

EOC review #8

sequences, series, permutation, combination, probability

• arithmetic → add/subtract a constant

$$a_n = a_1 + d(n-1)$$

$$S_n = \frac{n}{2}(a_1 + a_n)$$

$$a_n = n^{\text{th}} \text{ term}$$

d = difference

n = term number

a_1 = first term

S_n = sum on n^{th} term

r = ratio

• geometric → multiply by a constant

$$a_n = a_1(r)^{n-1}$$

$$S_n = \frac{a_1 - a_1(r)^n}{1-r}$$

• permutations (Fundamental Counting Principle)

↳ ORDER MATTERS

nPr ← # chosen
↑
of objects

MATH
→ PRB
2: nPr

• combinations → ORDER DOES NOT MATTER

nCr ← # chosen
↑
of objects

MATH
→ PRB
3: nCr

• factorial → ! MATH → PRB 4: !

probability

— probability of an event = $\frac{\text{possible outcomes}}{\text{total outcomes}}$

• probability of picking a King out of a deck of cards

$$= \frac{\# \text{ of Kings}}{\# \text{ of cards}} = \frac{4}{52} = \frac{1}{13}$$

— probability of an event given another event = $\frac{P(E1 \overset{\text{and}}{\vee} E2)}{P(E1)}$

• prob. of being absent on Friday is 0.03. prob. of it being Friday is $\frac{1}{5}$ or 0.2.

$$P(\text{Absent}|\text{Friday}) = \frac{P(\text{Friday} \& \text{Absent})}{P(\text{Friday})}$$

AND statements \rightarrow multiply

OR statements \rightarrow add