FUNDEMENTAL COUNTING PRINCIPLE

Note Title 1/7/2013

- THE FUNDEMENTAL COUNTING PRINCIPLE - IF A TASK IS MADE UP OF STAGES, THE TOTAL NUMBER OF POSSIBILITIES FOR THE TASK IS GIVEN BY $m \times n \times p \times \ldots$ WHERE m IS THE NUMBER OF CHOICES FOR THE FIRST STAGE, n IS THE NUMBER OF CHOICES FOR THE SECOND STAGE AND SO ON.

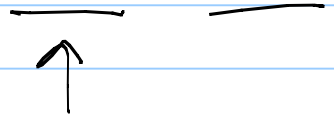
IE A CELL PHONE COMPANY HAS 5 DIFFERENT PHONES, 3 DIFFERENT MINUTE PLANS, 5 DATA PLANS AND

2 CASES. HOW MANY DIFFERENT PHONE SET U/S ARE AVAILABLE?

SOLN $5 \times 3 \times 5 \times 2 = 150$

IE HOW MANY DIFFERENT 2 DIGIT NUMBERS?

SOLN



$9 \times 10 = 90$

IE HOW MANY EVEN 2 DIGIT NUMBERS?

SOLN $9 \times 5 = 45$

IE HOW MANY 2 DIGIT NUMBERS USING 0, ~~1~~, 3, 5, 7, 9

A) REPETIONS ALLOWED

B) REPETITION NOT ALLOWED

SOLN A $5 \times 6 = 30$

B $5 \times 5 = 25$

IE A TRUE FALSE TEST HAS 7 QUESTIONS, YOU GUESS AT ALL OF THEM.

A) HOW MANY POSSIBLE ANSWERS FOR EACH QUESTION?

B) HOW MANY DIFFERENT PATTERNS TO ANSWER THE 7 QUESTIONS?

C) WHAT IS THE PROBABILITY GETTING ALL 7 CORRECT?

SOLN A) 2 WAYS

B) 7 WAYS × 2 WAYS = 14 WAYS

C) $\frac{1}{14}$

IE MULTIPLE CHOICE, 7 QUESTIONS, 4 POSSIBLE ANSWERS

A) HOW MANY WAYS FOR EACH QUESTION?

B) TOTAL # OF PATTERNS?

C) PROBABILITY ALL CORRECT?

SOLN A) 4

B) $7 \times 4 = 28$

c) $\frac{+}{28}$

IE CELL PHONE PASSWORD 6 DIGITS, HOW MANY PASSWORDS ARE POSSIBLE.

SOLN $10 \times 10 \times 10 \times 10 \times 10 \times 10 = 1000000$

IE BANK CARD PIN, MINIMUM 4 DIGITS, MAXIMUM 6 DIGITS, HOW MANY PINS POSSIBLE?

SOLN $\underbrace{10 \times 10 \times 10 \times 10}_{\text{4 DIGITS}} + \underbrace{10 \times 10 \times 10 \times 10 \times 10}_{\text{5 DIGITS}} + \underbrace{10 \times 10 \times 10 \times 10 \times 10 \times 10}_{\text{6 DIGITS}}$

$= 1110000$

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