

Probability (1-6, 6-7, 9-7) Test Review**Name** _____**#1-6 Find the number of outcomes.**

1. How many ways can a group of 10 students be chosen from a class of 16 students?
2. How many 4 digit PIN numbers are possible if the first number cannot be 0 and the last number must be even. Digits can repeat! (digits can be a whole number from 0-9)
3. How many ways can 5 different books be put in one stack on a table?
4. When going to lunch, I have a choice of 5 sandwiches, 4 sides, 3 drinks and 8 desserts. How many different lunches are possible?
5. How many ways can a batting order of 9 be arranged if there are 15 athletes on the team?
6. A user name must contain 3 letters followed by 4 digits. How many user names are possible if
 - a) there can be repeats
 - b) there can be no repeats
7. At Pythagoras High school, 60% of the students participate in band, 53% of the students participate in sports, and 26% participate in both. Find the probabilities. (hint: draw a Venn diagram)
 - a) P (just sports)
 - b) P (neither)
 - c) P (band or sports)
8. If the probability of an event happening is $\frac{2}{5}$, what is the probability that same event *will not* happen?

Evaluate:

9. $4!$

10. ${}_8C_5$

11. ${}_5P_2$

#12-17. A jar contains 20 gumballs where 8 are red, 5 are blue and 3 are green and 4 are white. Find the theoretical probability. Put answers as a reduced fraction, decimal rounded to the nearest hundredth, or percent.

12. P (red *or* white)13. P (*not* blue)14. P (red, *then* blue) , *with replacement*15. P (red, *then* green) , *without replacement*16. P (white, *then* white), *without replacement*17. P (green, *then* green), *with replacement***Find the probability.**

18. I have 15 bills in my wallet. One \$50, two \$20's, one \$10, 3 \$5's, and the rest are \$1's. I grab two bills, what is the probability that I will ...

a) pick 2 \$1 bills. (assuming the first bill was not returned to the wallet)

b) pick a \$50 bill and then a \$5 (assuming the first bill was not returned to the wallet)

19. You roll an 8-sided die. Find the probability.

- a) $P(5 \text{ or } 2)$

- b) $P(\text{multiple of } 2 \text{ or a prime number})$

- c) $P(\text{odd number or a number greater than } 4)$

Select the best answer(s).

20. Which situations below are mutually exclusive?

- a) Roll a 5 or 6 on a die
- b) Pick a card that is a heart or a seven
- c) Being a junior or being a girl
- d) Roll a odd number or 6 on a dice
- e) Roll a dice and then spin a spinner
- f) Being a teacher or a licensed driver
- g) Pick a red or a green marble from a bag
- h) Roll an even number or a prime number on a die
- i) Picking math class or English to study first tonight

21. Which situations below are Independent?

- a) Flip a coin and roll a dice
- b) Draw a card without replacement that is a heart and then another card that is a 7
- c) From a bag of marbles, pick a blue marble, keep it, then pick a red marble
- d) Roll a dice twice, get a odd number first, and then a 6
- e) Spin a spinner 3 times
- f) Pick a student of the week, for 8 weeks (you can win more than once!!)
- g) Pick a purple or white marble
- h) Pick an M&M, eat it and then pick another M&M to eat.
- i) Pick a player from your team to bat first and then another player to bat second.