



Probability & Statistics Final Exam

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This exam is comprehensive over the entire course and includes 12 questions. You have 60 minutes to complete the exam.

The exam is worth 100 points. The 8 multiple choice questions are worth 5 points each (40 points total) and the 4 free response questions are worth 15 points each (60 points total).

Mark your multiple choice answers on this cover page. For the free response questions, show your work and make sure to circle your final answer.

1. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
2. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
3. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
4. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
5. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
6. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
7. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>
8. (5 pts)	<div>A</div>	<div>B</div>	<div>C</div>	<div>D</div>	<div>E</div>



1. (5 pts) What effect does removing the outlier have on the mean of the data set?

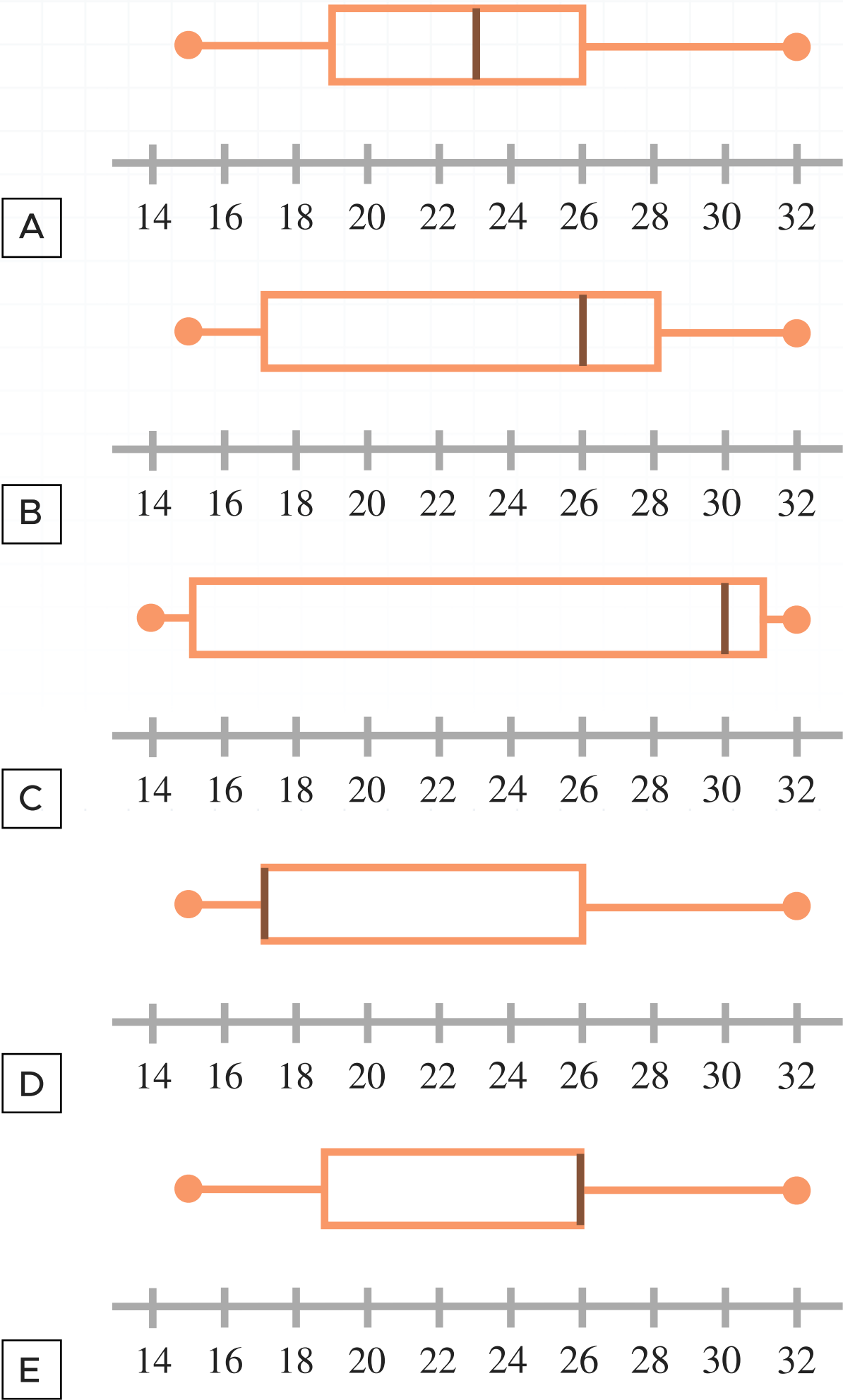
6, 31, 40, 42, 44, 53

- ☐ A The mean increases by 6
- ☐ B The mean decreases by 6
- ☐ C The mean stays the same
- ☐ D The mean decreases by 8
- ☐ E The mean increases by 8



2. (5 pts) Which box-and-whisker plot correctly represents the data set?

15, 26, 19, 17, 26, 28, 32



3. (5 pts) The mean finishing time for female downhill skiers during the Winter Olympics is 101.77 seconds, with a standard deviation of 0.41 seconds (the data is normally distributed). What is the maximum time a skier can post if she wants to ski faster than 97 % of her competitors?

A 100.000 seconds

D 100.995 seconds

B 100.032 seconds

E 101.032 seconds

C 100.950 seconds

4. (5 pts) A card is drawn from a full deck of 52 cards. What is the probability that the card drawn will be either a jack or a red card?

A $\frac{1}{13}$

C $\frac{7}{13}$

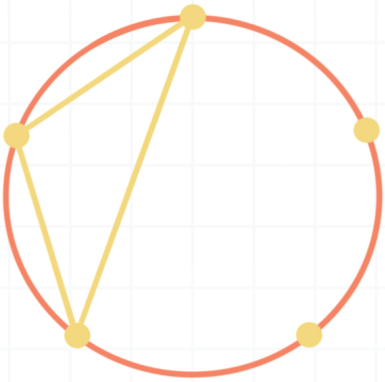
E $\frac{1}{52}$

B $\frac{2}{13}$

D $\frac{5}{26}$



5. **(5 pts)** There are 5 points located on a circle. How many different triangles can be drawn using the points as vertices?



A 3

B 5

C 10

D 12

E 15

6. **(5 pts)** There are 5 blue marbles and 2 yellow marbles in a bag. If a marble is pulled, the color is recorded, and then the marble is replaced, what's the probability that a blue marble will be pulled exactly 7 times in 10 total pulls?

A 9.49 %

B 70 %

C 50 %

D 26.55 %

E 71.43 %



7. (5 pts) There are 4,900 bison that live in a herd in Yellowstone National Park. A study wants to pull a sample size in order to find the proportion of calves in the herd. What is the smallest possible sample size that can be used to stay within a margin of error to be no more than $\pm 5\%$ at a 92% confidence level?

A 259

C 266

E 307

B 263

D 267

8. (5 pts) Find the line of best fit for the given data set:

x	y
0	0.8
2	1.4
4	3.1
6	4.8
8	6.2

A $y = 0.71x + 0.42$ **C** $y = 1.71x + 1.4$ **E** $y = -0.71x + 0.42$

B $y = 0.3x + 0.8$ **D** $y = -0.3x + 0.8$



9. **(15 pts)** What are the measures of central tendency for the following test scores recorded in a class of 26? Round your answers to the nearest hundredth.

88, 77, 95, 79, 59, 70, 86, 94, 68, 67, 91, 81, 77

88, 56, 95, 86, 74, 66, 93, 84, 70, 97, 60, 83, 88

10. **(15 pts)** What is the standard deviation of the data?

4, 7, 9, 12



11. **(15 pts)** You're planning a day at the beach, but the morning is cloudy. 64 % of all rainy days start off cloudy, but cloudy mornings are common (55 % of days start cloudy). This month is usually a dry month and only 18 % of the days tend to be rainy. What's the chance that it will rain during your day at the beach?

12. **(15 pts)** A pizza shop claims that 60 % of their 5,000 customers order pizza that includes pepperoni as a topping. You want to verify this claim, so you take a random sample of 120 customers to see whether or not they order a pizza with pepperoni. What's the probability that your results are within 5 % of the pizza shop's 60 % claim?

