AP Stats: Algebra and Probability

1. Solve for n.

$$1.96\sqrt{\frac{0.5\,(0.5)}{n}} < 0.03$$

2. Solve for k.

a. $11k = 110 + 99k$

b. $10k - 160k = -480$

c. $k - 8k = 0$

d. $\sqrt{45 - x} = 5$

e. $\frac{12.3 - k}{4.5} = -0.83$

3. In the table below lists sophomores and their status of taking either AP Statistics or AP World. Use the table to answer the following questions.

		AP World		
		Yes	No	
AP Stats	Yes	47	3	
	No	93	247	

a. P(student takes AP World)

b. P(student takes AP Stats)

c. P(student takes AP World or AP Stats)

d. P(student takes AP World and AP Stats)

e. P(student takes AP Stats GIVEN they take World)

f. P(student takes AP World GIVEN they take Stats)

4. You roll a fair die once. What is the probability of:

a. rolling a 5

b. rolling an odd number

c. you roll at least a 5

5. A slot machine has 3 wheels that spin independently. Each has 10 equally likely symbols: 4 bars, 3 lemons, 2 cherries, and a bell. If you play, what is the probability that the 3 wheels will show:

a. all 3 lemons.

b. all 3 bells (Jackpot)

c. No Bells

d. No bars

e. At least one bar (automatic loser)

Answers:

1. n > 1067.11	2. a. k = 10, -1	b. k = 12, 4
2c. k = 8,0	2d. k = 20	2e. k = 16.035
3a. 140/390	3b. 50/390	3c. 143/390
3d. 47/390	3e. 47/140	3f. 47/50
4a. 1/6	4b. 1/2	4c. 1/3
5a. 27/1000	5b. 1/1000	5c. 729/1000
5d. 216/1000	5e. 784/1000	

Combinations/Permutations worksheet

Indicate whether each situation involves a combination or permutation.

1. In how many ways can five apples chosen at random from a case of 80 apples?

2. In how many ways can ten applicants line up for a job interview?

3. In how many ways can 3 from a class of 20 be elected president, secretary, and treasurer?

4. Four students chosen at random from a student body of 1000

Evaluate each expression

5. ${}_{12}C_{11}$ 6. ${}_{12}C_{10}$ 7. ${}_{12}C_{5}$ 8. ${}_{12}C_{1}$

How many samples of five different items can you select from each set?

9. Jim, Ben, Sue, Tom, and Rita 10. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

11. 14 novels on a reading list 12. 50 states

Evaluate each expression.

13. 7! 14. $\frac{11!}{9!}$ 15. ${}_{12}C_{5}(0.3)^{5}(0.7)^{7}$ 16. ${}_{12}P_{3}$ 17. ${}_{12}P_{5}$

18. In how many ways can three medals (gold, silver, and bronze) be awarded for a race involving nine runners?

19. A committee must choose 3 finalists from 15 scholarship candidates. How many ways can the committee choose the three finalists?

20. A traveler can choose from three airlines, five hotels, and four rental car companies. How many arrangements of these services are possible?

Combinations/Permutations worksheet

Indicate whether each situation involves a combination or permutation.

1. In how many ways can five apples chosen at random from a case of 80 apples?
   Combination – ${}_{80}C_5$
2. In how many ways can ten applicants line up for a job interview?
   Permutation – ${}_{10}P_{10}$
3. In how many ways can 3 from a class of 20 be elected president, secretary, and treasurer?
   Permutation – ${}_{20}P_3$
4. Four students chosen at random from a student body of 1000
   Combination – ${}_{1000}C_4$

Evaluate each expression

5. ${}_{12}C_{11}$ 12

6. ${}_{12}C_{10}$ 66

7. ${}_{12}C_5$ 792

8. ${}_{12}C_1$ 12

How many samples of five different items can you select from each set?

9. Jim, Ben, Sue, Tom, and Rita
   1

10. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
    252

11. 14 novels on a reading list
    2002

12. 50 states
    2,118,760

Evaluate each expression.

13. 7! 5040

14. $\frac{11!}{9!}$ 110

15. ${}_{12}C_5(0.3)^5(0.7)^7$ 0.1585

16. ${}_{12}P_3$ 1320

17. ${}_{12}P_5$ 95,040

18. In how many ways can three medals (gold, silver, and bronze) be awarded for a race involving nine runners?
    504

19. A committee must choose 3 finalists from 15 scholarship candidates. How many ways can the committee choose the three finalists?
    455

20. A traveler can choose from three airlines, five hotels, and four rental car companies. How many arrangements of these services are possible?
    60