

● REASON FOR THE SEASONS

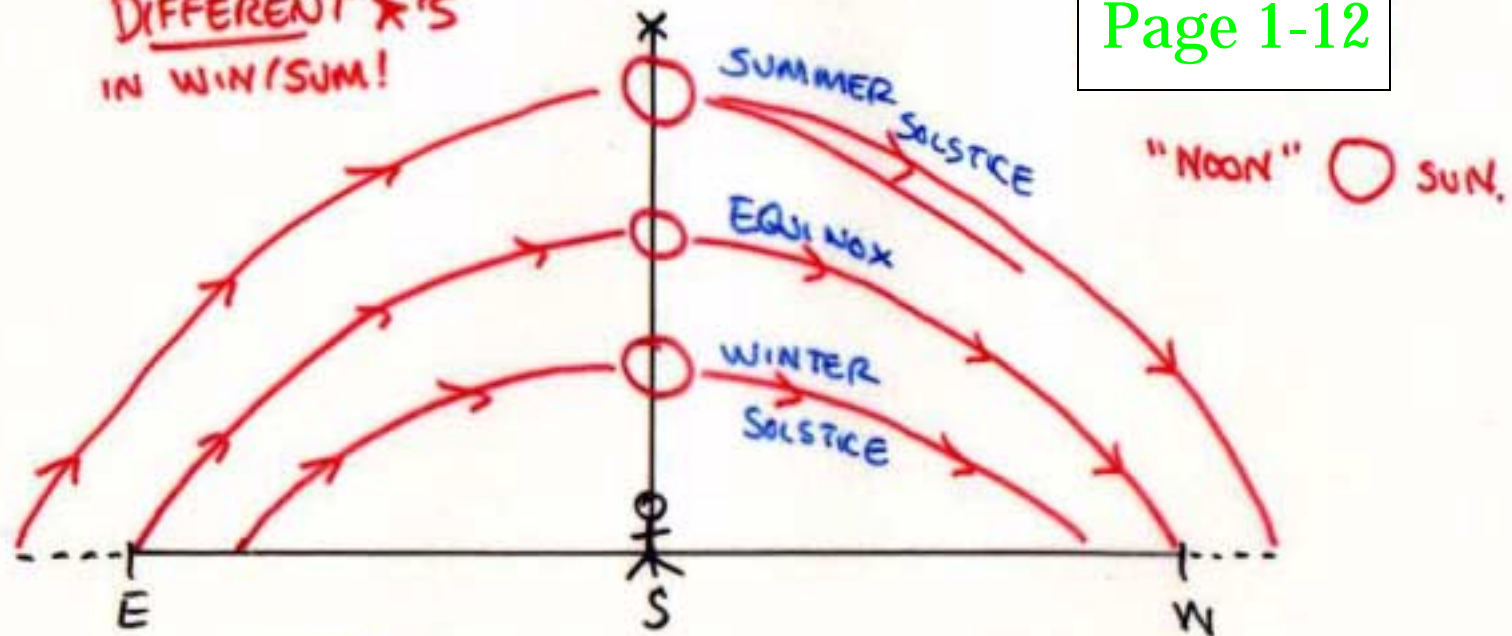
- PHENOMENA TO EXPLAIN!
- TILT OF THE EARTH'S AXIS

- VIEWPOINT IN THE SOLAR SYSTEM.
 - EQUINOXES
 - SOLSTICES

☐ PHENOMENA TO EXPLAIN "FEATURES OF THE SEASONS"

- HOT IN SUMMER, COOL IN WINTER (FOR US!)
- "BACKWARDS" IN THE SOUTHERN HEMISPHERE!
HOT IN WINTER, COOL IN SUMMER (FOR AUSTRALIA!)
- SUN CHANGES POSITION IN THE YEAR (AGAINST THE *'S)
DIFFERENT *'S
IN WIN/SUM!

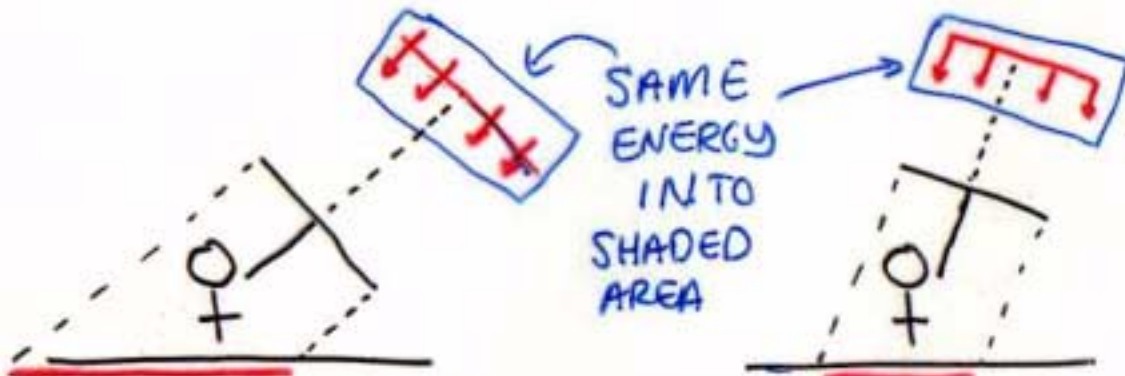
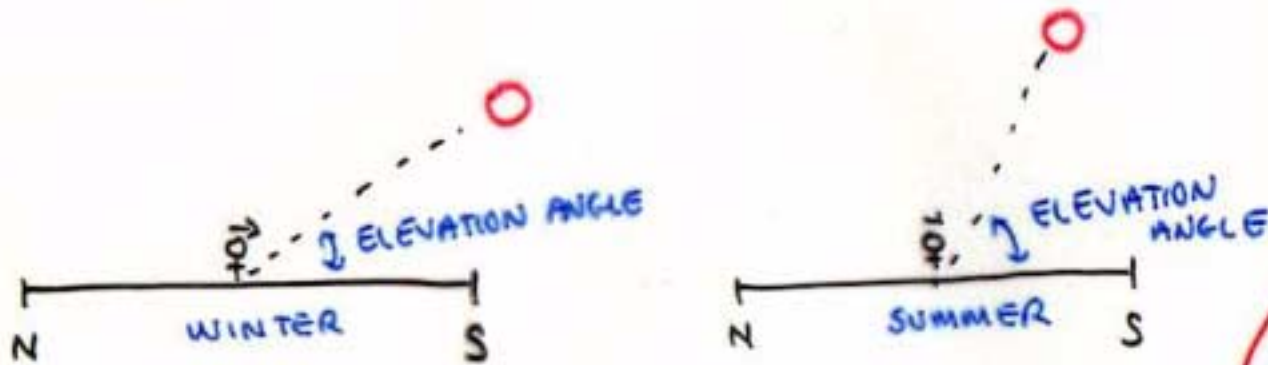
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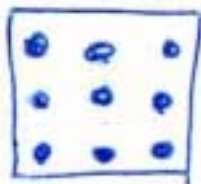
WHY SHOULD ANY OF THIS BE SO?

☐ "HEIGHT" (ELEVATION) OF THE NOON-TIME SUN
 MAKES WINTER COLD AND SUMMER HOT.

4 D.
 4-6 to 4-9
 PAGES
 IN CH. 4



SHADED AREA
 BIG AREA



LOW
 "HEAT"
 AREA

SHADED AREA
 SMALL AREA

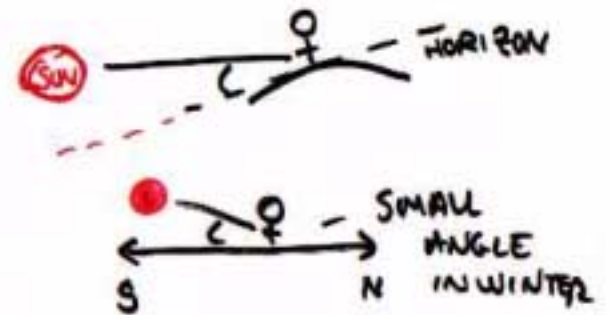
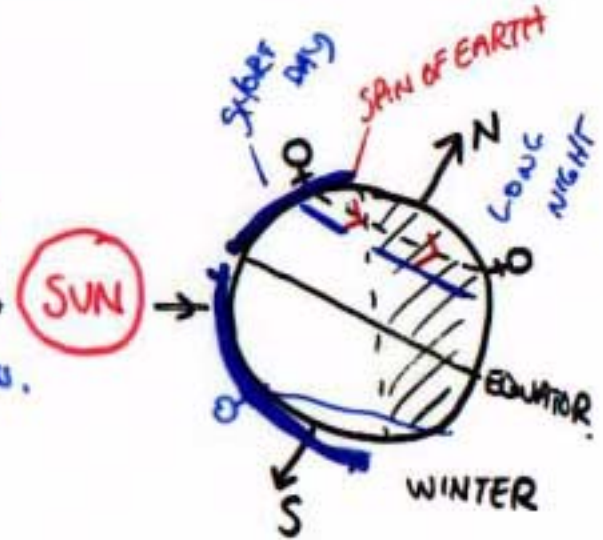
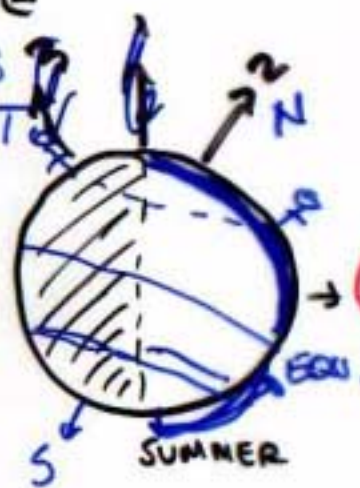
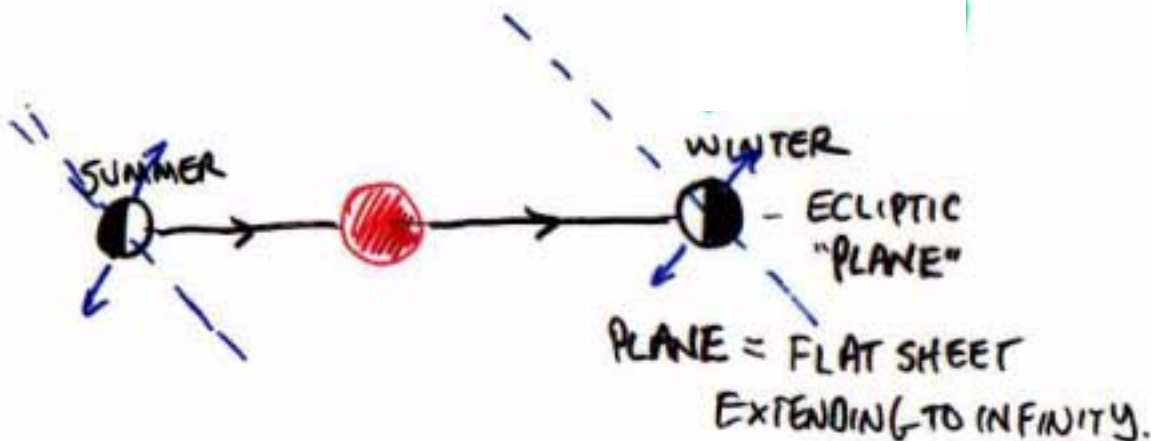
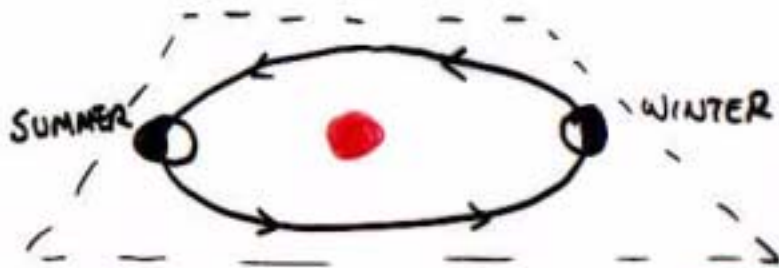
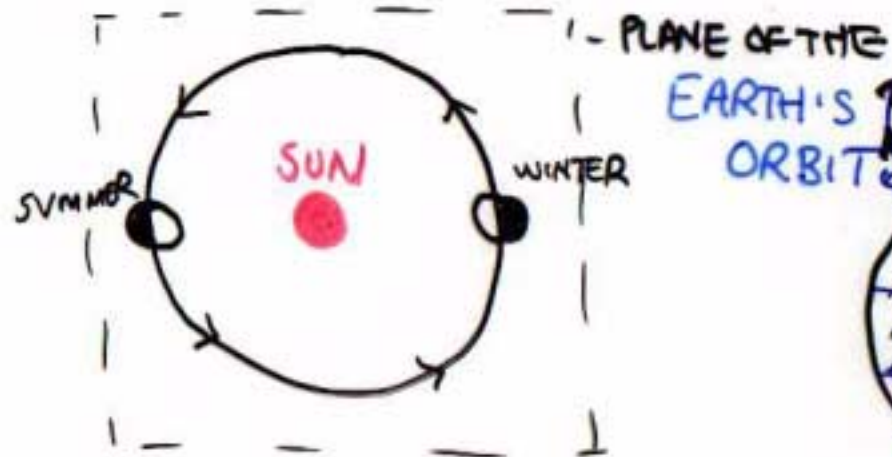


BIG
 "HEAT"
 AREA



SO...
 WHAT CONTROLS
 ELEVATION
 OF THE
 SUN?

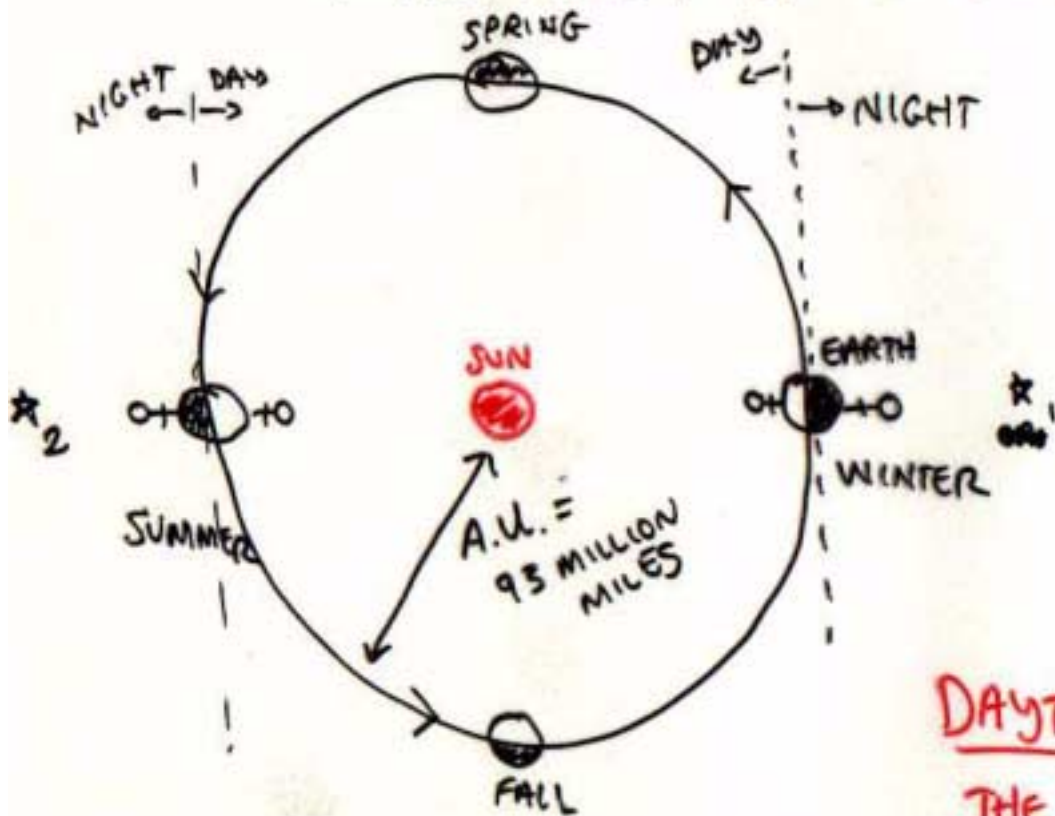
□ TILT OF THE EARTH'S AXIS



WHAT DOES "SUMMER" LOOK LIKE?
DIRECTION OF TILT?

□ TILT OF THE EARTH'S AXIS + THE ORBIT OF THE EARTH

4-15



YOU CAN SEE ★₁
IN WINTER BUT NOT
SUMMER

YOU CAN SEE ★₂
IN SUMMER BUT
NOT WINTER.

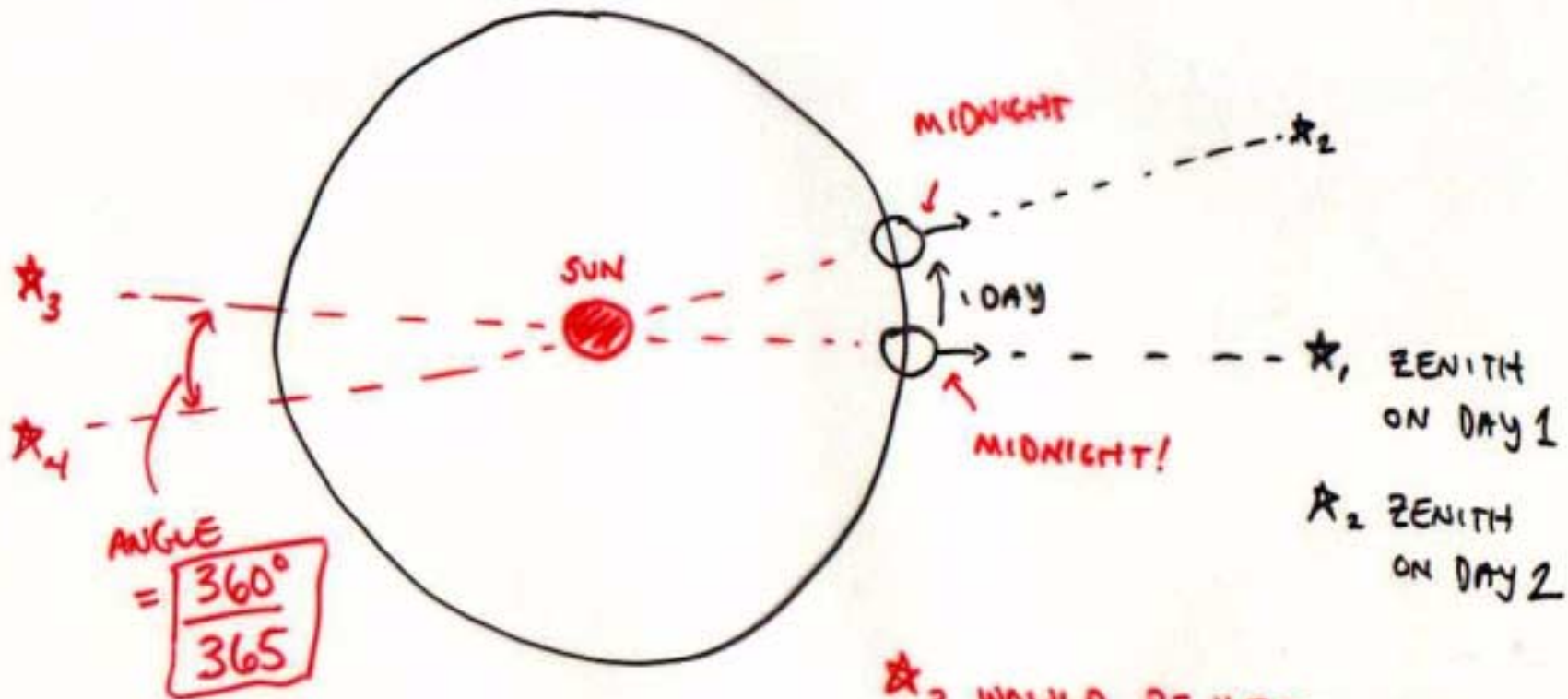
DAYTIME ONLY COMES FROM
THE DIRECTION FROM EARTH TO
THE SUN.

CYCLE TAKES 365 DAYS -
EARTH-YEAR.

SUMMER ★'S ≠
WINTER ★'S!

DIFFERENT STARS IN SUMMER + WINTER.

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\star_3 WOULD BE "BEHIND" SUN
IF YOU COULD SEE IT!
ON DAY 1

\star_4 "BEHIND" SUN ON DAY 2

LOOKS LIKE SUN "MOVED" FROM \star_3 TO \star_4

□ ORBITING + TILTED EARTH

EXPLAINS SEASONS ✓ NORTH +
SOUTH HEMISPHERES.

EXPLAINS MOTION OF THE SUN
ON THE ECLIPTIC

CONVENIENT ... NOT SO SIMPLE OR
OBVIOUS ... TOOK 2,000 YEARS
TO FORMULATE

NEWTON GAVE A REASON WHY IT
SHOULD BE SO...

LAWS ON EARTH ARE SAME
AS IN THE SKY.