AP STATISTICS ASSIGNMENT:

SECTION 1: MONEYBALL

1. In 1991, what was the total payroll for:
   New York Yankees?  
   Oakland Athletics?

2. The three players that the Oakland Athletics lost to free agency are:

3. What was Billy Beane (General Manager) told to do by the team owner of the Athletics?

4. What is the real problem that Billy and his team of scouts have to solve?

5. As a High School baseball star, why was Billy projected to be picked in the first round of the player draft?

6. According to Pete Brandt, "... the goal of people who run ball clubs is not to buy players, it is to ___________. In order to ___________, they need to ___________.”

7. The equation on the whiteboard: \( \frac{(\text{Runs scored})^2}{(\text{Runs scored})^2 + (\text{Runs allowed})^2} \), is known as the 'Pythagorean Expectation Formula'. What does it allow Pete to project?

8. How many runs are needed, and how many runs can be allowed, in order for the team to reach this goal?

9. Pete explains to Billy that the code that is shown on his computer is an algorithm that analyzes players based on a number of statistics. It is all about getting everything down to ___________.
   What is it used for?

10. Pete knows that there are 25 potential players that must be out there and available for Oakland because ________________________________.

11. Why is Chad Bradford (a pitcher), undervalued by other teams?
12. How is Billy going to replace players like Jason Giambi, Johnny Damon and Olmedo Saenz?

13. The three replacement players that Billy is interested in all have 'problems' but are cheap. Name the players:

__________________________  ____________________________  ____________________________

What do they all have in common?

14. Why did Billy not succeed at the major-league level as a player, despite having 'all the tools'?

15. The team that Billy has assembled is based on a statistical theory known colloquially as 'Moneyball'. Who invented this idea, and what was his real job at the time?

16. How many games back from the AL West lead are the Athletics as of May 23, 2002?

   How many games had they lost of their last 17 games?

17. Why does Billy prefer Scott Hatteburg at 1st base instead of Carlos Pena (despite Hatteburg's lack of experience and fielding skills in the position)?

18. How does Billy solve the problem of his manager (Art Howe) preferring to play Pena at 1st instead of Hatteburg?

19. Even though Jeremy Giambi was a player acquired using the 'Moneyball' formula, why do you think Billy felt the need to trade him?

20. What is 'The Streak'?

21. Billy states that if the A's win the last (championship) game of the season, they would have re-invented the game. What does he mean by this?

22. At the end of the 2002 season, the Athletics had exactly the same number of wins as the Yankees. How much did the Yankees pay on average for each win?

   How much did the A's pay on average for each win?
AP Statistics Assignment:

Section 1: Moneyball

1. In 1991, what was the total payroll for:
   - New York Yankees? $114,457,768
   - Oakland Athletics? $39,722,689

2. The three players that the Oakland Athletics will to lose to free agency are:
   - Johnny Damon
   - Jason Giambi
   - Jason Isringhausen

3. What was Billy Beane (General Manager) told to do by the team owner of the Athletics?
   - Find replacements for the money the team actually has.

4. What is the real problem that Billy and his team of scouts have to solve?
   - Building a team on a limited budget that can compete against teams with big-money.

5. As a High School baseball star, why was Billy projected to be picked in the first round of the player draft?
   - Billy was a '5-tool' guy. He could run, field, throw, hit, and hit for power.

6. According to Pete Brandt, "... the goal of people who run ball clubs is not to buy players, it is to
   - buy wins. In order to buy wins, they need to buy runs."

7. The equation on the whiteboard: \[
\frac{\left(\text{Runs scored}\right)^2}{\left(\text{Runs scored}\right)^2 + \left(\text{Runs allowed}\right)^2},
\]
is known as the 'Pythagorean Expectation Formula'. What does it allow Pete to project?
   - Winning percentage of a team, hence the number of games (99) required to reach the 2002 post-season. (The Oakland Athletics actually won 103 games in 2002).

8. How many runs are needed, and how many runs can be allowed, in order for the team to reach this goal?
   - 814 runs needed and 645 runs that can be allowed.

9. Pete explains to Billy that the code that is shown on his computer is an algorithm that analyzes players
   - based on a number of statistics. It is all about getting everything down to one number.
   - What is it used for?
   - To find value in players that nobody else can see.

10. Pete knows that there are 25 potential players that must be out there and available for Oakland because
    - Everybody else undervalues them.

11. Why is Chad Bradford (a pitcher), undervalued by other teams?
    - He 'throws funny'.
12. How is Billy going to replace players like Jason Giambi, Johnny Damon and Olmedo Saenz? 
   By recreating them 'in the aggregate'. Finding three ball players whose combined OBP (on-base-
   Percentage) matches the total of Giambi, Damon and Saenz (1.092). 

13. The three replacement players that Billy is interested in all have 'problems' but are cheap. 
   Name the players: 
   Jeremy Giambi       David Justice       Scott Hatteburg
   What do they all have in common? 
   They can all get on base. (Have high OBP's). 

14. Why did Billy not succeed at the major-league level as a player, despite having 'all the tools'? 
   Lacked confidence and the ability/maturity to deal with failure. 

15. The team that Billy has assembled is based on a statistical theory known colloquially as 'Moneyball'. Who 
    invented this idea, and what was his real job at the time? 
    Bill James (who was a Night-watchman in a factory). 

16. How many games back from the AL West lead are the Athletics as of May 23, 2002? 
    10 games back from the leading team. 
    How many games had they lost of their last 17 games? 
    14 games (Had won 20 games but had lost 26 games). 

17. Why does Billy prefer Scott Hatteburg at 1st base instead of Carlos Pena (despite Hatteburg's lack of 
    experience and fielding skills in the position)? 
    He gets on base more than Pena. 

18. How does Billy solve the problem of his manager (Art Howe) preferring to play Pena at 1st instead of 
    Hatteburg? 
    He trades Pena to the Detroit Tigers. 

19. Even though Jeremy Giambi was a player acquired using the 'Moneyball' formula, why do you think Billy felt 
    the need to trade him? 
    Perhaps something that the formula does not measure. 
    (Influence in the clubhouse, maturity, and leadership) 

20. What is 'The Streak'? 
    Longest continuous winning streak. (20 straight wins). 

21. Billy states that if the A's win the last (championship) game of the season, they would have re-invented the 
    game. What does he mean by this? 
    Leveling the playing field. It would show that small-market teams could compete and win against 
    teams with larger payrolls such as the Yankees and Dodgers. 

22. At the end of the 2002 season, the Athletics had exactly the same number of wins as the Yankees. 
    How much did the Yankees pay on average for each win? 
    $1 400 000 
    How much did the A's pay on average for each win? 
    $260 000