic sample is used.

b) Biased, because people at a museum may not represent the reading interests of the entire city.

c) Unbiased, as long as enough people are surveyed.

d) Biased, because it's difficult to categorize "favorite type of book."

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7. "Do you think that the workout facility needs a new treadmill and racquetball court?" Is this question biased or unbiased?

a) Unbiased, because it asks for an opinion directly.

b) Biased, because it combines two separate ideas into one question.

c) Unbiased, as it allows for a "yes" or "no" answer.

d) Biased, because not everyone uses both treadmills and racquetball courts.

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8. "Which is your favorite type of music, pop, or country?" Is this question biased or unbiased?

a) Unbiased, as it offers clear choices.

b) Biased, because it limits the options for music types.

c) Unbiased, if the survey is only about pop and country music.

d) Biased, because it forces a choice between two popular genres.

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9. "Are you a member of any after-school clubs?" Is this question biased or unbiased?

a) Biased, as it might make non-members feel excluded.

b) Unbiased, as it is a direct and neutral question.

c) Biased, because it doesn't specify what kind of clubs.

d) Unbiased, only if "yes" or "no" are the only possible answers.

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10. "Don't you agree that employees should pack their lunch?" Is this question biased or unbiased?

a) Unbiased, as it seeks an opinion on a workplace issue.

b) Biased, because it is a leading question that suggests a preferred answer.

c) Unbiased, if the survey is anonymous.

d) Biased, because not all employees have the time to pack lunch.

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2	Classify and determine study types	Example 4	P373

A research team wants to test new football uniform designs and their appeal to young adults. They randomly select 100 young adults to view the different uniforms. The research team observes and records the reactions to the uniforms. What type of study is this?

a) An experiment, because the uniform designs are being tested.

b) A survey, because opinions are being gathered.

c) An observational study, because the reactions are being observed and recorded without intervention.

d) A census, because a sample of young adults is chosen.

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1. A principal wants to determine the favorite after-school activity of his students. What study type should be used?

a) Observational study

b) Census

c) Survey

d) Experiment

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2. A researcher wants to determine whether young adults would be interested in a new line of smartwatches entering the market. What study type should be used?

a) Observational study

b) Census

c) Survey

d) Experiment

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3. A teacher wants to determine whether bright colors affect the test-taking abilities of high school students. What study type should be used?

a) Observational study

b) Census

c) Survey

d) Experiment

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3	Classify variables and analyze probability distributions to determine expected outcomes.	Example1	P394

a. Classify the random variable "the number of songs on a random selection of smartphones."

a) Discrete, because the number of songs is measurable.

b) Continuous, because the number of songs can vary.

c) Discrete, because the number of songs is countable.

d) Continuous, because it can be any positive number.

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b. Classify the random variable "the air pressure in a random selection of basketballs."

a) Discrete, because the pressure is limited to a specific range.

b) Continuous, because the pressure can take on any value within a range.

c) Discrete, because you can read the pressure gauge.

d) Continuous, because it is always a whole number.

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1. Classify the random variable "200-meter swim times."

a) Discrete, because time is countable.

b) Continuous, because time can take on any value within a range.

c) Discrete, because it's a fixed distance.

d) Continuous, because it always results in a whole number.

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2. Classify the random variable "number of students in class."

a) Discrete, because the number of students is countable.

b) Continuous, because the number of students can vary.

c) Discrete, because it's always an even number.

d) Continuous, because it can be any positive number.

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3. Classify the random variable "individual archery scores."

a) Discrete, because scores are typically counted in whole units.

b) Continuous, because a score can fall anywhere within a range.

c) Discrete, because you can only get a certain number of arrows.

d) Continuous, because accuracy is measured.

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4. Classify the random variable "the amount of water in a bottle."

a) Discrete, because you can count bottles.

b) Continuous, because the amount can vary infinitely within a range.

c) Discrete, because it's a fixed volume once poured.

d) Continuous, because it is always a whole number of milliliters.

4	Analyze standardized data and distributions by using z-values.	Exercises (8-10)	P401

8. What is the z-value for a standard normal distribution with $\sigma = 9.8$, $X = 55.4$, and $\mu = 68.34$?

a) 1.32

b) -1.32

c) 0.84

d) -0.84

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9. What is the z-value for a standard normal distribution with $\sigma = 11.6$, $X = 42.80$, and $\mu = 68.2$?

a) 2.19

b) -2.19

c) 1.84

d) -1.84

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10. What is the z-value for a standard normal distribution with $\sigma = 11.9$, $X = 119.2$, and $\mu = 112.4$?

a) 0.57

b) -0.57

c) 1.02

d) -1.02

5	Analyze normally distributed variables by using the Empirical Rule.	Exercises (7)	P401

7a. For a normal distribution with a mean of 186.4 and a standard deviation of 48.9, which range of values represents the middle 99.7% of the data?

a) (137.5, 235.3)

b) (88.6, 284.2)

c) (39.7, 333.1)

d) (186.4, 333.1)

7b. For a normal distribution with a mean of 186.4 and a standard deviation of 48.9, what percent of data will be greater than 235.3?

a) 5%

b) 16%

c) 32%

d) 68%

7c. For a normal distribution with a mean of 186.4 and a standard deviation of 48.9, what range of values represents the upper 2.5% of the data?

a) $(186.4, \infty)$

b) $(235.3, \infty)$

c) $(284.2, \infty)$

d) $(333.1, \infty)$

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| 6 | Draw angles in standard position and identify coterminal angles. | Exercises (16-33) | P421 |

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16. Which pair of angles are coterminal with $65°$?

a) $425°, -295°$

b) $65°, -65°$

c) $295°, -425°$

d) $360°, -360°$

17. Which pair of angles are coterminal with $-75°$?

a) $75°, -285°$

b) $285°, -435°$

c) $-285°, 435°$

d) $15°, -15°$

18. Which pair of angles are coterminal with $230°$?

a) $590°, -130°$

b) $130°, -590°$

c) $230°, -230°$

d) $410°, -410°$

19. Which pair of angles are coterminal with $45°$?

a) $405°, -315°$

b) $315°, -405°$

c) $45°, -45°$

d) $90°, -90°$

20. Which pair of angles are coterminal with $60°$?

a) $300°, -420°$

b) $420°, -300°$

c) $60°, -60°$

d) $120°, -120°$

21. Which pair of angles are coterminal with $370°$?

a) $10°, -350°$

b) $730°, -350°$

c) $370°, -370°$

d) $10°, -10°$

22. Which pair of angles are coterminal with $-90°$?

a) $90°, -270°$

b) $270°, -450°$

c) $-270°, 450°$

d) $180°, -180°$

23. Which pair of angles are coterminal with $420°$?

a) $60°, -300°$

b) $780°, -300°$

c) $420°, -420°$

d) $60°, -60°$

24. Which pair of angles are coterminal with $30°$?

a) $390°, -330°$

b) $330°, -390°$

c) $30°, -30°$

d) $60°, -60°$

25. Which pair of angles are coterminal with $55°$?

a) $415°, -305°$

b) $305°, -415°$

c) $55°, -55°$

d) $110°, -110°$

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26. Which pair of angles are coterminal with $80°$?

a) $440°, -280°$

b) $280°, -440°$

c) $80°, -80°$

d) $160°, -160°$

27. Which pair of angles are coterminal with $110°$?

a) $470°, -250°$

b) $250°, -470°$

c) $110°, -110°$

d) $220°, -220°$

28. Which pair of angles are coterminal with $2\pi/5$?

a) $12\pi/5, -8\pi/5$

b) $8\pi/5, -12\pi/5$

c) $2\pi/5, -2\pi/5$

d) $4\pi/5, -4\pi/5$

29. Which pair of angles are coterminal with $5\pi/6$?

a) $17\pi/6, -7\pi/6$

b) $7\pi/6, -17\pi/6$

c) $5\pi/6, -5\pi/6$

d) $10\pi/6, -10\pi/6$

30. Which pair of angles are coterminal with $-3\pi/2$?

a) $\pi/2, -7\pi/2$

b) $7\pi/2, -\pi/2$

c) $3\pi/2, -3\pi/2$

d) $2\pi, -2\pi$

31. Which pair of angles are coterminal with $2\pi/3$?

a) $8\pi/3, -4\pi/3$

b) $4\pi/3, -8\pi/3$

c) $2\pi/3, -2\pi/3$

d) $\pi/3, -\pi/3$

32. Which pair of angles are coterminal with $5\pi/2$?

a) $\pi/2, -3\pi/2$

b) $9\pi/2, -3\pi/2$

c) $5\pi/2, -5\pi/2$

d) $3\pi/2, -3\pi/2$

33. Which pair of angles are coterminal with $-3\pi/4$?

a) $5\pi/4, -11\pi/4$

b) $11\pi/4, -5\pi/4$

c) $3\pi/4, -3\pi/4$

d) $\pi/4, -\pi/4$

7	Convert between degree and radian measures and find arc lengths by using central angles	Example 6	P420

A traffic circle has a diameter of 160 feet. If a car travels three-fourths of the way around the roundabout, how far does it travel?

a) 40π feet

b) 80π feet

c) 120π feet

d) 160π feet

A surveyor's wheel has a radius of 15 inches. If it completes 13/20 of a rotation, what is the total distance traveled in feet, rounded to the nearest hundredth?

a) 2.55 ft

b) 5.11 ft

c) 15.39 ft

d) 30.63 ft

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