

BE-IB

MONDAY 4-21-08

*ASK ABOUT
MAKEUP
QUIZZES

Computer Terms:

1 Mb = 1 Megabyte = 1 million bytes $\approx 1 \times 10^6$

1 Gb = 1 Gigabyte = 1 billion bytes $\approx 1 \times 10^9$

1 Tb = 1 Terabyte = 1 trillion bytes $\approx 1 \times 10^{12}$

① If an MP3 player is 2 Gb and each song is ≈ 5 Mb, how many songs will it hold? (Use scientific notation).

② If computers are "changing" at 50% per year, assume a 2 Gb MP3 is today's "standard," set up the exponential growth equation for the "standard" MP3 for any future year " t ".

FYI, terms you will use sooner than you think!

1 Pb = 1 Petabyte = 1×10^{15} bytes

1 Eb = 1 Exabyte = 1×10^{18} bytes

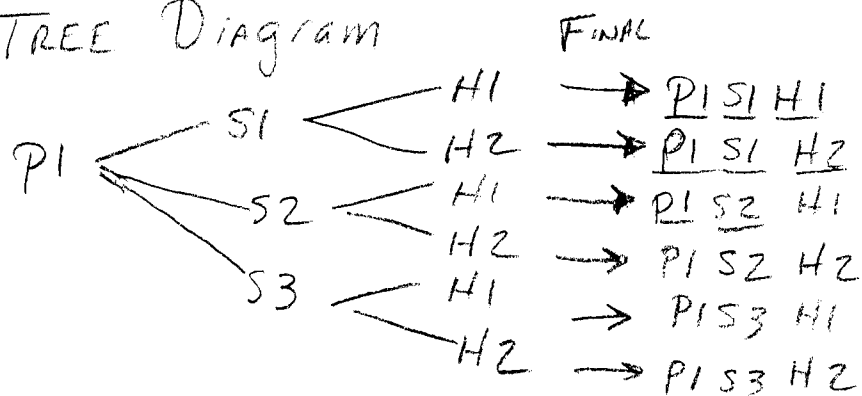
1 Zb = 1 Zettabyte = 1×10^{21} bytes

1 Yb = 1 Yottabyte = 1×10^{24} bytes

Recall this kind of problem:

You have 4 pairs of pants and 3 shirts and 2 pairs of shoes. How many different outfits can you make?

TREE Diagram



6 outfits with P1



6 with P2



6 with P3



6 with P4

24 total

$$4 \cdot 3 \cdot 2 = 24$$

FCT ?

FUNDAMENTAL COUNTING PRINCIPLE

If an event M can occur m ways,
 followed by an event N that can occur n ways,
 then the event M followed by N can
 occur $m \cdot n$ ways.

EXAMPLES

① Football team $\Rightarrow$ red jerseys for road
 white for home
 gray for practice
gray or black pants
black or white shoes

How many possible combinations?

② Deli $\Rightarrow$ 10 sandwiches, 12 sides, and
 7 beverages. How many combinations?

see Ch. 14-1

Try using the FCP to solve this problem: how many ways can you arrange 6 books on a shelf?

$$6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 720$$

or $6! = 720$

↑

READ "6 factorial"

EX 3

PG 755

How many ways to arrange 10 video games on a shelf?

$$10! = 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

$$10! = 3,628,800$$

EX5
Pg 756

Ride 12 roller coasters is a pack.

① How many ways?

$$12! = 479,001,600$$

② Suppose you only have time to ride 8, how many ways?

⚡ It is NOT 8!

$$12 \cdot 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5$$

8 choices

$$= 19,958,400$$

$$\text{or } \frac{12!}{4!} = \frac{12 \cdot 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{4 \cdot 3 \cdot 2 \cdot 1}$$

$$= \frac{479,001,600}{24} = 19,958,400 \checkmark$$

Homework: • Read CH 14-1

• Pg 756 # 1 to 8