



Advanced Placement

# STATISTICS

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AP Statistics

Dr. Alston Brown

## Expectations

Please download and complete the following worksheet prior to the first day of classes

## Materials

[Attached Packet](#)

# AP STATISTICS SUMMER PREP

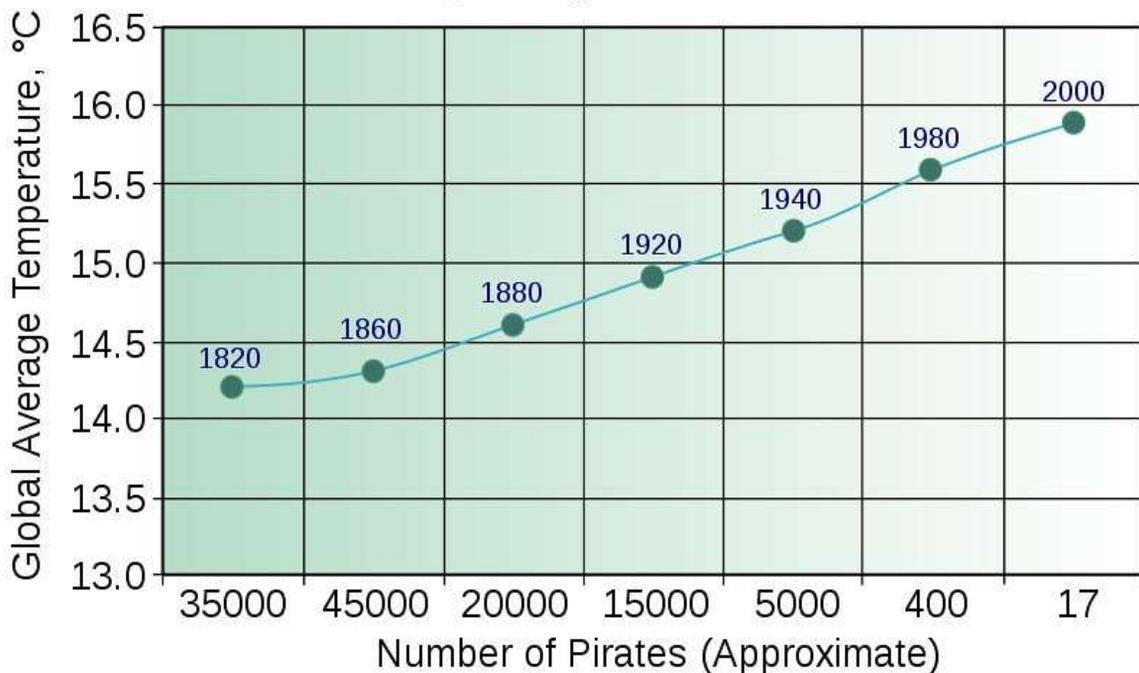
Welcome to AP Statistics!

Although this is a statistics course, you will need to be able to work with equations and concepts that you learned in Algebra 2. You also will need to be able to write. There is more writing AP Statistics than in any other math class. This packet will help you prepare and review for the course as well as see a preview of what is coming.

- Complete the packet for review.
- This is due the first day of school. NO EXCEPTIONS.
- Place a star (★) next to any problem you aren't sure how to do and be prepared to review it when you return to school.
- Knowing and understanding these concepts is KEY to your success in AP Statistics and to prepare for the AP exam.

See you soon!

Global Average Temperature vs. Number of Pirates



# AP STATISTICS SUMMER PREP

1. Find the value of the expression without using a calculator.

$$\frac{5 \times 6 - 2 \times 7}{3 + 1}$$

2. Find the value of the expression without using a calculator.

$$\frac{\left(\frac{4^2}{4}\right) + \left(\frac{9^2}{3}\right)}{2^3 + 1}$$

3. Evaluate the expression given that  $a=2$ ,  $b=3$  and  $c=1$ . Round to the nearest hundredth.

$$a \left( \frac{b^2 - (b \times c)}{a^3} \right)$$

4. Evaluate the expression given that  $a=4$ ,  $b=-1$  and  $c=6$ . Round to the nearest hundredth.

$$2 \left( \frac{b(a - b)^2 + 2(c - b)^2 + (c - a)^2}{a} \right)$$

5. Evaluate the expression given that  $a=3$ ,  $b=4.2$  and  $c=12$ . Round to the nearest hundredth.

$$\frac{\sqrt{(b - c)^2 + a^3} + (c - a)^2}{a^2}$$

6. What is 8 percent of 64? Round to the nearest hundredth.

7. 25 is 20% of what number?

8. 12 is thirty percent of what number?

9. Simplify.

$$\frac{x^2 - 16}{x + 5} + \frac{2x - 9}{x + 5}$$

10. Simplify.

$$\frac{2x}{x^2 - 9} - \frac{3}{x + 3}$$

**AP STATISTICS SUMMER PREP**

10. Simplify.

$$(4x - 3)(x^2 + 3x - 6)$$

11. Simplify.

$$\sqrt{3x^2y^8} * \sqrt{6x^3y^5}$$

12. Simplify.

$$(2x - 3)(x + 4)$$

13. Simplify.

$$(5x + 2y)(3x^2 + xy - 3)$$

14. Simplify

$$\left(\frac{-3x^2y^3}{z^4}\right)^2$$

15. Solve for x.

$$a(x + 4) - 2 = b(x - 1)$$

16. Solve for x.

$$\frac{x + a}{b} - a = c$$

17. Solve for x.

$$10 - (x + 4) = 2(x - 3) + 4$$

18. Solve for x.

$$2x - 32 + (x - 5) = 2(x - 4)$$

19. Solve for x.

$$3x^2 - 2x - 5 = 0$$

20. Solve for x.

$$\frac{2 + x - 3 + 6}{8} = 0.5$$

21. Solve for x.

$$3|x + 5| = 72$$

# AP STATISTICS SUMMER PREP

22. Solve for x.

$$\frac{2}{x+4} = \frac{3}{x-2}$$

23. Solve the problem:

The length of a rectangle is twice its width. If the perimeter is 144 meters, find the length and width of the rectangle.

24. The enrollment at a university changed from 9,000 to 12,500 students. By what percent did the enrollment increase?

25. What is the median of the following numbers? 10, 39, 71, 42, 39, 76, 38, 25

26. Find the mean of the set of numbers: 21, 3, 7, 17, 19, 31, 46, 21, 43.

27. The mean weight of five complete computer stations is 167.2 pounds. The weights of four of the computer stations are 158.4 pounds, 162.8 pounds, 165 pounds, and 178.2 pounds respectively. What is the weight of the fifth computer station?

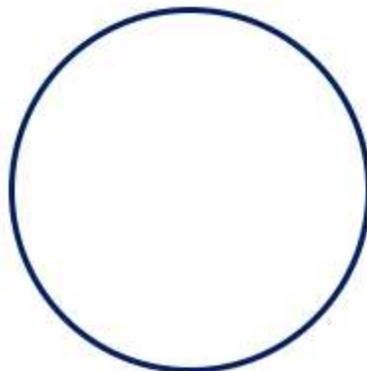
28. Create a pie chart for the following data about how people get to work:

20% Bus

25% Car

30% walk

25% Bicycle/Scooter



# AP STATISTICS SUMMER PREP

29. A survey of the number of minutes it takes students to get to school was taken. Make a dotplot of the data shown in the table.

Minutes	5	10	15	20	25	30	35	40+
# of students	5	6	10	12	8	6	3	2

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30. In a group of 50 people, 20 people are healthy. Of the remaining 30 either they have high blood pressure, high cholesterol levels or both. If 10 have high blood pressure only and 15 have high cholesterol only,

a) how many people have high blood pressure and a high level of cholesterol?

If a person is selected randomly from this group, what is the probability that he/she

b) has high blood pressure (event A)?

c) has high level of cholesterol(event B)?

d) has high blood pressure and high level of cholesterol (event A and B)?

e) has either high blood pressure or high level of cholesterol (event A or B)?

f) Use the above to check the probability formula:  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ .

## AP STATISTICS SUMMER PREP

30. You walk into a bakery and see 10 chocolate chip cookies, 4 snickerdoodles, 5 peanut butter cookies, and 6 sugar cookies. Answer the questions based on the above information.

- What is the probability of selecting a sugar cookie?
- What is the probability of selecting a chocolate chip cookie?
- What is the probability of selecting a peanut butter cookie?
- What is the probability of choosing two chocolate chip cookies in a row, assuming you do not put the first cookie back?
- What is the probability that you select a sugar cookie, put it back in the box, and then select sugar again?

# AP STATISTICS SUMMER PREP

31. boxplots commonly appear on the AP exam. See if you can interpret the boxplot below.

TEST SCORES AS A PERCENT



- What was the high score on the test?
- What percent of the class scored above a 72?
- What was the median score on the test?
- What percent of the class scored between 88 & 96?
- Do you think that this test was too hard for the students? Explain.
- Would you expect the mean to be above or below the median? Explain.

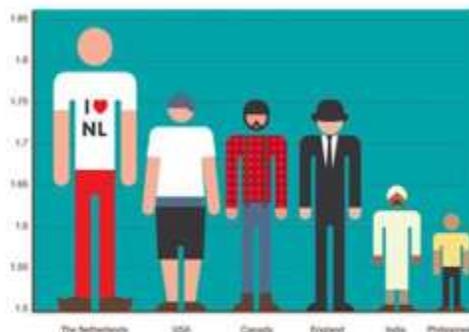
# AP STATISTICS SUMMER PREP

Interpreting graphs are an important part of statistics . You will examine them in many ways over the course of the next year. Respond to the questions regarding the corresponding graphs.

32.

a. What impression does this graph give you?

LOOKING DOWN ON THE REST OF THE WORLD  
(Average male height in m)



b. How could this graph be improved?

33. A survey is done of student music genre preferences. The results are shown in the bar graph below. Use the graph to respond to the questions.

a. How many students prefer Classical?

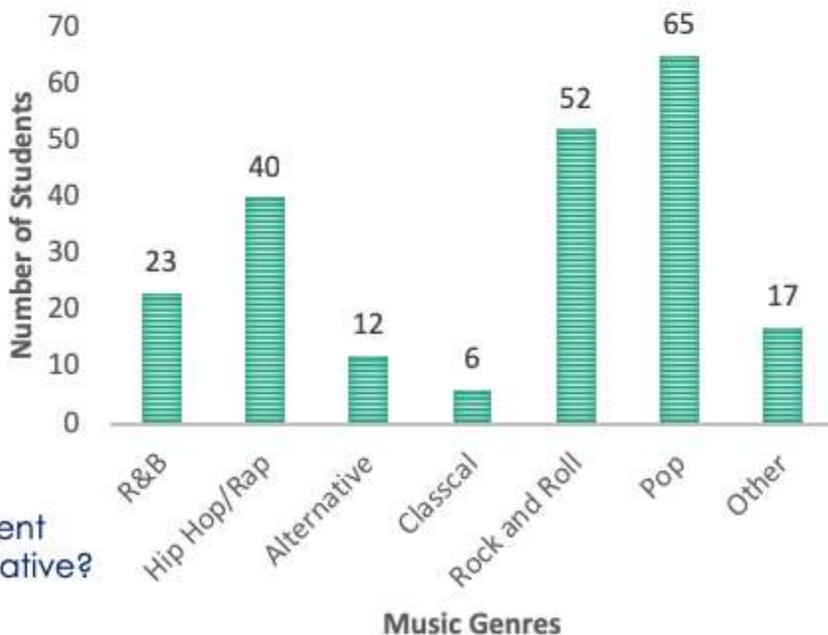
b. Which was the most popular genre of music of those surveyed?

c. How many students were surveyed?

d. Of those surveyed, what percent Preferred Rock and Roll or Alternative?

e. What impression does this graph give?

STUDENT MUSIC PREFERENCES



## AP STATISTICS SUMMER PREP

34. 9 flavors of ice cream, 6 with some chocolate and 3 without any chocolate, were served at a gourmet ice cream shop. 3 flavors were selected at random and they all contained chocolate.

a) How were the flavors selected?

b) Calculate the probability of selecting all 3 flavors that do not have chocolate.

c) Based on your answer to part b.) is there reason to doubt that the flavors were selected randomly? Explain.

35. On a Monday morning, there are 4 red trucks, 2 purple convertibles, 3 black motorcycles, 6 green bicycles, and 3 red bicycles and 8 silver scooters.

a) Find the probability of a red vehicle or a bicycle.

b) Find the probability of a silver vehicle.

c) Find the probability of a 2-wheel vehicle that is not red.